

Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

MAI 622: AI Entrepreneurship



Course Objective



Help students master concepts of relevance to AI and Data-driven entrepreneurship, by:

- Introducing basic **terminology** and **concepts** of **innovation, entrepreneurship, and intellectual property**
- Discussing **case studies** of turning ideas to successful companies, and **visions** for the future of AI
- Learning and practicing steps entailed in **start-up foundation**, as captured in MIT's **Disciplined Entrepreneurship** methodology.
- Understanding and practicing **business model development**.
- Learning how to **pitch** to attract investment

Learning Objectives



After taking this course, students should be able to:

- Recognize and describe **key concepts** and **terminology** related to **innovation**, **entrepreneurship**, **AI** and **data-driven economy**.
- Understand and explain the **interplay** between **AI**, **Machine Learning**, **Big Data**, and various **application domains**.
- Analyze, evaluate and propose **entrepreneurial ideas**, especially for innovative products, processes or services based on AI, and **apply the key stages of turning an idea or invention** into a **commercial product**.
- Understand issues of **Intellectual Property (IP)** and methods for **IP protection**.
- Understand the basics of **incorporation** and **company structure**.
- Understand the key challenges for **attracting talent**, **establishing and managing a startup team**.



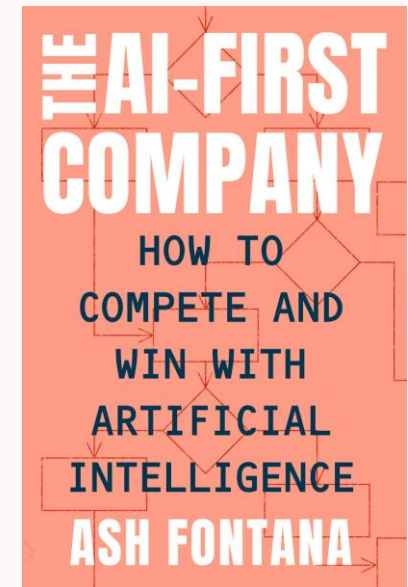
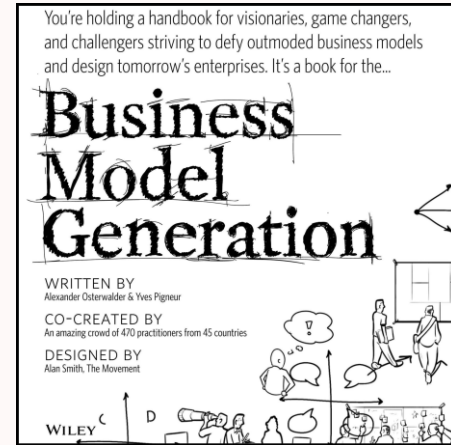
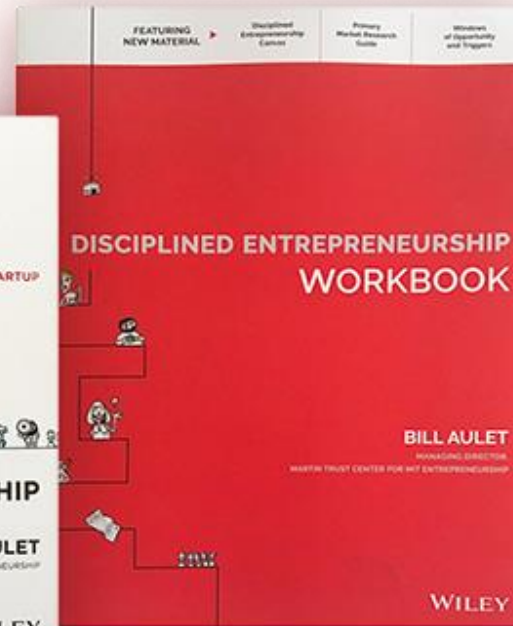
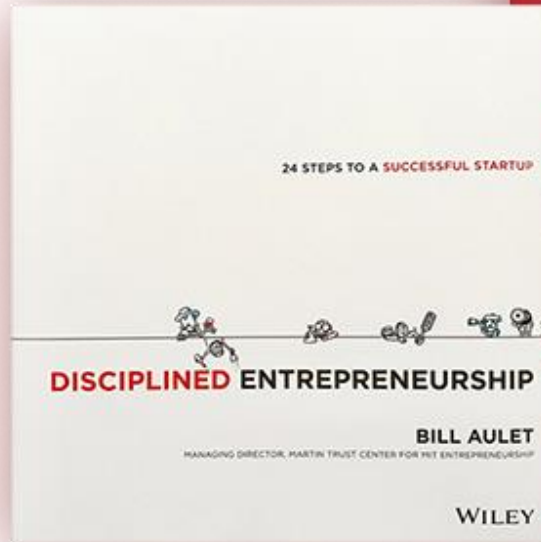
Learning Outcomes and Acquired Skills



The students who complete this course successfully, will be able to:

- Understand, describe and apply methodologies and tools for innovative entrepreneurship, such as the [Disciplined Entrepreneurship Methodology](#), the [Lean Product Methodology](#) and [Lean AI](#).
- Understand and [create Business Models](#) using the [Business Model Canvas](#).
- Define and apply techniques for [market analysis](#), [product design](#), [value proposition definition](#), [customer acquisition](#), [pricing products or services](#), and [sales](#).
- Understand the basics of [fundraising](#) and [financing options](#) for startups.
- [Prepare pitch decks](#), and [pitch](#) in front of potential investors, an AI-related business idea/product/service.
- Use state-of-the-art [collaboration](#), [ideation](#) and [rapid prototyping tools](#).

Main Sources for Learning Materials



Startup School



Reading List

Textbooks



- Bill Aulet (2013) “**Disciplined Entrepreneurship.**” Wiley.
- Bill Aulet (2017) “**Disciplined Entrepreneurship Workbook.**” Wiley.
- Alexander Osterwalder et al (2010) “**Business Model Generation.**” Wiley.
- Ash Fontana (2021) “**The AI-First Company.**” Penguin.
- European Patent Office. “**Inventors’ Handbook.**”
<https://www.epo.org/learning-events/materials/inventors-handbook.html>

Reading List

Online Videos & Courses



- **Y Combinator's Resources,**
<https://www.ycombinator.com/resources/>
- Steve Blank, “**How to build a startup?**”
Udacity, <https://classroom.udacity.com/courses/ep245>
- Sam Altman, “**How to start a startup?**”
<http://startupclass.samaltman.com/>
- Centre for Entrepreneurship: **C4E video lectures library**
<https://www.youtube.com/c/c4eOrgCy/videos>

Additional Readings

AI Case Studies & Vision



- Cade Metz (2021). **“The Genius Makers: The Mavericks Who Brought A.I. to Google, Facebook, and the World.”** Random House Business.
- Kai-Fu Lee & Chen Qiufan (2021). **“AI 2041. Ten Visions for Our Future.”** Penguin.
- Eric Topol (2019). **“Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again.”** Basic Books.

Additional Readings

Context & Policy



- Henry A Kissinger, Eric Schmidt, Daniel Huttenlocher (2021) “**The Age of AI and Our Human Future.**” Little, Brown and Company.
- Smith, B. and Browne C.A. (2019) “**Tools and Weapons. The Promise and the Peril of the Digital Age.**” Penguin.
- Lee, Kai-Fu (2018) “**AI Superpowers: China, Silicon Valley, And The New World Order.**” Houghton Mifflin Harcourt Company.
- O’Neil, C. (2016) “**Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy.**” Crown.
- Sinan Aral (2021) “**The Hype Machine.**” Penguin.

Additional Readings

Disruptive Startups



- Ben Horowitz (2014) **“The Hard Thing about Hard Things.”** Harper Business.
- Steven G. Blank (2006) **“The Four Steps to the Epiphany. Successful Strategies for Products that Win.”** Lulu.
- Peter Thiel with Blake Masters (2015) **“Zero to One: Notes on Startups, or How to Build the Future.”** Virgin Books.
- Jeff Bezos (2014) **“The Everything Store: Jeff Bezos and the Age of Amazon.”** Corgi.
- Clayton Christensen (2016) **“The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail** (Management of Innovation and Change).” Harvard Business Review Press.
- Alexander Osterwalder et al (2014) **“Value Proposition Design: How to Create Products and Services Customers Want.”** Wiley.



Course Structure



- Module 1: Innovation, Start-Ups and AI
- Module 2: Business Modeling
- Module 3: Disciplined Entrepreneurship
- Module 4: Fundraising and Pitching



Module 1

Structure



- **Invention, Entrepreneurship, Innovation, Research, Start-ups, Ecosystems, Risk, Venture Capital**
- **Intellectual Property Elements**
- **Steps involved to turn an Invention to a Start-up**
- **Explore success stories and failures of AI entrepreneurship; discuss visions for the future**



Module 2

Structure



- **Introduction to the Business Model Canvas**
- **How to prepare a Mission Statement**
- **The "AI-First Company"**



Module 3

Structure



Section 1: Introduction to DH

Section 2: Who is your Customer?

- Market segmentation – DE Step 1
- Beachhead market selection – DE Step 2
- End-user Profile Definition – DE Step 3
- Total Addressable Market Size (TAM) of Beachhead – DE Step 4
- Profile Persona development for the Beachhead – DE Step 5
- Identify your Next 10 Customers – DE Step 9

Section 3: What can you do for your Customer?

- Full Life Cycle Use Case – DE Step 6
- High-level Product Specification – DE Step 7
- Value Proposition: Definition and Quantification – DE Step 8
- Define your Core – DE Step 10
- Charting your Competitive Position – DE Step 11

Module 3

Structure



Section 4: How does your Customer acquire your Product?

- Customer's Decision-Making Unit Definition – DE Step 12
- Map Process to Acquire Paying Customer – DE Step 13
- Map the Process to Acquire a Customer – DE Step 18

Section 5: How do you Scale your Business?

- Calculate TAM Size for Follow-on Markets – DE Step 14
- Develop a Product Plan – DE Step 24

Section 6: Business Models

- Design a Business Model – DE Step 15
- Business Model Patterns
- Introduction to Platform Economy, Network effects, Platform-based services
- Business Model Generation – Business Model Canvas



Module 3

Structure



Section 7: Pricing, Lifetime Value and Cost of Customer Acquisition

- Set Your Pricing Framework – DE Step 16
- Calculate Lifetime Value of Acquired Customer – DE Step 17
- Cost of Customer Acquisition (COCA) Analysis – DE Step 19

Section 8: Design and Build your Product

- Design and test key assumptions – DE Steps 20, 21
- Minimum Viable Business Product – DE Step 22
- Product demonstration and customer-satisfaction assessment – DE Step 23
- Lean Product Methodology Overview

Module 4

Structure



- **Introduction to Start-up Financing and Fundraising**
- **Pitching your idea/product/company to investors**

Learning Methods



- Attending **lectures**, where the main concepts and methodologies are presented and critically appraised, and **active participation** in class.
- Reading and self-study of **readings** defined in the **Course Outline**.
- Attending the **recitation**, where the class will expand on topics covered in the Lectures, through open discussion, student presentations, and viewing and discussing of relevant online material.
- Participation to **Guest Lectures and Seminars** of the Series of Lectures in Innovation and Entrepreneurship (KEP101) of the Centre for Entrepreneurship.
- **Reading and video assignments**: Students required to read articles, watch videos and write short critiques, commentaries or essays on assigned readings.
- **Group projects**, where teams of students are expected to develop an idea with a strong exploitation potential through a business venture or a social enterprise. The teams are required to undertake all necessary activities to develop a strong business plan and prepare a final oral presentation to seek funding (Venture Capital pitch).

Evaluation



- Student progress evaluated continuously through:
 - Class participation
 - Writing assignments
 - Group project
- Group project deliverable comprises three documents:
 - Written Midterm report
 - Oral Presentation (Pitch)
 - Written Final report.
- Midterm and Final project report should address the issues examined in the 24 steps of **Disciplined Entrepreneurship** methodology

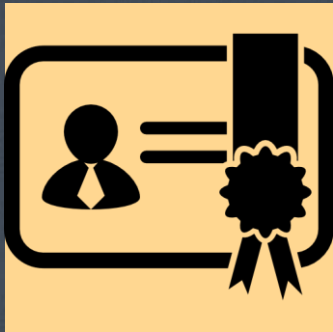
Grading



The final grade is based on the following formula:

- Class Participation: 10%
- Writing Assignments: 10%
- Term Project Midterm Report: 20%
- Term Project Pitching Presentation: 35%
- Term Project Final Report: 25%

ECTS Analysis



- Successful participation to the course credited with 8 units of the European Credit Transfer System (ECTS)
- One ECTS unit corresponds on average of 25-30 hours of work.
- Successful completion of the class requires a total of 187.5-225 hours of work.
- Student workload analyzed as follows:
 - Class and Recitation participation: 4 hours per week for 13 weeks, totaling to 52 hours.
 - Study at home: 2 hours per week for 14 weeks, totaling 28 hours.
 - Write-ups: A total of 15 hours.
- Group project Midterm Report: 30 hours
- Final presentation: 30 hours.
- Group project Final Report: 50 hours

Group Project



- Students are expected to establish teams and develop an idea with a strong exploitation potential through a business venture or a social enterprise related to Artificial Intelligence or Data Science.
- The teams are required to undertake all necessary activities to develop a strong business and technology development plan and prepare a final oral presentation to seek funding (**Venture Capital pitch**).

Group Project Deliverables



- **Midterm report:** This presents the first layout of the business model and product offering and is expected to evolve throughout the semester as each team validates its initial hypotheses. For the second half of the semester, each team is expected to interact with real customers, partners, providers etc to evaluate its business model, in addition to developing its product offering.
- **Oral Presentation:** This is a "Venture Capital Pitch," to be presented in a 10-minutes oral presentation, followed by a Q&A session. The pitch should be prepared according to guidelines and best practices discussed in class and relevant readings. The presentation should be a self-contained document (often called a "deck") with no more than 10 slides , which should be read-able if you email it to someone. All members of each team should participate in the presentation.
- **Written Final report:** The final report should present a comprehensive summary of achievements.

Final Report Structure



Final Report should comprise two sections:

- The first section is a critical appraisal of the midterm report, describing and explaining what has changed since the midterm report was written, and detailing how your ideas have evolved.
- The second section, provides a description of progress made since the midterm report in developing your product, conducting market research and evaluating your business model. Also, a description of your prototype implementation and your technology stack.

Group Project Team Formation



- Establish teams with 2-4 people
- Brainstorm
- Discuss ideas for a company
- Reach a consensus on the purpose of your team
- Agree on an early draft of your mission statement
- You will be required to elaborate your idea throughout the course, following the Disciplined Entrepreneurship Methodology, to end up with a business plan and a pitch
- Be careful on what you agree upon, because this will stay with your for the whole semester!

Thank you!



Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

MAI 622: AI Entrepreneurship



MAI 622: AI Entrepreneurship - Module 1

Innovation, Research, Start-Ups



Module 1

Contents



- Key Concepts of Innovation and Entrepreneurship
- Ecosystems of Technological Innovation
- Intellectual Property: From Inventions to Products



Planning



Week 1 and 2:

- 4 90-minute lectures
- 2 60-minute precept discussions
- 5 Video Assignments
- 2 Reading Assignments

Learning Objectives

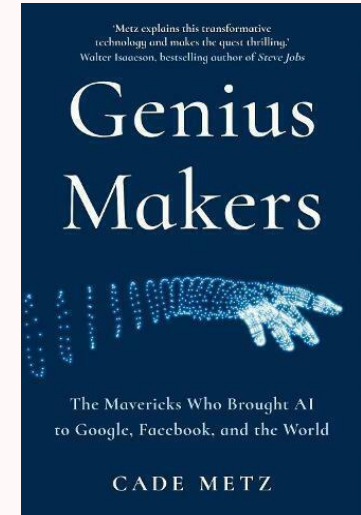
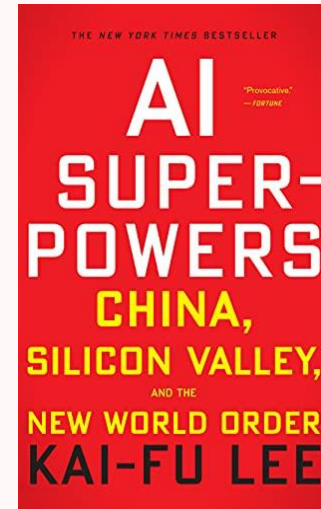
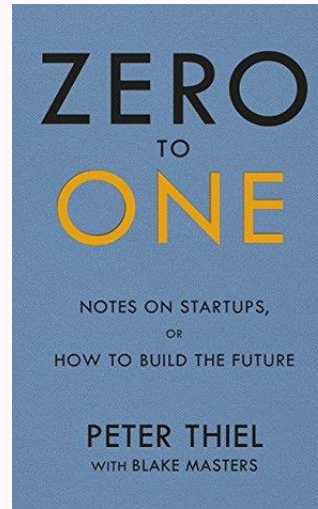


After attending this module, studying the suggested readings, and watching proposed videos students should be able to:

- Recognize and describe **key concepts** and **terminology** related to the nexus of **innovation**, **research** and **start-ups**.
- Understand and explain key concepts of **Intellectual Property (IP)** and methods for **IP protection**.
- Understand, analyze, explain and follow the main issues and steps involved in **translating an invention** to a **commercial product or venture**.



Suggested Readings



- Peter Thiel with Blake Masters (2014) **"Zero to One"**
- European Patent Office. **"Inventors' Handbook"** <https://www.epo.org/learning-events/materials/inventors-handbook.html>
- Judy Estrin (2008) **"Closing the Innovation Gap"**
- Kai-Fu Lee (2018) **"AI Super-Powers"**
- Cade Metz (2021) **"Genius Makers"**



Online Videos & Courses



- Navigating Data and AI Opportunities and Risks: New Challenges for Business and Regulators. Professor Theodoros Evgeniou, INSEAD. C4E IEF2020 - PwC Distinguished Lecture.
 - <https://www.youtube.com/watch?v=OtD2fr1Bo6A>
- The Challenges of AI for Business and Policy Making . Panel Discussion, C4E IEF2020.
 - https://www.youtube.com/watch?v=eYh_O67r2w8
- Closing the Innovation Gap. Judith Estrin, U. of Washington Colloquium, Feb. 2000.
 - <https://www.youtube.com/watch?v=I24T28z6jJU>
- Computers and Humans Will Each Do Their Best. Eric Schmidt, The G.S. Beckwith Gilbert '63 Lectures, Princeton Univ. May 2015
 - https://mediacentral.princeton.edu/media/The+G.S.+Beckwith+Gilbert+'63+LecturesA+Eric+S Schmidt+'76+-+“Computers+and+Humans+Will+Each+Do+Their+Best%22/1_ndnym9sd
- IP law / Commercializing IP. Nick Kounoupas. C4E, Feb. 2018 ([slides](#))
 - <https://youtu.be/3iP9WaNvaqU>
- EU Intellectual Property Helpdesk videos:
 - <https://www.youtube.com/playlist?list=PLNhMWKRzktjIFb0JRJgLSzEeGFpNwOkGN>

Online Videos & Courses



- [Navigating Data and AI Opportunities and Risks: New Challenges for Business and Regulators.](#) Professor Theodoros Evgeniou, INSEAD. C4E IEF2020 - PwC Distinguished Lecture.
- [The Challenges of AI for Business and Policy Making](#) . Panel Discussion, C4E IEF2020.
- [Closing the Innovation Gap](#). Judith Estrin, U. of Washington Colloquium, Feb. 2000.
- [Computers and Humans Will Each Do Their Best.](#) Eric Schmidt, The G.S. Beckwith Gilbert '63 Lectures, Princeton Univ. May 2015
- [IP law / Commercializing IP](#). Nick Kounoupias. C4E, Feb. 2018 ([slides](#))

Module 1: Innovation, Research, Start-Ups

Section 1: Key Concepts





Innovation Why is it Important?



The Importance of Innovation

Technological innovation is the ultimate source of productivity

[Robert Solow, MIT, Nobel Prize in Economics, 1987]

Now, more than ever, productivity is the main driver of future
growth and prosperity

[OECD, “The Future of Productivity”, 2015]

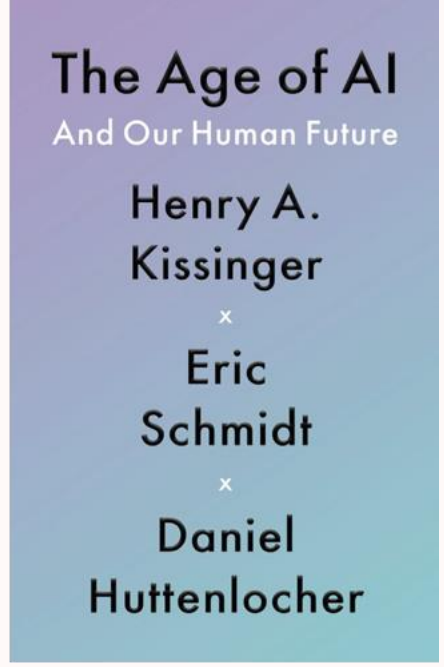
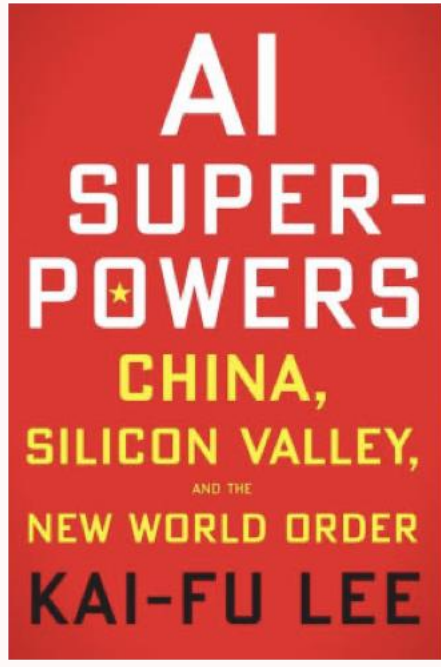
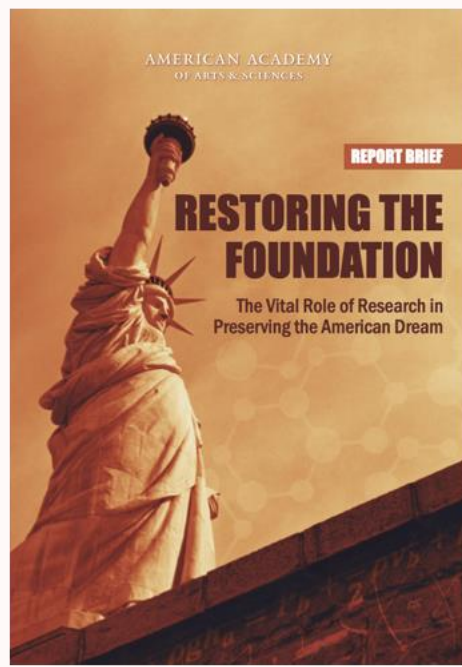
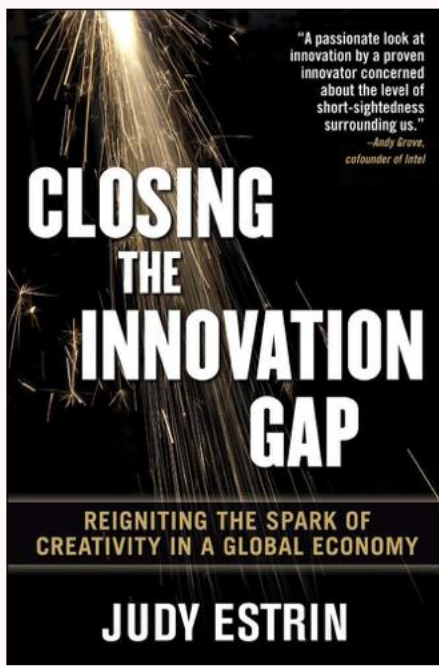
The Importance of Innovation

Without new technology, globalisation is unsustainable in a world of scarce resources. [SEP]

[Peter Thiel with Blake Masters, "Zero to One" 2014]

Who gets to control innovation is a [SEP] central question of our time. [SEP]

[Susan Liautaud, Public Policy Program, Stanford University, [SEP] "Ethical Innovation Means Giving Society a Say," WIRED, 12/6/2017]



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The Innovation Wars

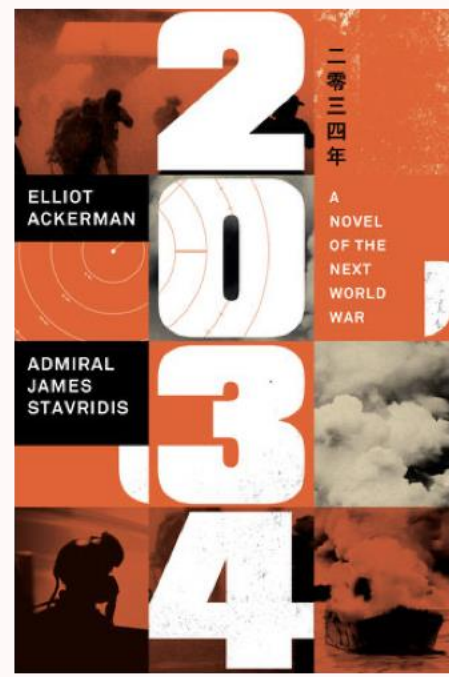
America's Eroding Technological Advantage

By Christopher Darby and Sarah Sewall March/April 2021

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Section 1

Outline

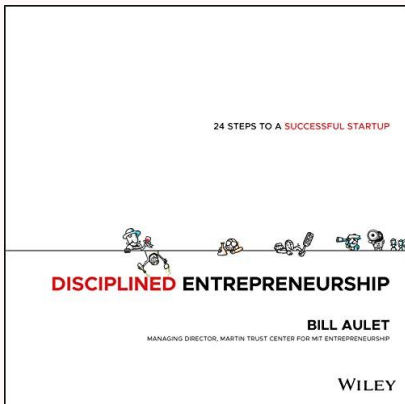
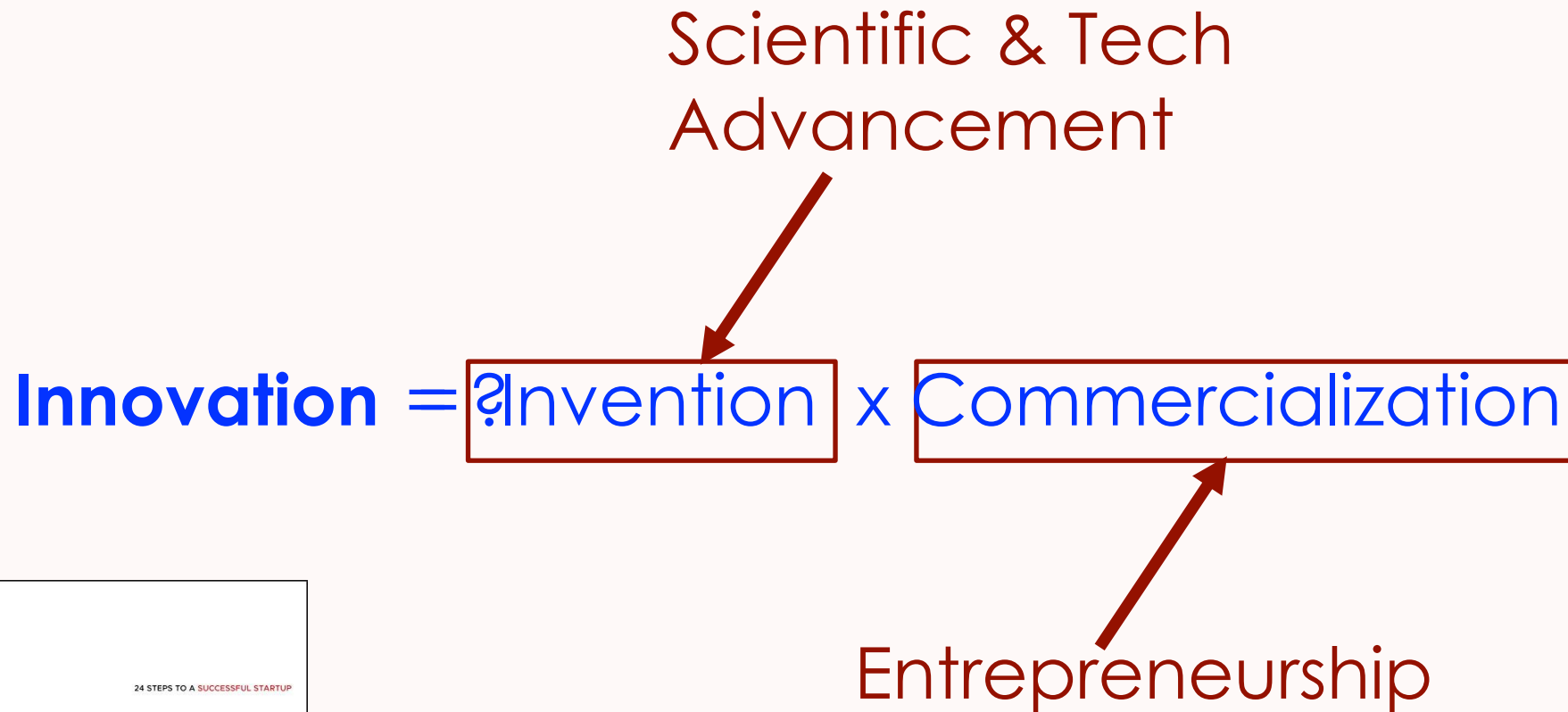


- Invention
- Innovation
- Entrepreneurship
- Risk
- Disruption
- Ecosystem
- Research & Education

- Invention: **anything novel**
 - scientific-technological (including medicine)
 - socio-political (including economics and law)
 - humanistic, or cultural
- **Patentable** Invention
 - Novel, non-obvious, possible industrial application
 - Not all the inventions can be patented
 - Patents: not the only way to protect or exploit inventions

- A new or changed entity, which **creates or redistributes value** [ISO TC 279 on innovation management, standard ISO 56000:2020]
- Something **original** and **effective** which **creates value**, including the **creation of a new market/new needs/new business models**.
- Involves the practical implementation of an invention to have **impact** in a **market** or **society**.

Innovation

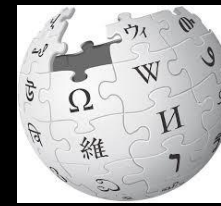


Bill Aulet, Martin Trust Center for MIT Entrepreneurship, 2017

Invention vs Innovation

*Invention **may or may not result** in innovation (creation of value)*

*Innovation does **not strictly need** an invention.*



- “Entrepreneurship is the **creation** or **extraction** of **economic value**. With this definition, entrepreneurship is viewed as change, generally entailing **risk** beyond what is normally encountered in starting a business, which may include other values than simply economic ones.”

Source: Wikipedia



Why is Entrepreneurship Significant?



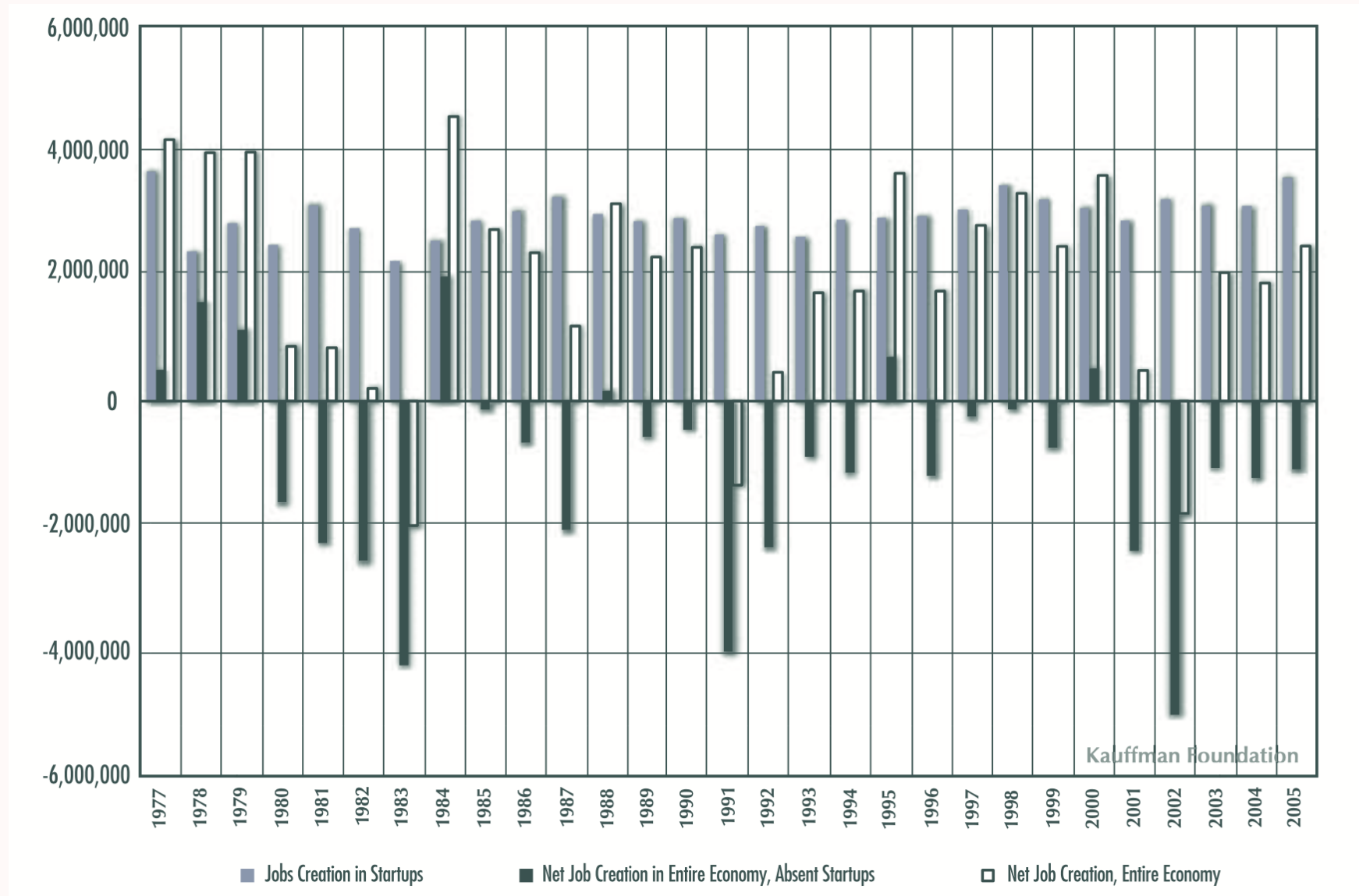
Entrepreneurship

is the principal mechanism through which **developed** and **developing economies** can take advantage of inventions and manage to **evolve** and **regenerate**

[Monitor Group. Paths to Prosperity: Promoting Entrepreneurship in the 21st Century. 2009]

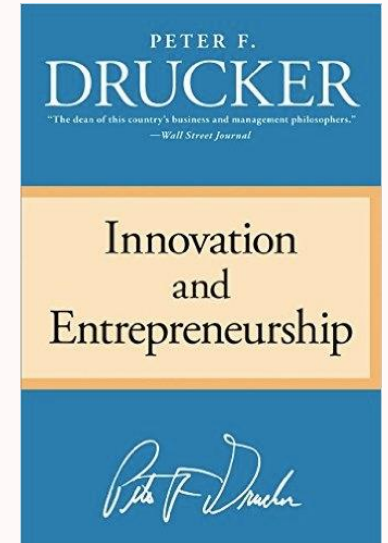
“Without start-ups, the net rate of increase in **employment** in the **USA** between 1980-2005 would have been negative.”

[US Census Bureau, circa 2009]



- Reliance on technology is hugely **risky**.
- Relatively few technical innovations bring **immediate economic benefit** that will *justify required investments* of time and resources

Peter Drucker, "Innovation and Entrepreneurship"



Key Concepts

Outline



- Invention
- Innovation
- Entrepreneurship
- Risk
- Disruption
- Ecosystem
- Research & Education

Disruption

- **Disruption** describes a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses. [Clayton M. Christensen, Michael E. Raynor, and Rory McDonald, "What is Disruptive Innovation?" HBR, Dec. 2015]
- **Disruptive innovation:** innovation that creates a new market and value network or enters at the bottom of an existing market and eventually displaces established market-leading firms, products, and alliances. [Wikipedia]





What drives disruption?

Ideas

Needs



Sources of Disruption

- Ideas
 - Scientific and Technological progress
- Needs
 - Planetary-scale Problems and Challenges

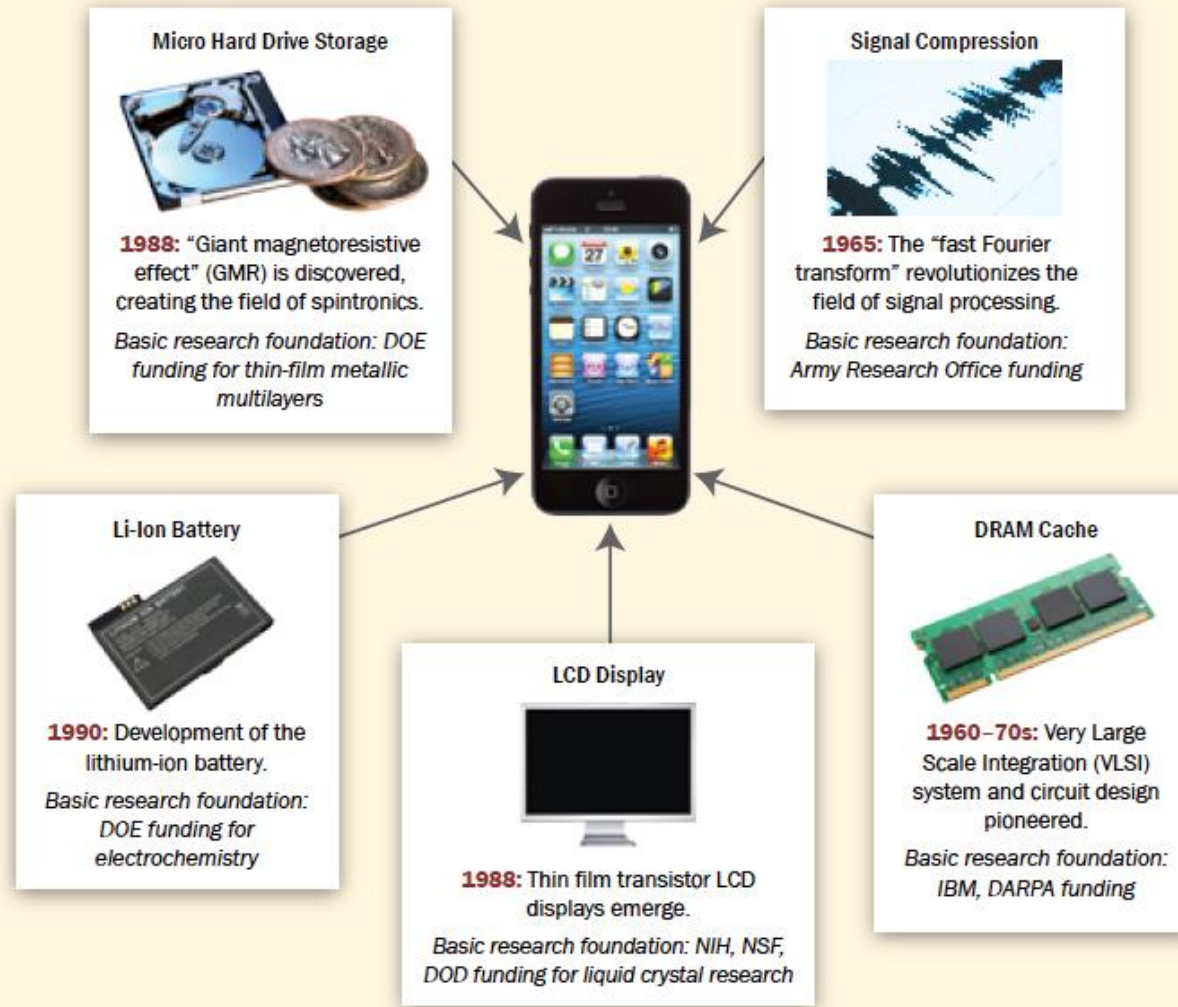
Can you identify some Disruptive Innovation?



Steve Jobs "We're here to make a dent in the universe"

No Basic Research, No iPhone

Federally Funded Basic Research Made the iPhone Possible



"Restoring the Foundation." American Academy of Arts & Sciences, 2014.



“Stand out of my light”

Plutarch’s, Alexander

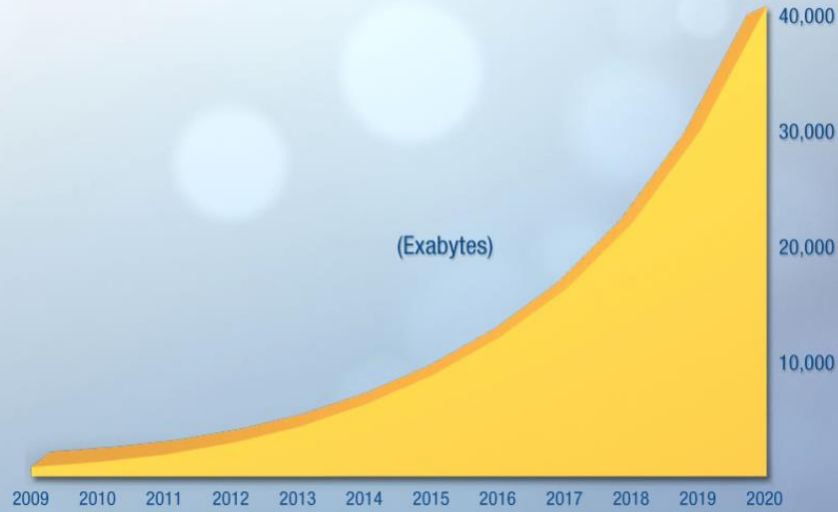


«Ninety-five Theses: propositions for debate concerned with the question of indulgences»

*Disputatio pro declaratione virtutis indulgentiaru
Martin Luther (31/10/1517)*

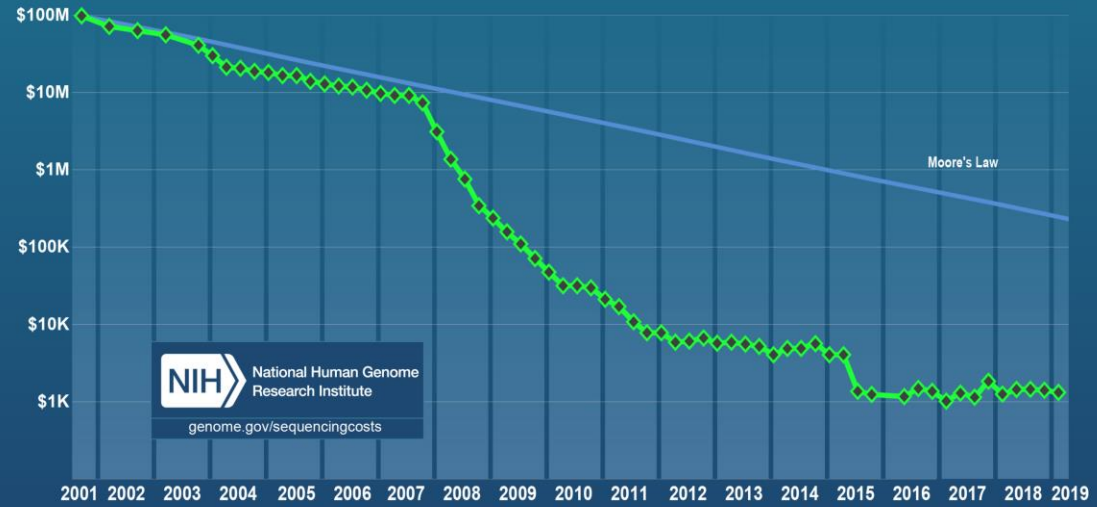
- Behind the Scientific & Technological Progress in the 21st Century Landscape
- We are on the verge of a large scale revolution enabled by the **emergence the next-generation of innovation**
- Thanks to **exponential advances** in Technology & Scientific knowledge:
 - Computing, Big Data, AI, Robotics
 - Renewable Energy, Materials, 3D Printing, Nanotechnology
 - Genomics & Biology

The Digital Universe: 50-fold Growth from the Beginning of 2010 to the End of 2020



Source: IDC's Digital Universe Study, sponsored by EMC, December 2012

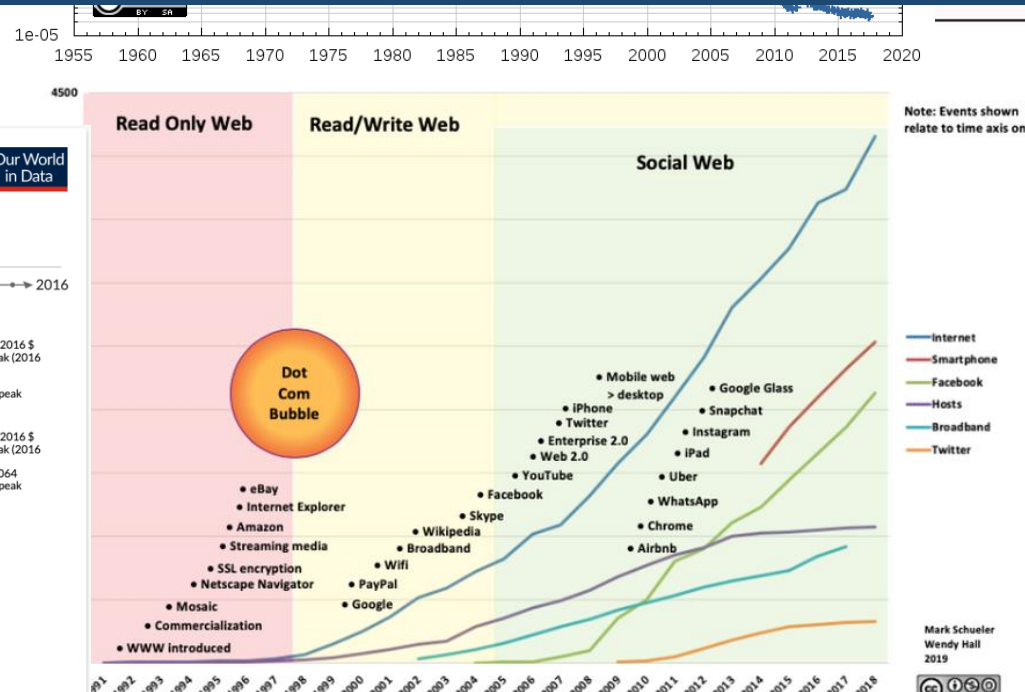
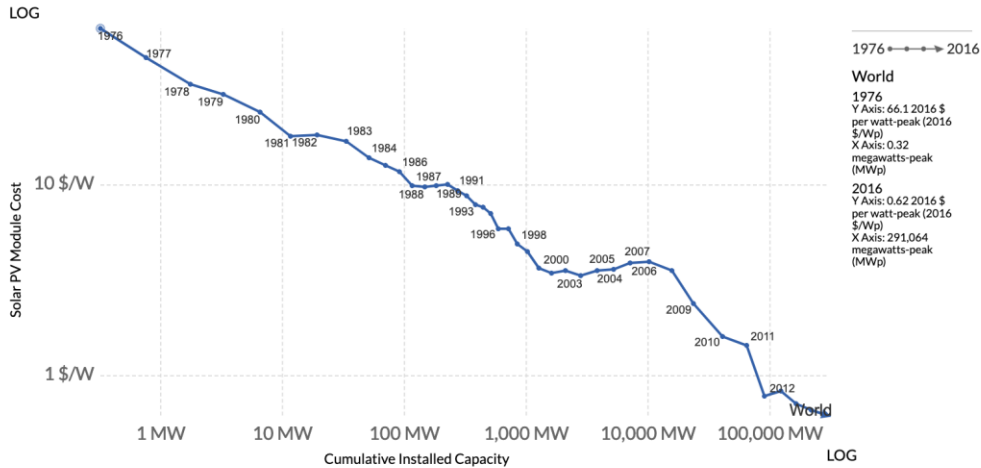
Cost per Genome



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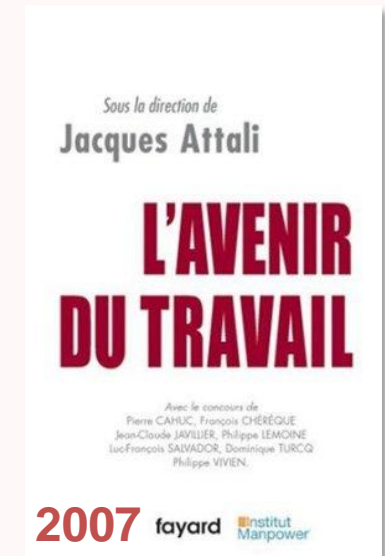
Solar PV module prices vs. cumulative capacity, 1976 to 2016

Solar photovoltaic (PV) module prices (measured in 2016 US\$ per watt-peak) versus cumulative installed capacity (measured in megawatts-peak, MWp). This represents the 'learning curve' for solar PV and approximates a 22% reduction in price for every doubling of cumulative capacity.



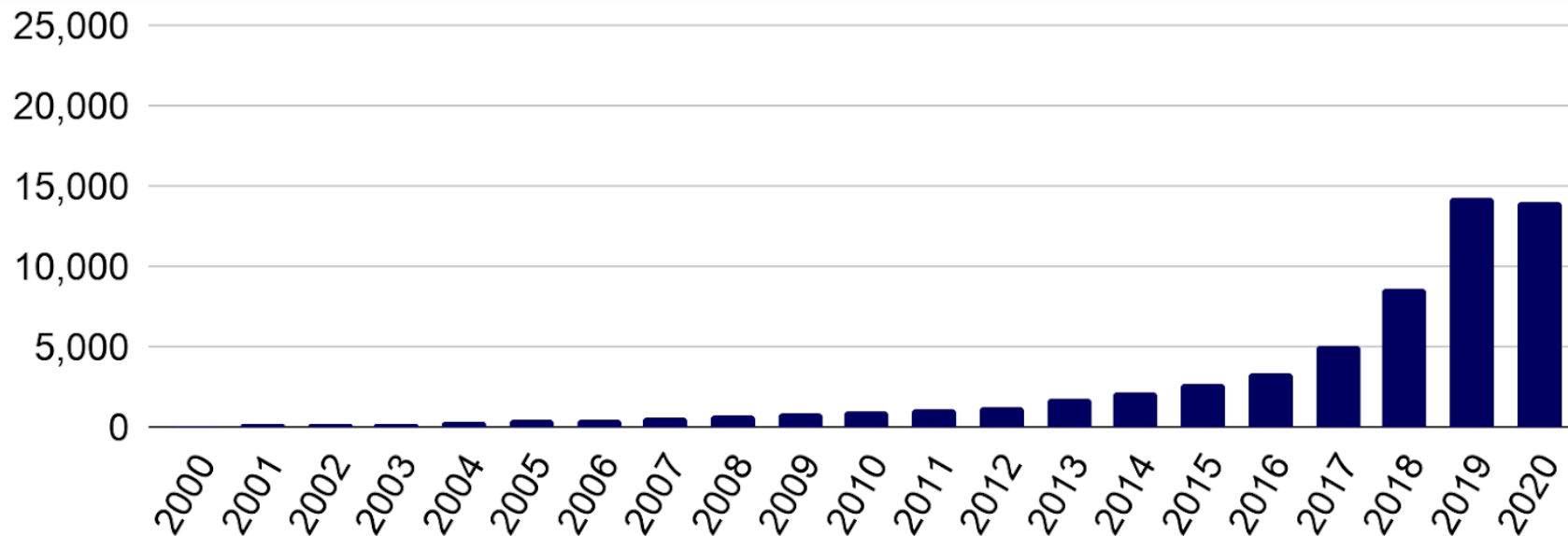
The Knowledge Avalanche

- Rapid pace of knowledge creation:
available technical knowledge (number of pages published in scientific journals)
 - 2007: doubles every **7 years**
 - 2030: doubles every **72 days**
- **80%** of the knowledge required to perform an advanced technical job is rendered **obsolete within 10 years.**
- In 25 years from the time of that study, the **employment landscape** would be profoundly different.



Knowledge Avalanche in AI

- Publications involving AI methods (e.g. deep learning, NLP, computer vision, RL) in biology are growing >50% year-on-year since 2017. Papers published since 2019 account for 25% of all output since 2000.





Source: State of AI Report 2020 & PubMed

[nature](#) > [articles](#) > article

Published: [27 January 2016](#)

Mastering the game of Go with deep neural networks and tree search

[David Silver](#) , [Aja Huang](#), [Chris J. Maddison](#), [Arthur Guez](#), [Laurent Sifre](#), [George van den Driessche](#), [Julian Schrittwieser](#), [Ioannis Antonoglou](#), [Veda Panneershelvam](#), [Marc Lanctot](#), [Sander Dieleman](#), [Dominik Grewe](#), [John Nham](#), [Nal Kalchbrenner](#), [Ilya Sutskever](#), [Timothy Lillicrap](#), [Madeleine Leach](#), [Koray Kavukcuoglu](#), [Thore Graepel](#) & [Demis Hassabis](#) 

Nature **529**, 484–489 (2016) | [Cite this article](#)

413k Accesses | **5965** Citations | **3052** Altmetric | [Metrics](#)

“our program AlphaGo achieved a 99.8% winning rate against other Go programs, and defeated the human European Go champion by 5 games to 0. This is [the first time that a computer program has defeated a human professional player](#) in the full-sized game of [Go](#), a feat [previously thought to be at least a decade away](#).”

[nature](#) > [news](#) > article

NEWS | 20 February 2020

Powerful antibiotics discovered using AI

Machine learning spots molecules that work even against 'untreatable' strains of bacteria.

[Jo Marchant](#)

A Deep Learning Approach to Antibiotic Discovery

Jonathan M. Stokes,^{1,2,3} Kevin Yang,^{3,4,10} Kyle Swanson,^{3,4,10} Wengong Jin,^{3,4} Andres Cubillos-Ruiz,^{1,2,5} Nina M. Donghia,^{1,5} Craig R. MacNair,⁶ Shawn French,⁶ Lindsey A. Carfrae,⁶ Zohar Bloom-Ackermann,^{2,7} Victoria M. Tran,² Anush Chiappino-Pepe,^{5,7} Ahmed H. Badran,² Ian W. Andrews,^{1,2,5} Emma J. Chory,^{1,2} George M. Church,^{5,7,8} Eric D. Brown,⁶ Tommi S. Jaakkola,^{3,4} Regina Barzilay,^{3,4,9,*} and James J. Collins^{1,2,5,8,9,11,*}

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²Broad Institute of MIT and Harvard, Cambridge, MA 02142, USA

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⁴Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

⁵Wyss Institute for Biologically Inspired Engineering, Harvard University, Boston, MA 02115, USA

⁶Department of Biochemistry and Biomedical Sciences, Michael G. DeGroot Institute for Infectious Disease Research, McMaster University Hamilton, ON L8N 3Z5, Canada

⁷Department of Genetics, Harvard Medical School, Boston, MA 02115, USA

⁸Harvard-MIT Program in Health Sciences and Technology, Cambridge, MA 02139, USA

⁹Abdul Latif Jameel Clinic for Machine Learning in Health, Massachusetts Institute of Technology, Cambridge, MA 02139, USA

¹⁰These authors contributed equally

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<https://doi.org/10.1016/j.cell.2020.01.021>

“A pioneering **machine-learning** approach has identified **powerful new types of antibiotic from a pool of more than 100 million molecules** — including one that works against a wide range of bacteria, including tuberculosis and strains considered untreatable [...] the antibiotic, called **halicin**, is **the first discovered with artificial intelligence (AI)**.

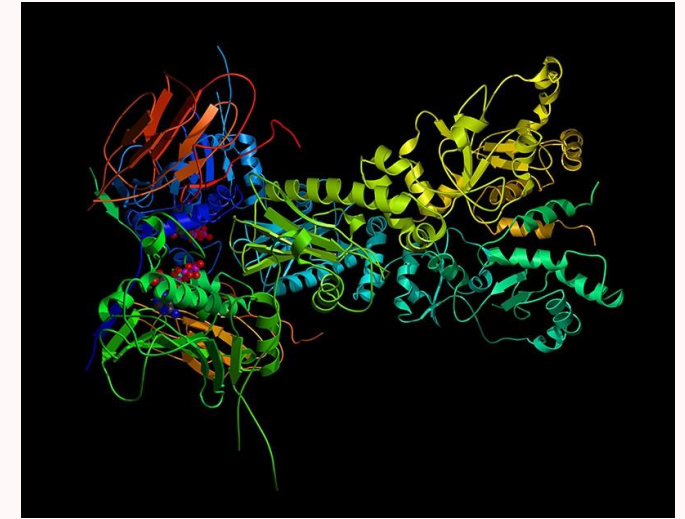
[...]

this is the first time AI has identified **completely new kinds of antibiotic from scratch**, without using any previous human assumptions.”

NEWS | 30 November 2020

‘It will change everything’: DeepMind’s AI makes gigantic leap in solving protein structures

Google’s deep-learning program for determining the 3D shapes of proteins stands to transform biology, say scientists.



“The announcement [**30/11/2020**] by DeepMind that its **AlphaFold** technology is able to **predict protein structure** with accuracy comparable to slow and costly experimental methods is a harbinger of breakthroughs to come.”

“The genomes we believed were blueprints for life, **were effectively encrypted—this will unlock them** and transform biological and biomedical research.”

[Tim Hubbard, Kings College]

<https://deepmind.com/blog/article/alphafold-a-solution-to-a-50-year-old-grand-challenge-in-biology>

Needs (21st century)

- In the physical world:
 - Climate Change, Depletion of Natural Resources, Food Production, Epidemics
- In the cyberspace:
 - Cybercrime & Cyberterrorism, Privacy, Sovereignty
- In the society:
 - Globalisation, Work, Ageing, Migration, Human Cognition, Education

Needs: Threat of Automation

Nearly **half of 702 professions** in the U.S. could be susceptible to **elimination** due to diminishing costs of ICT and exponential improvements in hardware, algorithms and software.

Frey & Osborne, "The Future Of Employment: How susceptible Are Jobs To Computerisation." 9/2013

Based on the current trends of technology advancement and adoption, **I predict that within fifteen years, artificial intelligence will technically be able to replace around 40 to 50 % of jobs in the United States.** Actual job losses may end up lagging those technical capabilities by an additional decade.

Kai-Fu Lee, "AI Super-Powers, China, Silicon Valley, and the New World Order." 2018



18 / 1 / 2014

Key Concepts

Outline



- Invention
- Innovation
- Entrepreneurship
- Risk
- Disruption
- Ecosystem
- Research & Education

Ecosystem

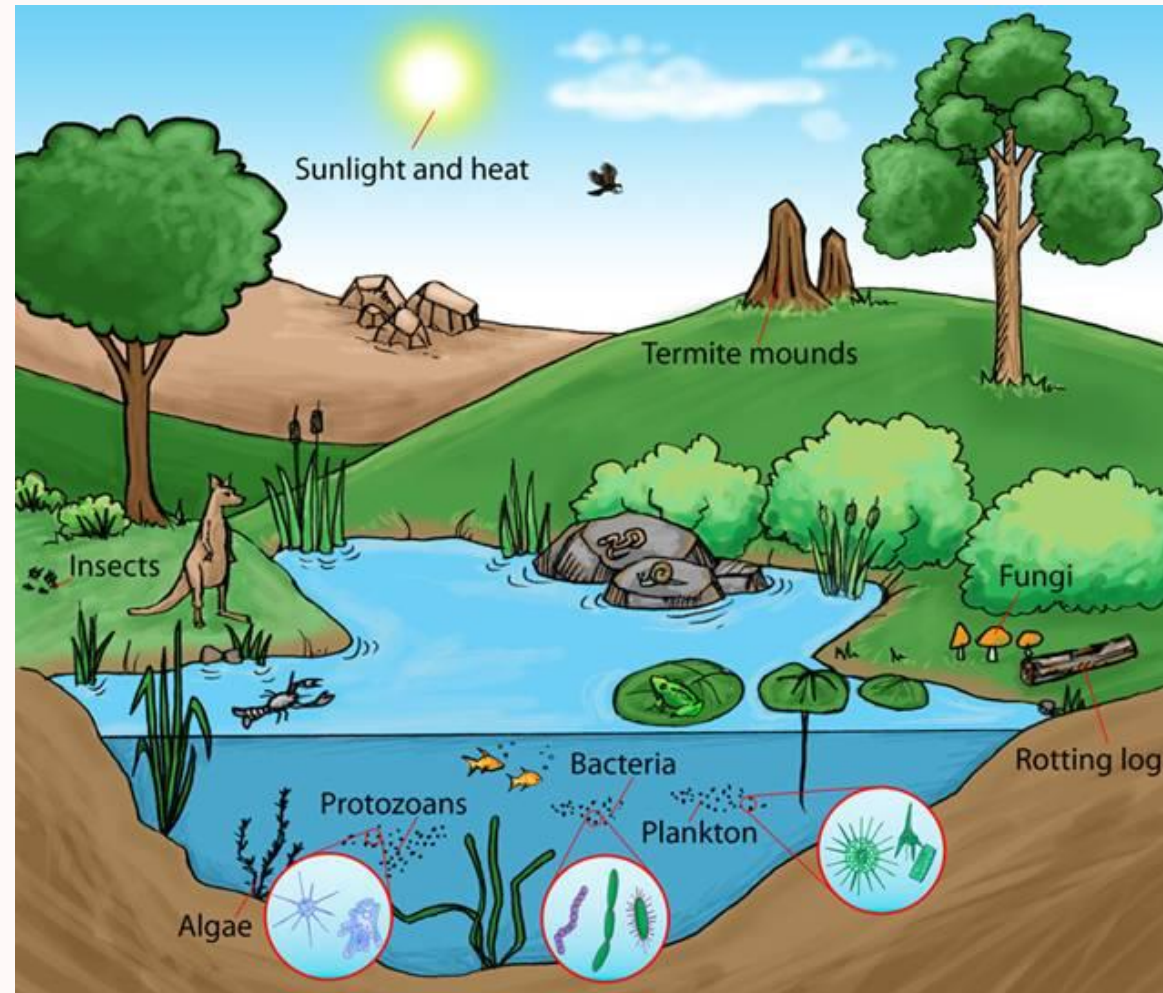


Image Source: <https://www.zmescience.com/ecology/ecosystems-what-they-are-and-why-they-are-important/>

Ecosystem: Traits

- Dynamic rather than static
- Organically grown but maybe some design too
- Heterogeneous rather than monoculture
- Symbiotic rather than competitive
- Competitive rather than symbiotic..

Innovation Ecosystem

“An innovation ecosystem refers to a loosely interconnected network of companies and other entities that **coevolve capabilities** around a **shared set of technologies, knowledge, or skills**, and work **cooperatively** and **competitively** to develop new **products and services.**”

Predators and Prey: A New Ecology of Competition, James F. Moore, HBR, 1993

- The entrepreneur-investor relationship characterized by **uncertainty** and **information asymmetry**:
 - Entrepreneurs always possess more accurate information about themselves and their business than their investors possibly can;
 - and no one knows whether products can be developed, customers will purchase them, or new businesses will compete successfully against others.
- To secure capital from investors, entrepreneurs must overcome the information asymmetry and uncertainty problems by:
 - sharing as much information about themselves and their business as they can, in order to
 - **create of trust** with investors

Dimensions of Trustworthiness

- Ability
- Benevolence
- Integrity

Values: need to be prevalent in an ecosystem and its members

- Governments around the world are looking to **technology innovation** as a **driver** for national economic growth.
- Governments increasingly see **universities** as the incubators of the **national innovation capacity**.

[A new mission for public research, EPO, 2013.]

- “Universities are at the centre of national and international efforts to **solve global challenges**.”

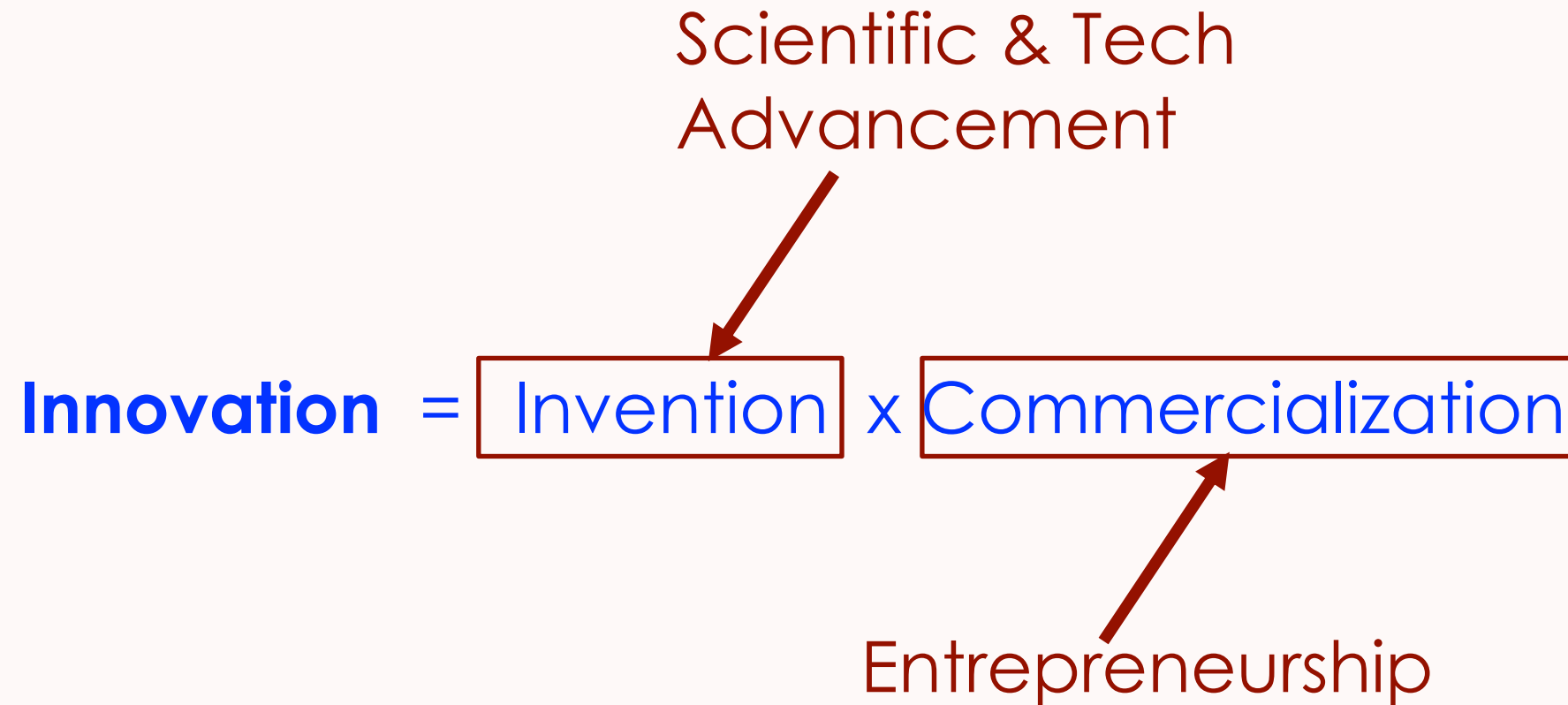
[Raimun Lutz, Vice-President, EPO, 2013]



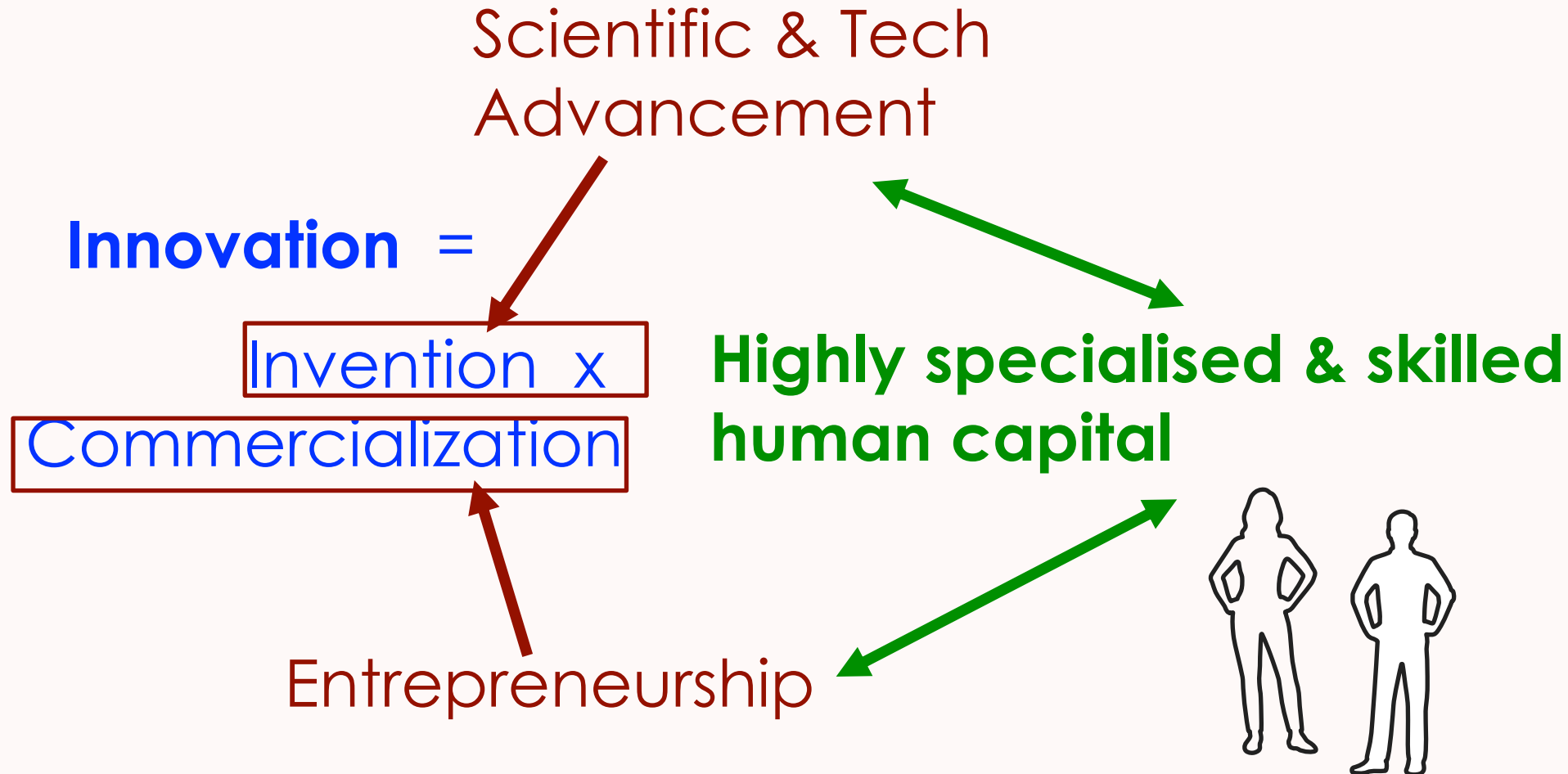
Why Universities?



Why Universities?



Why Universities?



“Highly specialized human capital is a scarce resource that can be used either for innovation of products and services or for educating future innovators.”

Kenneth Arrow. *Economic Welfare and the Allocation of Resources for Invention* (1962)

Knowledge Check



- Describe the difference between Invention, Research, Innovation
- Explain how AlphaGo became a source of future Innovation
- What is the business model that Martin Luther disrupted?

Knowledge Check



- Discuss if universities can catalyze or produce innovations and create synergies required to address these challenges?
- Discuss if Universities around the world can respond to these aspirations successfully in a period of disruption?

Module 1: Innovation, Research, Start-Ups

Section 2: Technological Innovation Ecosystems



Section 2

Outline



- Successful Ecosystems
- The risk of the Cargo Cult
- Silicon Valley's Origins
- Research Commercialization
- Start-ups and Technology Transfer
- Overcoming Barriers
- Concluding Remarks



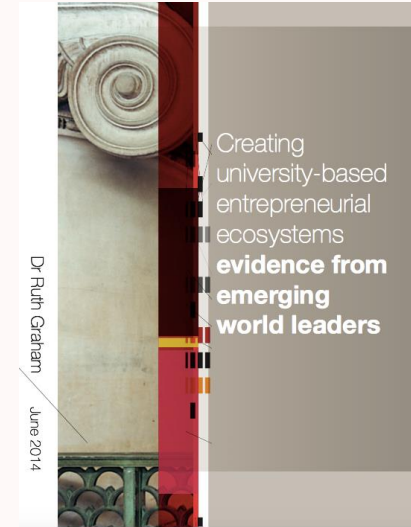
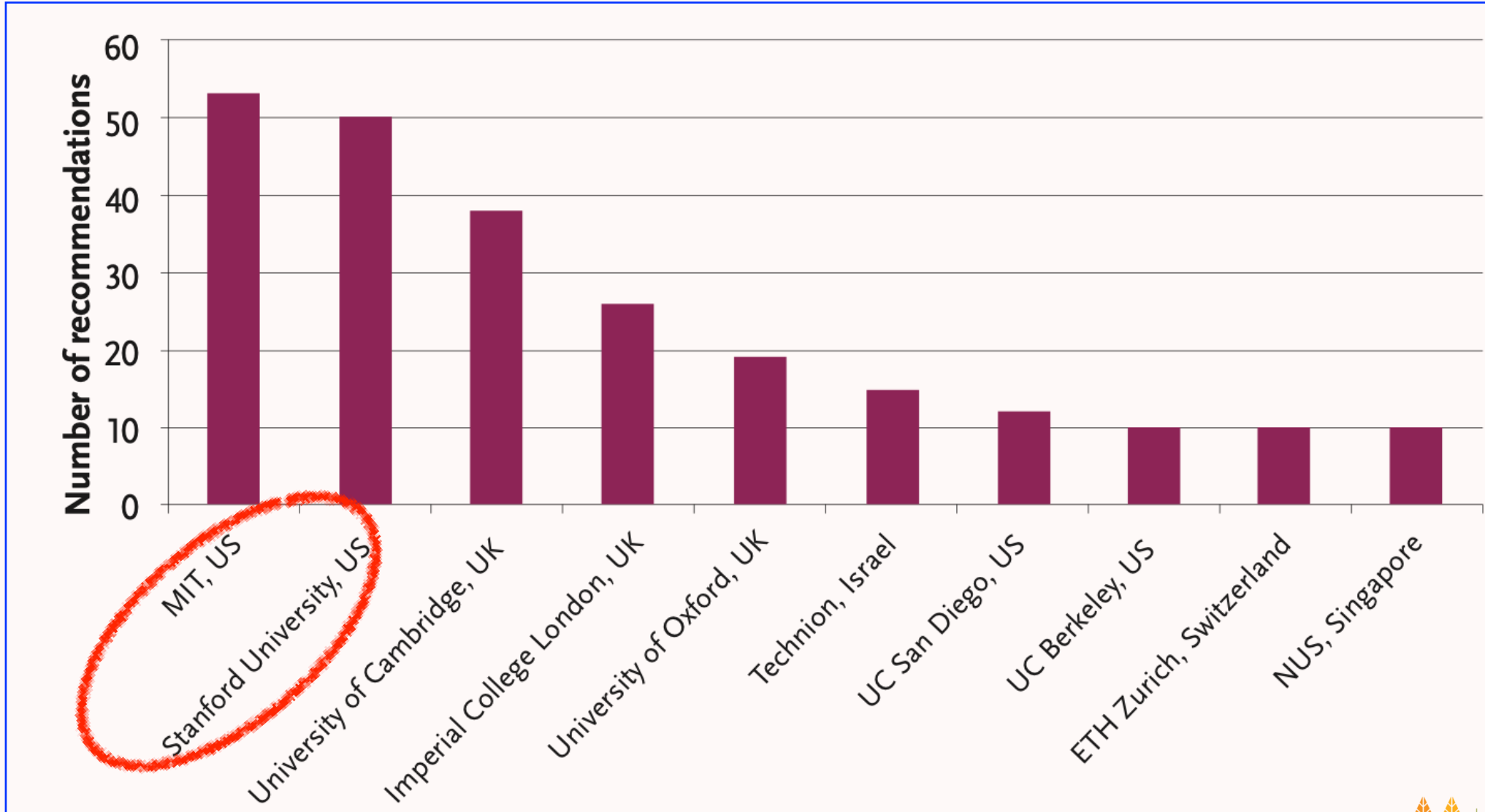
Which universities have created
the world's most successful
technology innovation
ecosystems?



'Which universities would you identify as having created/ supported the world's most successful technology innovation ecosystems?'

[MIT-Skoltech Study, June 2014: 61 experts from 20 countries]

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Most Successful Ecosystems

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Silicon Valley



Kendall Square, Boston



Stanford



UC Berkeley



MIT



Harvard

Some evidence: Stanford



Master Programs in
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- Stanford's Office of Technology Licensing (circa 2014)
 - licensed 8000 campus-inspired inventions
 - generated \$1.3 billion in royalties for the university
- Five thousand companies “trace their origins to Stanford ideas or to Stanford faculty and students”
 - Hewlett-Packard, Yahoo, Cisco Systems, Sun Microsystems, eBay, Netflix, Electronic Arts, Intuit, Fairchild Semiconductor, Agilent Technologies, Silicon Graphics, LinkedIn, and E*Trade

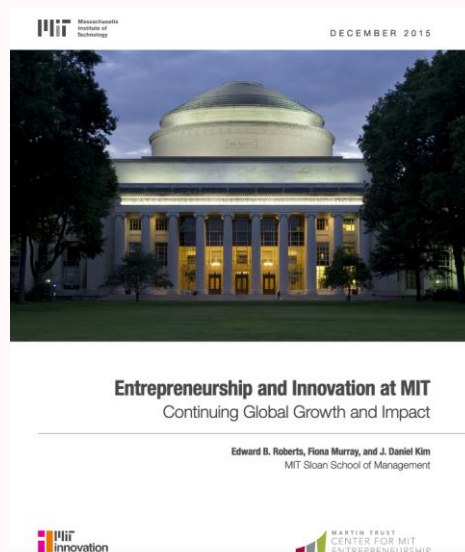
Source: “Get Rich U. There are no walls between Stanford and Silicon Valley. Should there be?”
Ken Auletta, New Yorker, April 30, 2012

Some evidence: MIT



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- 30,000 active companies founded by MIT alumni:
 - employ 4.6 million people
 - generate annual world revenues of \$1.9 trillion
 - producing the equivalent of the 10th-largest economy in the world as of 2014



“Entrepreneurship and Innovation at MIT: Continuing Global Growth and Impact”
Edward B. Roberts, Fiona Murray, and J. Daniel Kim (2015)



University of Cyprus
Department of Computer Science

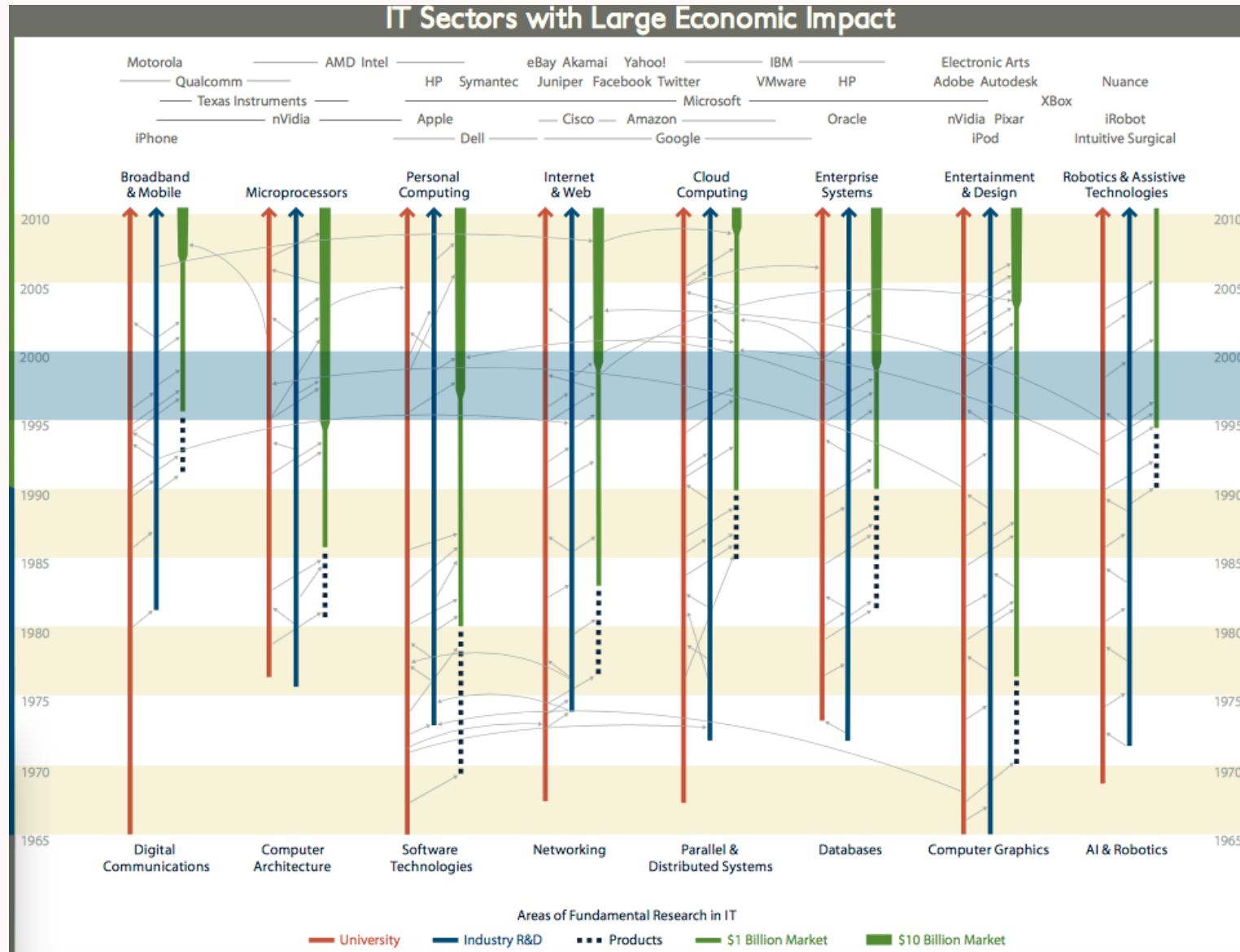


Some evidence: US ICT Sector



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Source: **Continuing Innovation
in Information Technology**
U.S. National Academies Press, 2012



Key Lessons: the role of the University

- A clear **link** exists between building **indigenous research capacity** and **economic growth** in a post-industrial knowledge economy
- **University-based research** is the **most effective driver** of scientific discovery and economically relevant new technologies
- **World-class Universities** provide ideal context for educating students for careers in **science, industry, government, and civil society.**
- Produce graduates with the **intellectual breadth** and **critical-thinking skills** to solve problems, innovate and lead.

R. Levin, "The Rise of Asia's Universities". Foreign Affairs, May/June 2010



Let's do the next Silicon Valley!



"I've had dozens of meetings over the years with leaders from around the world who asked how they can build their own Silicon Valley.

It never works."

J. Breyer, Breyer Capital & Accel Partners [WEF '14, Bloomberg's GII 2014]

“It would be much better to study the **early history of Silicon Valley** than trying to **copy** what they are doing now”

MIT-Skoltech Study, June 2014

Reading Assignment



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The End of Silicon Valley as We Know It?

Four ways the party may be coming to an end

By [Tim O'Reilly](#)

March 11, 2021

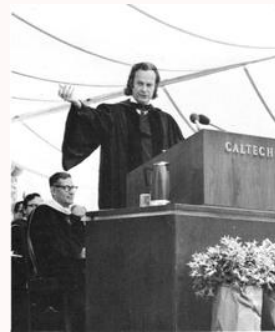


University of Cyprus
Department of Computer Science



The Cargo Cult Danger

“In the South Seas there is a Cargo Cult of people. During the war they saw airplanes land with lots of good materials, and they want the same thing to happen now. So they’ve arranged to make things like runways, to put fires along the sides of the runways ...



They’re doing everything right.
The form is perfect.
It looks exactly the way it looked before.
But it doesn’t work!
No airplanes land.
They follow all the apparent precepts and forms but they’re missing something essential”

Cargo Cults



- “Cargo cults are religious practices that have appeared in many traditional tribal societies in the wake of interaction with technologically advanced cultures.
- They focus on obtaining the material wealth (the "cargo") of the advanced culture by imitating the actions they believe cause the appearance of cargo: by building landing strips, mock aircraft, mock radios, and the like.”



Outline

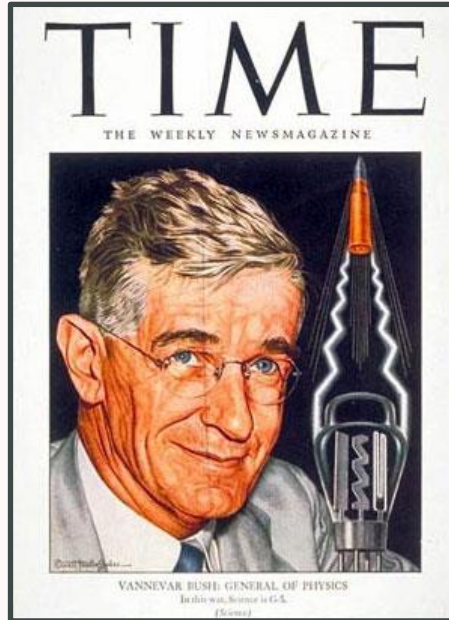


- Successful Ecosystems
- The risk of the Cargo Cult
- Silicon Valley's Origins
- Research Commercialization
- Start-ups and Technology Transfer
- Overcoming Barriers
- Concluding Remarks

The Origins of Silicon Valley



The Origins



Eric Schmidt, Executive Chairman of Google; US President's Council of Advisors on Science and Technology; UK Prime Minister's Advisory Council.

- G.S. Beckwith Gilbert '63 Lecture, Princeton University (April 30, 2015): *"Computers and Humans Will Each Do Their Best"*



Origin #1: Vannevar Bush

TIME

THE WEEKLY NEWSMAGAZINE



VANNEVAR BUSH: GENERAL OF PHYSICS
In this war, Science is G.I.
(Science)

Director, Office of Scientific Research & Development, 1941- 1947

- “Science, The Endless Frontier” report to US president Truman (July 1945)
- Basic research is "the pacemaker of technological progress"
- Supported federal patronage for the advancement of knowledge in the United States
- Establishment of [National Science Foundation \(NSF\)](#)
- By late 1970s: [US\\$75 billion per year](#) US Govt spending on R&D.

"No American has had greater influence in the growth of science and technology than Vannevar Bush" (Wiesner, Biographical Memoir, National Academy of Sciences)

Three driving principles

- **Government**: bears primary responsibility for funding basic research and determines the total amount of funding available in different fields
- **Universities**: primary institutions responsible for carrying out government-funded research
- **Assessment**: based not *on political or commercial grounds* but on **meritocracy**, through an intensely competitive process of *peer review* by independent experts based on scientific merit alone

R. Levin, "The Rise of Asia's Universities". Foreign Affairs, May/June 2010

Why the government?

“Because the full economic benefit of a breakthrough in pure science **can rarely be captured by the original inventor**, private enterprises will typically have **insufficient incentive** to make many socially productive investments”

R. Levin, “The Rise of Asia’s Universities”. Foreign Affairs, May/June 2010

Why the University?

- Exposes postgraduate scientists-in-training to the **most cutting edge techniques and areas of research**
- Allows undergraduates to **witness meaningful science first-hand**, rather than merely reading about last decade's milestones in textbooks
- Students develop **ability to collaborate and assimilate new information, solve problems, and create new knowledge**
- **Best research gets funded** - not research proposed by those who are politically well-connected

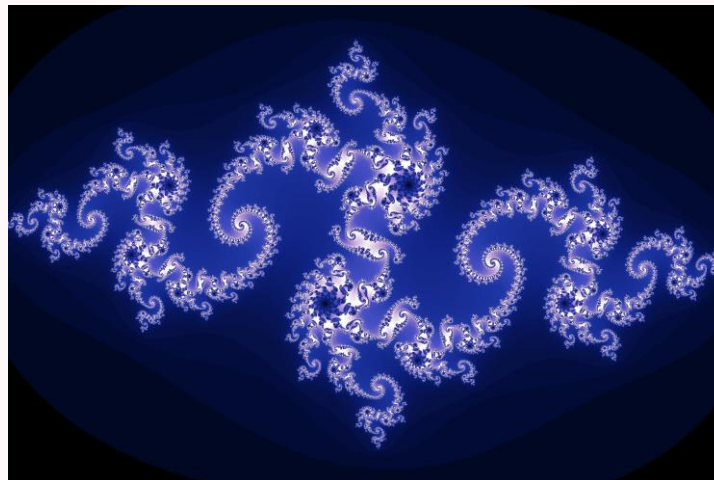
R. Levin, "The Rise of Asia's Universities". Foreign Affairs, May/June 2010

What kind of University?

“If you think of technology as something that’s spreading like a sort of **fractal stain**, every point on the edge represents an interesting problem.

One guaranteed way to turn your mind into the type to start up ideas [...] is to **get yourself to the leading edge of some technology**.

[...] when you get there, ideas that seem uncannily prescient to other people will seem **obvious to you**”



Paul Graham, Y Combinator, 2014

(btw) The “short-termism” curse



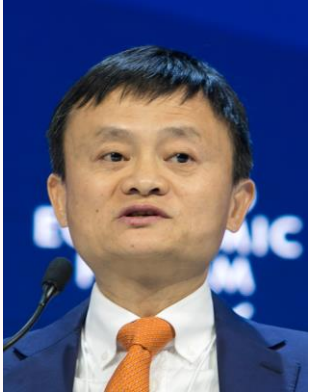
“Americans think everything had to happen yesterday; they have a very short time frame.

My company is 108 years old. Most of my American counterparts are thinking about what’s happening this quarter.

But, we think in generational terms.”

W. Fung, Chairman of Li & Fung (world’s largest consumer-goods sourcing and logistics company), 2014

(btw) The “short-termism” curse



"When Alibaba was founded in 1999, our goal was to build a company that could make China and the world proud and **one that could cross three centuries to last 102 years.**

However, we all knew that no one could stay with the company for 102 years.

A sustainable Alibaba would have to be built on **sound governance, culture-centric philosophy,** and **consistency in developing talent.**

No company can rely solely on its founders. [...] Because of physical limits on one's ability and energy, no one can shoulder the responsibilities of chairman and CEO forever."

Jack Ma, Founder of AliBaba, Letter on retirement, Sept. 2018

Origin #2: Arthur Rock



Arthur Rock
America's first venture capitalist
Key role in launching Intel & Apple.

One of America's first **venture capitalists**

- He played a key role in launching **Fairchild Semiconductor, Teledyne, Intel, Apple**, and many other high-tech companies.
- A driving force in the emergence of Silicon Valley as a centre of innovation and entrepreneurship.
- Between **1961** and **1968**, **invested \$3 million** and **returned \$100 million** to their investors.

Origin #2: Arthur Rock

“I think my biggest accomplishment was starting the venture capital business if, in fact, I did that. If I have to go down in history for doing one thing, I guess that’s it.

But **success for me is in helping to build great companies**. Having money is nice. Being able to travel and do the things I want to do is all very nice.

But I would give up some of that for **the feeling of success, of having created jobs. I helped create jobs. I helped create companies. I helped create wealth for a lot of people**. That gives me a great deal of satisfaction.”

Arthur Rock's interview with Harvard Business School, 2001

Venture Capital

- A type of funding for **new or growing businesses**, which typically pursue **innovative products or services**, in **high growth technology industries**.
- Usually comes from **venture capital firms** that specialise in building **high risk** financial portfolios.
- Venture capital firms give funding to the startup company **in exchange for equity** in the startup.



ANDREESSEN
HOROWITZ



KPCB | KLEINER
PERKINS
CAUFIELD
BYERS



SoftBank

IDG Ventures

ACCEL
PARTNERS

SEQUOIA



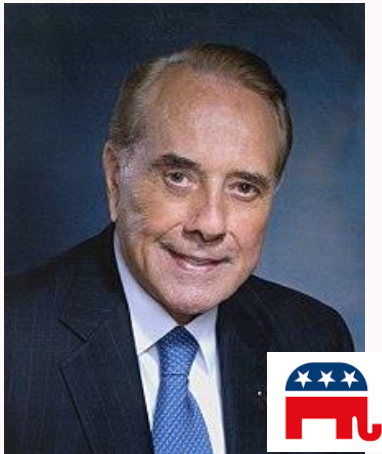
Research Commercialization



Research Commercialization

- By late 1970s:
 - US\$75 billion per year US Govt spending on R&D.
 - 28,000 patents accumulated.
- However, **less than 20 patents** commercialised, although Universities engaged in licensing, joint ventures, or spinoffs from university research.

Bayh and Dole



Birch Bay
U.S. Senator
(D) Indiana

Bob Dole
U.S. Senator
(R) Kansas

Possibly **the most inspired piece of legislation to be enacted in America over the past half-century**. More than anything, this single policy measure helped reverse America's precipitous slide into industrial irrelevance.

The Economist. December 14, 2002.

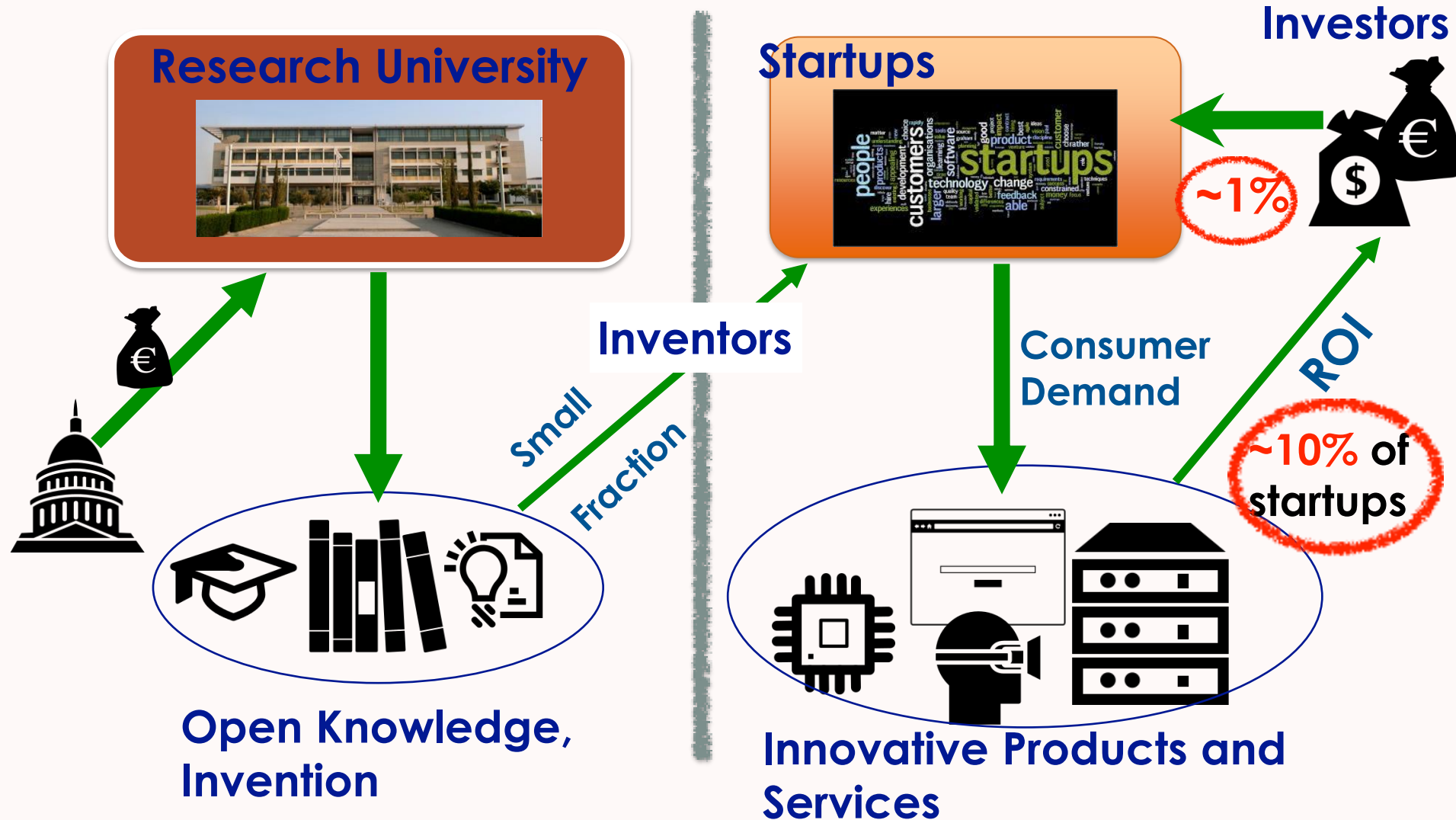
- **1980 Bayh-Dole Act**: allowed federally-funded intellectual property to be **owned by Universities**

“It is not government’s responsibility ... to assume the commercialisation function. Unless private industry has the protection of some exclusive use under patent or license agreements, they cannot afford the risk of commercialisation expenditure.”

- 1980-1997: **>7000 patents** granted to academic institutions; **>2,200 new companies formed** based on licensing of academic inventions

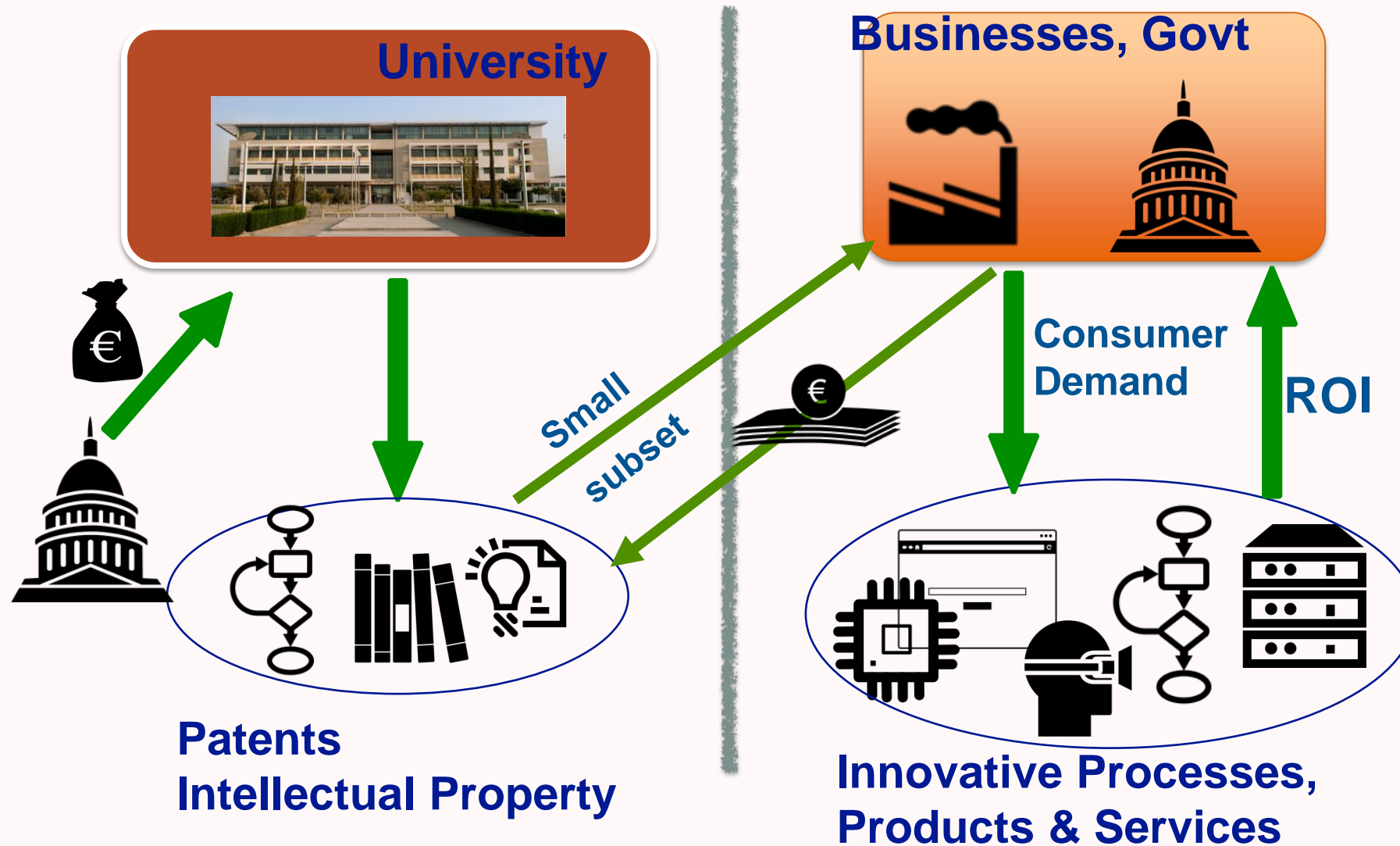
M. Ehrlich, “The National Science Foundation’s Lean Startup Push” *Venture Findings*, Issue#4(2016), CIV, Tel Aviv University

How does it work? Start-ups



Source: prof. Kai Li, Princeton Univ.

How does it work? Tech Transfer

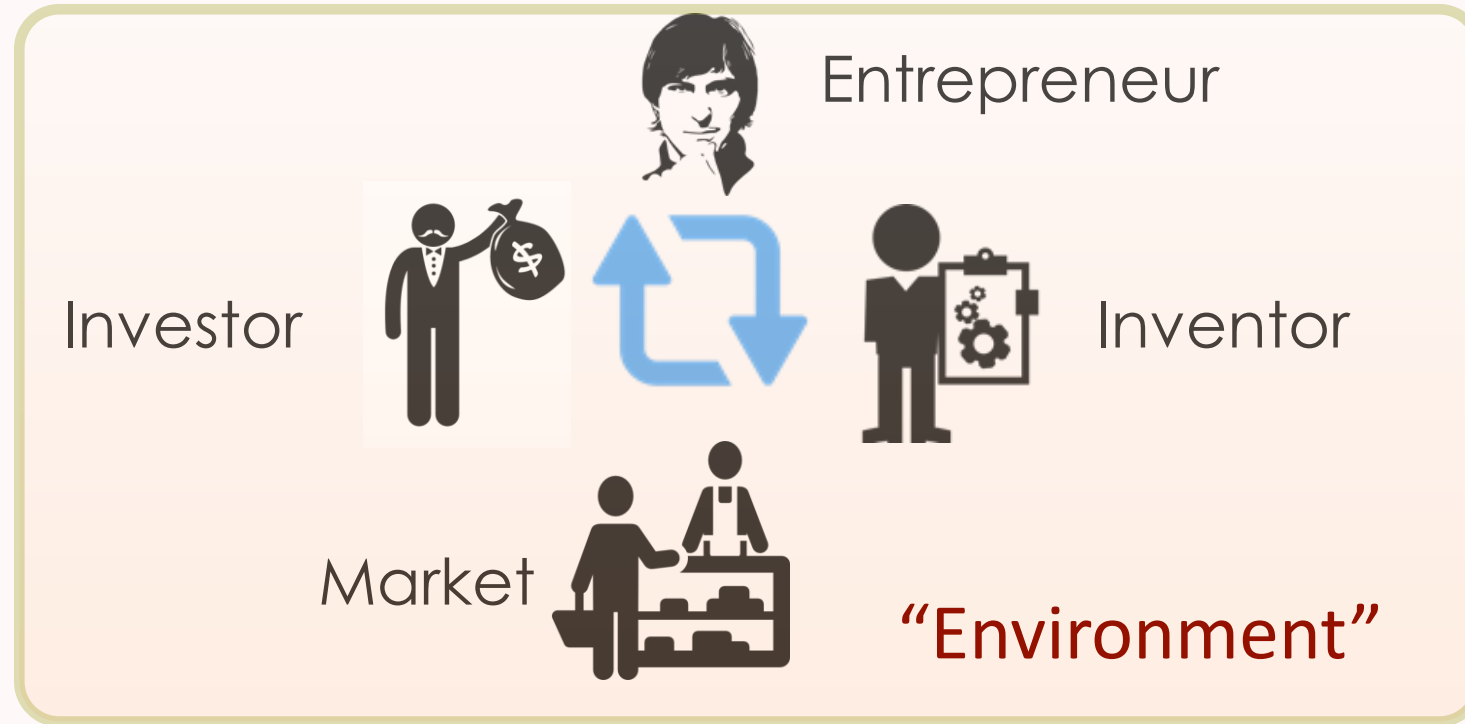


Another way to see Innovation

- **Government-funded Research**: transformation of money into knowledge
- **Innovation**: transformation of knowledge into money

[Geoffrey Nicholson, 3M (Inventor of the Post-It Note)]

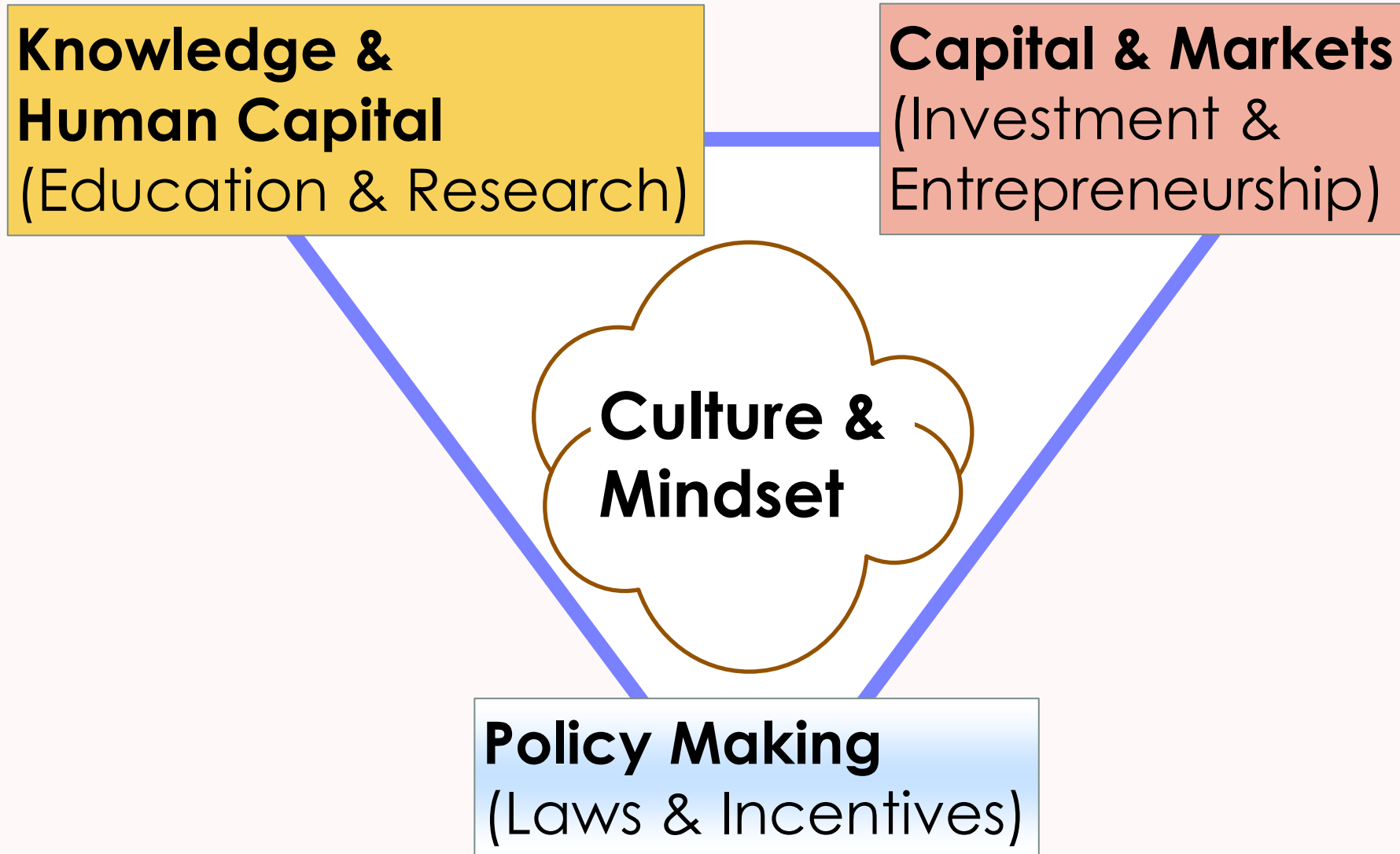
Key factors for commercial success



“the most important task in business – the creation of **new value** - cannot be reduced to a formula”

[Peter Thiel with Blake Masters, "Zero to One" 2014]

The Environment



Outline



- Successful Ecosystems
- The risk of the Cargo Cult
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- Concluding Remarks



Overcoming Barriers



A proliferation of “Silicon Valleys”

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NEW
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NYU ABU DHABI

TusPark



Fraunhofer

Skolkovo Tech

Skolkovo Institute of Science and Technology

SHENZHEN INSTITUTES OF
ADVANCED TECHNOLOGY

eit European Institute of
Innovation & Technology

Yissum
Hebrew University Technology Transfer

جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

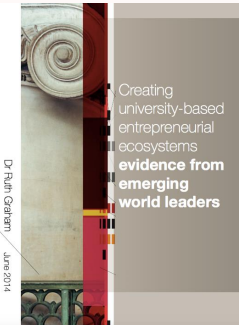


NUS
National University
of Singapore

قطر
Qatar Foundation

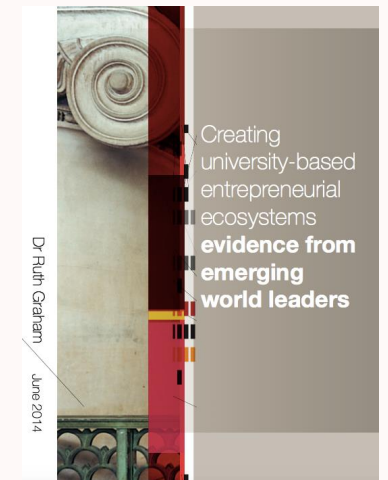
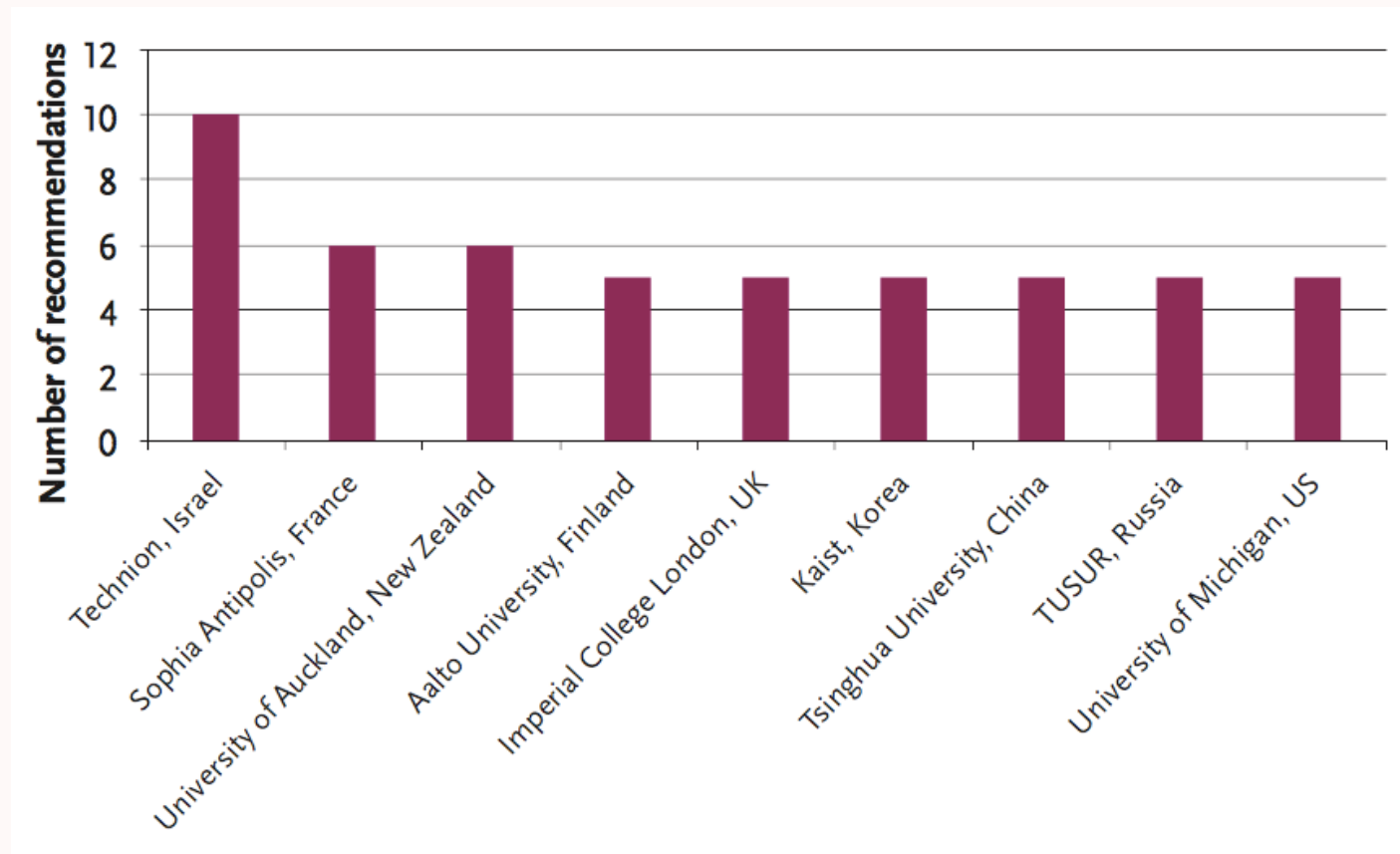
Common barriers

- National **culture** that does not support entrepreneurial behaviour and **risk-taking**.
- Geographical **isolation** and/or **limited** local **market**.
- Lack of venture **capital** or **multinational companies** in the region.
- No existing **high-ranking research-led university** within the ecosystem base.



Success in the face of challenges

“Which **universities** would you identify as having created/supported highly effective technology innovation ecosystems **despite a challenging environment?**”



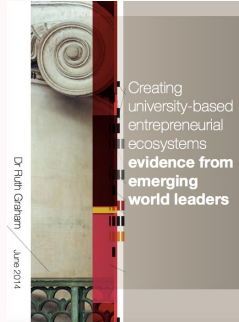
Factors to Identify Emerging Leaders

- Not simply a result of strong government funding.
- Playing an active role in establishing / growing a vibrant ecosystem.
- Critical entrepreneurial development still in its 'startup phase'.
- Key Entrepreneurship & Innovation components driving change still in place.
- Taken a distinctive path in their E&I policy in response to particular barriers faced in their environment.
- A significant focus on engineering and technology in their entrepreneurship activities.



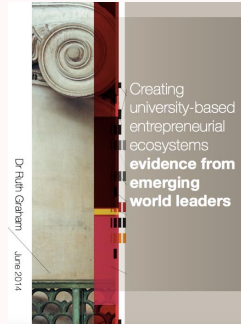
Key features of Emerging Leaders

- **Well-connected champions** with common vision, rich connections
 - Inspire, implement and sustain the effort
- **Public endorsement** by senior management of university engagement with entrepreneurship
 - Prominence in regional and national strategies for economic growth
- **Regional, national or government support**, on a sustained basis, often responsive and flexible in nature
 - Prioritising high-potential players, supporting international strategic partnerships
- **Relationships of trust** with the regional E&I community
 - A focal point through which university and local E&I community come together to establish necessary synergies and *“support the next generation of entrepreneurs”*
- **Mobilisation and drive of student** entrepreneurial movement
 - Often a result of strong culture and direct communication lines between this group and university management
- **Creating a market for university entrepreneurship** when limited existing E&I strengths in immediate environment
 - Partnerships with alumni entrepreneurs, establishing agency for international industry partnerships, open-access support for entrepreneurial development and start-up creation



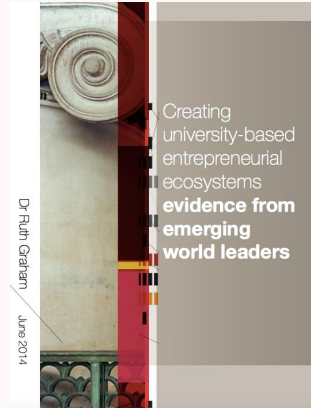
Key building blocks of E&I strength

- University senior management - **leadership & governance**
 - excellence in strategy & implementation
- University departments - **academic culture**
 - excellence in disciplinary and cross-disciplinary research, curricular and co-curricular activities
- University-led E&I activity - **E&I training and skills**
 - proper focus and alignment
- Student-led E&I activity - **need-driven**
 - enthusiasm and “can-do” attitude
- External E&I community - **wider context**
 - robust relationships of trust, synergies and flow of people & ideas



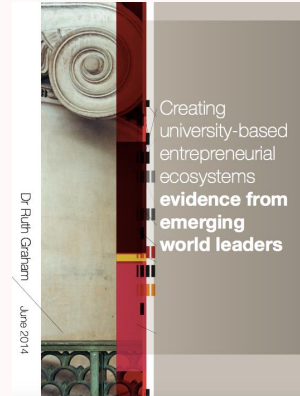
Development models

- Model A: ‘**bottom-up**’ and community-led, catalysed by students, alumni, entrepreneurs in the regional economy with a ‘**loose IP control**’
 - Strong partnerships of trust with regional entrepreneurial community
 - Investment focused on regional rather than institutional capacity
- Model B: ‘**top-down**’ and university-led, working through established university structures, with a ‘**tight IP control**’
 - Driven by and focused on strong TTO
 - Emphasis on university-owned IP - often leaves students and alumni marginalised



Main success factors

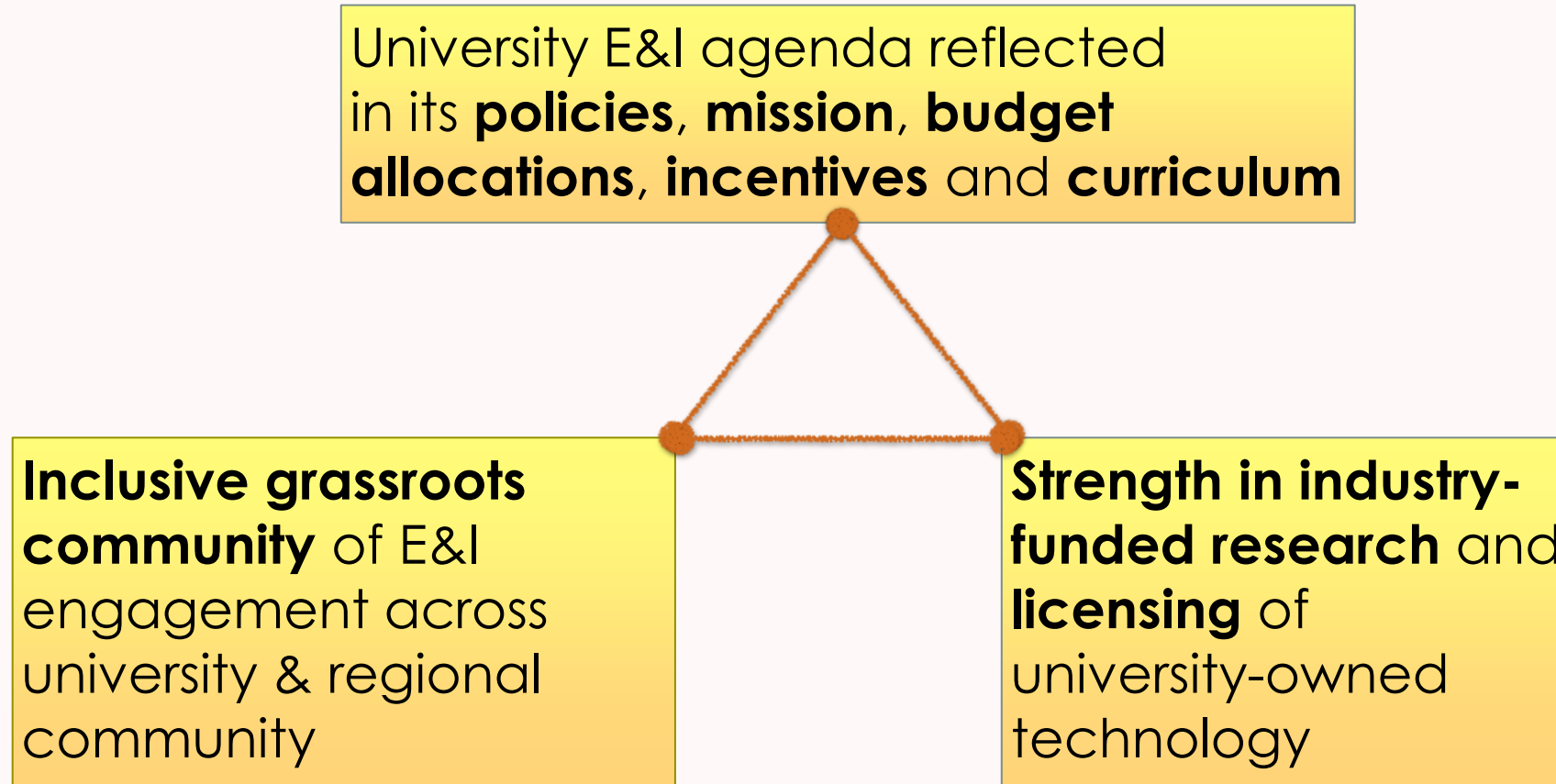
- Institutional Entrepreneurship & Innovation **culture**
- Strength of university **leadership**
- University **research capability**
- The local or regional **quality of life**
- Regional or **government** support
- Effective institutional **strategy**
- Powerful **student**-led entrepreneurship **drive**
- Strong partnerships of **trust** with regional entrepreneurial community



Ongoing challenges

- Potential conflict between research excellence and entrepreneurial ambitions
- Disconnect between grassroots, community-driven E&I and formal university channels
- Integration of E&I into the university's mission, policies and incentive systems
- Definition of proper E&I metrics

Balancing critical components



Concluding Remarks

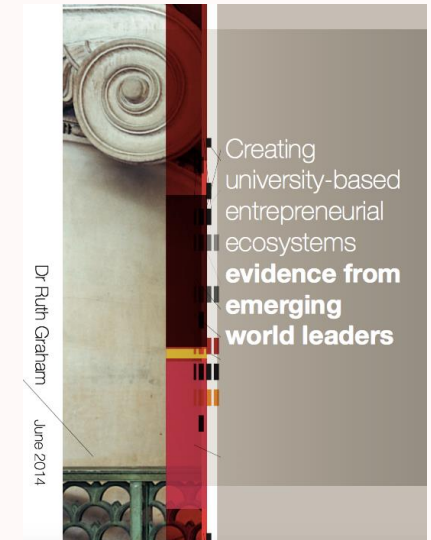


Conclusions

- Cannot cut and paste. Each country/place/university has to find its own model:
 - **Silicon Valley** was developed in an environment of abundance, building on top of a long tradition and strong foundations of strong science, education, mentorship, and inspiration - mission driven.
 - **Israel** success was a needs-based evolution supported by culture.
 - **China** - market-driven, profit-hungry, cut-throat entrepreneurship but with government orchestration.
 - **New York & London** – financial industry and media.
 - **Singapore** and **Korea** - by design.
- Creative innovative mindset requires changing attitudes – takes time.
- Strong, consistent, and persistent policy making requires changing attitudes and social pressure.

Concluding Remarks

“the stable development of a research commercialisation activity, outside a one-off “blockbuster” innovation, would take
at least 10-15 years”

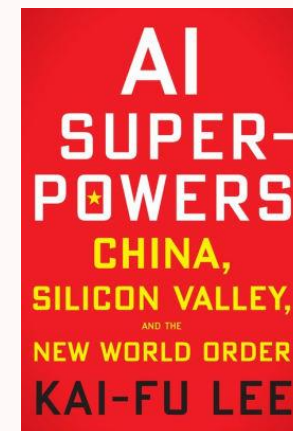


Concluding Remarks

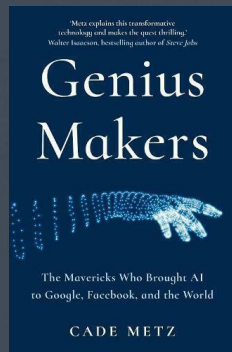
universities develop the entrepreneurs of the
future
not
the ventures of today...

Concluding Remarks

“Start-ups and the Entrepreneurs who found them are not born in a vacuum. Their business models, products and core values constitute an expression of the unique cultural time and place in which they come of age.”



Reading Assignment



Read Part 1 – Chapters 1-6 (A New Kind of Machine) of the book “Genious Makers” by Cade Metz.

- These chapters discuss the scientific and technical evolutions that brought neural networks to the forefront of the present AI revolution.
- How long did it take for this evolution to materialize?
- Who were the key persons and what each of them achieved?
- What were the main factors that led to the successes of AI and ML after so many failures?



Module 1: Innovation, Research, Start-Ups

Section 4: From invention to commercial product

Source:



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



University of Cyprus
Department of Computer Science



Section 3

Outline



- From invention to commercial product
- Disclosure and confidentiality
- Assessing Novelty
- Competition and Market Potential
- Risk Assessment
- Exploitation Routes
- Prototyping and Proof of Concept
- Protecting your Invention

- Review key stages of turning an invention into a commercial product...
- ... or turning an idea into an enterprise, if we are to widen our definition of 'invention' to include:
 - novel processes
 - business methods
 - social interactions etc

The element of risk

- Any new business venture involves risk, but
- invention carries extra risk because it is impossible to predict how well an unknown, untried product will perform in the marketplace.
- No matter how thoroughly the market is researched, no one can guarantee success.
- Most companies and investors know this, and it is the main reason why they are reluctant to gamble on inventions. There are always safer ways to invest money!

The element of risk

- A single, simple lesson that inventors need to learn, to maximise chances of success:
 - **reduce risk and control costs at all times**
- Most risk is financial, so controlling costs is vital.
 - It is easy to overspend on an invention because optimism tends to overrule caution.
 - Many invention projects fail because too much money has been spent too soon, or on the wrong things.

The element of risk

- As an inventor you must be able to demonstrate that you have done **everything you possibly can to eliminate risk from your project.**
- This means not just the risk to you, but also the risk to:
 - potential investors,
 - licensees and
 - business associates.
- If you can show a positive attitude to risk reduction, you are much **more likely to attract investment and support.**
- You should therefore regard reducing risk as essential to improving the chances for your invention - perhaps even more essential than acquiring strong IP rights!

Section 4: From invention to commercial product (EPO Handbook)

Disclosure and confidentiality

Source:



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



Disclosure and confidentiality

- What is disclosure?
- The **dangers of disclosure are real**, and need to be taken seriously as soon as you start thinking about your invention.
- Protecting your idea against disclosure is not quite the same as protecting your idea against infringement.
 - It depends largely on your own common-sense measures, which you should take from the day you first think of your idea.
- Protecting your idea against infringement depends largely on the correct use of formal legal procedures when the time is right to use them.

Assessing the risk of disclosure

- Disclosing an idea without adequate legal protection is always dangerous. The main risks are:
 - Someone may use knowledge of your idea for their own gain - which usually means your loss.
 - Disclosure now may prevent you from obtaining a worthwhile patent later.
- In the very earliest stages of an idea, the problem for many inventors is twofold:
 - It is usually inadvisable to apply too early for a patent. The timing of a patent application can be critical.
 - Yet in order to make progress with an invention, some disclosure may be unavoidable.
- How then should you protect your idea in the early stages of its development?

- Disclosure to individuals during private meetings
 - This type of risk is controllable as long as you take a few basic precautions, detailed below.
- Public disclosure
 - The dangers here are less obvious. Particularly problematic areas are:
 - **Media publicity** and **competitions**. Both may be useful **after** you have legally protected your idea but definitely not before it.
 - Inventions which originate as **student projects** - especially if there is a requirement to exhibit or publish your work.
 - Teaching staff often do not understand that any form of public display of an idea legally constitutes disclosure and can have serious consequences.

Who can you trust?

- You should be safe disclosing details of your idea to people whose professions require them to observe confidence in all dealings with clients:
 - patent attorneys, other legal professionals, EPO and national IP office personnel
 - public servants such as business or technology advisers and funding scheme administrators.
- When dealing with anyone else - companies in particular - you should **disclose nothing** without at least (a) a **signed non-disclosure agreement** (NDA) and (b) free forms of legal protection in place, such as copyright or unregistered design right.

Disclosure strategy

- You should try to avoid:
 - Obsessive secrecy.
 - A demand for payment before disclosing any detail of your idea.
- Few people will be willing or able to help you if you use such negative tactics. Instead:
 - Before talking to companies or individuals **not bound by confidentiality** (either a professional code or a signed NDA), **decide exactly how much you can tell** them without describing the inventive parts of your idea.
 - Revealing broadly what it is ('It is a novel mousetrap') may be safe; revealing what makes it novel is dangerous.
 - The more you discuss the technical aspects of your idea, the greater the risk of disclosing secrets. Try instead to focus your presentation on the competitive benefits of your invention: for example, 'It is cheaper', 'It is more reliable', 'It is easier to use'.
 - Be diplomatic but firm about your need to restrict disclosure. If the people you are talking to want more detail from you, insist that they sign your NDA. If they refuse to sign, walk away! Even if they do sign, disclose as little as possible.
 - Even if protected by an NDA, be very careful what you reveal to experts in your field of invention. They may need only one or two small details to guess the unique features of your invention.

Protecting your idea (IP)

- At some point you must legally protect your intellectual property (IP) or you will not be able to:
 - Disclose it safely.
 - Be recognized in law as its owner.
 - Profit from its commercial exploitation.
 - Prevent or discourage its unauthorized use by others.
- There are several forms of protection known as **intellectual property rights** (IPR). Usually, the best way to protect an invention as it evolves is to use a strategic combination of IPR.
- Many inventors assume that the only way to protect their idea is to **patent** it. While patents tend to be of primary importance, other forms of IPR should also be considered.

- IPR is a complex area of law that holds many dangers for inexperienced inventors. A patent attorney's advice will be **helpful** when you are **planning an effective IP protection strategy**, and **essential** if you **decide to patent your idea**.
- Despite their name, patent attorneys are usually experts in all forms of IPR. They can improve your chances of obtaining worthwhile protection for your idea, and can act for you when problems arise.
- Your patent attorney should be able to advise you fully on IP matters in your own country and all of Europe. For IP matters outside Europe, most patent attorney firms in your own country will be able to act for you, or arrange representation, in any country.
- However, it is important to understand that no patent attorney can ensure that your IPR will bring you any financial reward. The expertise of patent attorneys is restricted to IP law. You or your team of other experts must take responsibility for the commercial success of your invention.

IP Commercialization



Watch the video and see the [slides](#)



IP law / Commercializing IP

Section 4

Outline



- From invention to commercial product
- Disclosure and confidentiality
- Assessing Novelty
- Competition and Market Potential
- Risk Assessment
- Exploitation Routes
- Prototyping and Proof of Concept
- Protecting your Invention

Section 4: From invention to commercial product (EPO Handbook)

Novelty

Source:



Europäisches
Patentamt

European
Patent Office

Office européen
des brevets



University of Cyprus
Department of Computer Science



What is an invention?

- For your idea to be regarded as an invention, at least one significant part of its technology must be completely novel (that is, new). There must be no evidence that this novel aspect of your idea has ever been **described** before, or **used for the same purpose** before.
- Not all the technology of an invention needs to be novel.
 - An idea may be an invention if existing technologies are **combined** in a way that is novel, or **used** in a way that is novel.
 - The inventive element might be **only a small part of the whole idea**. But if that small part makes a **big difference** to the commercial prospects of the idea, it could be an important and valuable invention.
- Many people claim to have thought of a novel use of technology. **The reality is that in most cases, the idea is already known.** It therefore cannot be novel and so there may be little point trying to commercialise it.
 - The inventor will usually be unable to protect it strongly, and without strong **intellectual property protection** to attract them, few companies or investors will be interested.
- How do you find out if your idea is novel? You do it by **searching for prior art**.

What is prior art?

- Prior art is any evidence that your invention is already known.
 - Prior art does not need to exist physically or be commercially available. It is enough that someone, somewhere, sometime previously has described or shown or made something that contains a use of technology that is very similar to your invention.
 - An existing product is the most obvious form of prior art. This can lead many inventors to make a common mistake: just because they cannot find a product containing their invention for sale in any shops, they assume that their invention must be novel.
 - The reality is very different. Many inventions never become products, yet there may be evidence of them somewhere. That evidence - whatever form it may take - will be prior art.
- Some experts estimate that **for every recorded invention that eventually reaches the market, ten never will**. This means that if you want to find out if your invention is novel, you should indeed search products past and present - but you should also search much further.
- The most important place for further prior art searching is the **worldwide patent system**. Some patent databases - including the **European Patent Office's free database Espacenet** - contain 90 million documents, collected and indexed over many years by patent offices in many countries.
- Thanks to the internet, and to the international classification systems used to organise inventions by subject, it is quite easy for inventors to do their own patent searching.

- While looking for prior art, you should also look for competing art. These are ideas that may not be at all like yours but do the same job. It is important to study competing art for two reasons:
 - Most inventions are a solution to a problem, and most problems have more than one possible solution. You need to examine other solutions, as some may offer more advantages than yours.
 - If you try to exploit your idea commercially, alternative solutions may be strong competition. In order to argue successfully that your solution is better than alternatives, you need to know what the alternatives are!

Why is novelty important?

- For an invention, a **lack of novelty matters** for 2 main reasons:
 - You are unlikely to be able to obtain any worthwhile intellectual property rights for an idea that is not novel.
 - In most cases this means that your idea will have little or no commercial value.
(Exceptions include ideas that rely more for their success on skilful marketing than IPR, or where a rights owner agrees to license the IPR.)
 - An idea that is not novel cannot legally belong to you. If someone else owns the rights to it, you risk having legal action taken against you if you try to exploit it without their permission.
 - Nor can you claim the idea as yours even if it has no legal owner (for example, if it is an old idea).

Why is novelty important?



- Even if an idea is novel, novelty on its own may not mean much. For an invention to have **good commercial potential**, it needs to be a **significant improvement on prior art**. This depends on many factors. Some improvements may be small in technology terms but have high commercial value.
 - For example, the drinks can ring-pull is simple technology, but its advantages - (a) it is secured by a rivet that does not penetrate the can, and (b) the underside of the ring is shaped to give mechanical advantage - made it a significant invention with huge commercial value.
- On the other hand, it is possible for a commercially successful idea to be novel but not particularly inventive.
 - For example, electric toothbrushes used to be too expensive to sell well. Then someone discovered that it was possible to use a much cheaper motor. Prices fell and sales soared. This new type of electric toothbrush simply included a well known motor, and functioned in a well known way, so there was no invention - but the novelty of combining motor and toothbrush gave it a large commercial advantage.

Is the idea obvious?

- To be regarded as an invention, an idea needs to include an **inventive step**.
 - An inventive step must be **non-obvious**: something not readily occur to an expert in the relevant technology.
 - **Obvious** means something that would be the next logical step along your path from the problem to the solution.
- Judging what might be obvious can be **very difficult**:
 - Many inventions involve combining equipment.
 - The result of such combinations might be a new product, but its properties or functionality might be entirely predictable as soon as one knew its components. As such, it could be considered obvious.
 - A product in which one component has been replaced for a different one with equivalent properties could be considered to be obvious.
- In another situation there might be a new problem which can be solved with a well known piece of equipment: the 'novel' process for solving this problem might be considered **obvious** if there was only one solution to the problem, and it would be known to the typical technician facing the problem (the so-called '**person skilled in the art**').
- When components are combined to make a product or process with properties which are **greater than the sum of its parts**, or **better than expected**, then that could be a **non-obvious invention**.
- Or an invention could come from where there are **many possible solutions to a problem**, but the inventor has had to research and **select the best one**. Or an inventor might defy some technical prejudice and solve a problem by doing something **every other expert had previously believed would not work**.

Where do inventors go wrong?

- When it comes to prior art searching, many inventors simply scratch the surface. By far **the most common mistake they make is to assume that their idea is novel, when a simple patent search would tell them that it was not.** They then make things worse by spending often large sums of money on an idea that is extremely unlikely to be commercially successful.
- For example, the inventor of an odourless toilet bowl visited many companies with a complete working toilet, performing 1 600 demonstration flushes. But he had never done a patent search. Eventually he found a company interested enough to do its own patent search. They soon found so much prior art that it became obvious that the idea was unprotectable. The inventor threw away his toilet.

Prior art searching

- Prior art search processes: a **product search** and a **patent search**.
 - You must do both to be confident that you have done a thorough prior art search. You must also do them before spending significant amounts of time and money on your idea.
- **Warnings:**
 - It **may take only minutes on the internet to find prior art**. If you do not look for it, companies and investors almost certainly will. You are unlikely to get help or funding if they find crucial prior art that you have missed.
 - **Do not ignore evidence you do not like**. The purpose of a prior art search is to go looking for evidence you may not like.
 - An absence of prior art at the time of your searches may not be a permanent absence. You should **update your prior art searches periodically** as you develop your idea.
 - **No prior art search - not even an official Patent Office examination - is regarded in law as conclusive proof of novelty.**

Prior art searching Steps

- Step 1: Finding the right keywords
- Step 2: Product searching
- Step 3: Patent searching

Find the keywords

- To maximise your chances spend some time thinking of key words or search terms which best describe your idea.
- When using search engines, the most obvious key words may be unhelpful. For example, let us say your idea is a mousetrap. A search for 'mousetrap' produces over two million hits - many of them irrelevant, and an impossible number to search.
- But a search for 'rodent trap' (**what else it is**) and 'trapping mice' (**what it does**) produces 20,000 and 700 hits respectively. These are still not small numbers but they are likely to be more relevant, so we can usefully start searching here.
- The **most productive search terms may be specialist technical terms** that you do not know. For example, a search for external devices that pump blood round the human body required the crucial medical term 'extra corporeal'.
 - A searcher with no medical knowledge would be unlikely to know this term, but might find it while examining the results of other key word searches. It may therefore take a few preliminary searches to find better keywords to use for more accurate searches.
- Look out too **for new terms for new technologies**: for example, 'virtual fit' for software systems to replace trying on clothes in shops, and 'telemedicine' for remote monitoring of patients in their own homes.

Product searching

- You need to find out what is already on the market:
 - That is similar to your idea (prior art).
 - That tackles the same problem (competing art).
- Obsolete technologies or products may be prior art, so check historical as well as current sources of information.
- Products in development but not yet on the market may be prior art, so [search news sites, industry journals, trade show and exhibition websites](#). Perhaps especially [search academic research activity](#), as this is where many new products start out, often years before a commercial product appears.
 - Search [offline](#) - in shops, books, periodicals, printed catalogues etc.
 - [Talk to people with relevant experience](#) - for example, retailers and suppliers - who will have seen products come and go over the years and may have seen your idea among them.

Patent searching

- For many ideas, patent searching will be far more important than product searching.
 - Although many products on the market do not have a patent, they are probably heavily outnumbered by the many ideas that are successfully patented but never reach the market.
- Patent searching involves two skills:
 - Finding every patent document that is relevant to your invention.
 - Interpreting the significance of your patent search findings.

How long will your search take?

- From a few minutes (if your first keywords are accurate and there is a great deal of prior art) to many hours.
- Be prepared to spend **all the time it takes** to be confident that you have done a proper job.
- Your mission is to **find evidence that disproves the novelty of your invention!**
 - Your hope is that you will fail, but in the interests of a thorough search you must put that to the back of your mind.
- Assume that if you are not finding prior art, **you are looking in the wrong places.**
- Keep searching until you are **confident** that there is nowhere else left to look.
- **Keep records** of everywhere you look and everything relevant that you find.
- You are unlikely to be as good as a professional searcher, so in some cases it may be advisable to ask a professional to search for you

Simple Espacenet Searching

- Use your keywords to find at least some relevant patents: prepare search strings of up to ten keywords (Use Espacenet's wildcard feature to find plurals and other variants).
 - This may produce enough prior art to end your search.
 - If not, go back to Smart Search and try different search strings.
- Work with bibliographic screens to look for patent abstracts and/or examining individual patents.
- If you have not found enough prior art after repeating this procedure a few times, try shifting the basis of your search from keywords to **classifications** or **CPCs** (Cooperation Patent Classifications).
 - Use relevant patents found to identify relevant **subject classification** for your idea.
 - Try combining keywords with CPC terms to refine your search.

Espacenet Search

Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

The screenshot shows the Espacenet Patent Search interface. At the top, there is a navigation bar with the Espacenet logo and search options. Below this, a search bar and navigation tabs are visible. The main content area displays a 'Result list' with search filters and a list of patent results. The results are sorted by date of upload in the database. The first result is 'System For Providing Circic Motion' by Westerkamp et al. Other results include 'COUPLING ASSEMBLY HAVING TRANSPORT LOCK', 'LOCK MECHANISM FOR ELECTRONIC DEVICE', and 'COMBINATION LOCKS WITH IMPROVED CODE CHANGING FEATURES'.

Result list

Select all Compact Export (CSV|XLS) Download covers (0) Print

More than 100,000 results found in the Worldwide database for: **td = lever** using SmartSearch. Only the first 500 results are displayed.

Results are sorted by date of upload in database

1. System For Providing Circic Motion

Inventor:	Applicant:	EC:	IPC:	Publication info:	Priority date:
WESTERKAMP EDWARD [US] MEISER DANIEL [US]	BLOEMER MEISER & WESTERKAMP LLC [US]	A47D9/028 H02K33/10 (+1)	F16M11/06 H02K33/00	US2011210624 (A1) 2011-09-01	2006-10-25

2. COUPLING ASSEMBLY HAVING TRANSPORT LOCK

Inventor:	Applicant:	EC:	IPC:	Publication info:	Priority date:
DUSSEL KLAUS [DE] WEGE VICTOR [DE] (+2)	SCHAEFFLER TECHNOLOGIES GMBH	F16D13/59C2 F16D13/25D	F16D13/22	US2011209953 (A1) 2011-09-01	2008-11-03

3. LOCK MECHANISM FOR ELECTRONIC DEVICE

Inventor:	Applicant:	EC:	IPC:	Publication info:	Priority date:
PIRILLIS ALEXANDROS [US]	METHODE ELECTRONICS INC [US]	H05K7/14B3B	H05K7/00	US2011211904 (A1) 2011-09-01	2008-03-27

4. COMBINATION LOCKS WITH IMPROVED CODE CHANGING FEATURES

Inventor:	Applicant:	EC:	IPC:	Publication info:	Priority date:
JOHNSON MARK D [US] MEDINA RAFAEL HIRAM GUTIERREZ [MX]	MASTER LOCK CO [US]		E05B37/08 E05B65/52	US2011209506 (A1) 2011-09-01	2010-03-01

A word of caution

- Most documents in patent databases will be **applications only** and **not** granted patents.
- Although the claims in applications count as disclosure, they are often modified later and so may be no guide to:
 - the claims - if any - eventually granted
 - the extent to which your idea might infringe someone else's patent.

Professional patent searching

- It is advisable to use professional patent search services if you can afford them. Such services typically include:
 - A **PATLIB (PATent LIBrary) centre**. A joint initiative of the national patent offices of the EPO member states and their regional patent information centres, the PATLIB network consists of over 320 centres throughout Europe. Qualified and experienced staff can provide a range of search and other information services.
 - **Database searches offered by many libraries and business information services**. Many of these are provided at low cost as a public service, but may not be performed by qualified or experienced patent searchers.
 - **Commercial search services offered by national Patent Offices**. Options and costs may vary.
 - **Commercial search service providers**. There are several major companies in this market, and many smaller specialist consultancies. See, for example, the members of PATCOM . Fees and services vary, so shop around.
- **Searches by patent attorneys**. Fees usually vary according to the type of search you need. A patent attorney will also be able to help you interpret your search findings. This is the real skill in patent searching.

Section 4

Outline



- From invention to commercial product
- Disclosure and confidentiality
- Assessing Novelty
- Competition and Market Potential
- Risk Assessment
- Exploitation Routes
- Prototyping and Proof of Concept
- Protecting your Invention

Section 4: From invention to commercial product (EPO Handbook)

Competition and Market Potential

Source:



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



University of Cyprus
Department of Computer Science



Competition and Market Potential

- Is your idea a good business opportunity?
 - Novelty alone may mean **nothing** if your idea does not have good commercial potential. Very few people will buy a product simply because it is an invention. They will buy it only if they have a use for it **and** prefer it to competing products.
 - Therefore, if you hope to interest companies and investors in your idea, you must convince them that it offers a lucrative **business opportunity** with as few risks as possible. They must see enough profit potential in your idea to recover their investment many times over.
 - Thinking commercially also helps to reduce your own financial risk, which will increase as you develop your idea.

Competition and Market Potential

- When thinking about the market potential of your idea, you **must** consider how it might cope with **competition**.
- You also need to study competition for another reason: if your idea is completely new, what you can find out about competing products or companies may be the only reliable market data available.
- Competition does not just mean products exactly like your idea. It means **anything** currently used or done to solve the problem your idea addresses.
- For example, if your idea is a novel mousetrap, competition is not just all other mousetraps. It must include all methods of getting rid of mice - even cats!

Assessing your competition

- Key questions:
 - Who are your competitors?
 - How much of a threat are they?
 - Can your idea compete successfully against them?

Who are your competitors?

- Using the internet, it should be quite easy to find competing products and technologies anywhere in the world. **Do not ignore a product simply because it is not sold in your country.** Markets are now global, and products currently sold in only one country could be available worldwide within months.
- As with prior art, look also in shops, trade-only outlets, catalogues etc. Read industry journals and visit trade exhibitions to find out what people are buying and **not** buying, and to find out about new product launches.
- Talk to people who work in relevant trades or professions. Ask them which products and methods they use or do not use, and why. (Do not, of course, disclose your invention.)
- **Retired experts** in particular may be able to give you valuable information that they would not have been free to disclose when they were employed. They may also have time to spare, and if they like what you are doing, they may be happy to become involved in your project.

How much of a threat are they?

- You need to know as much as possible about each competing company. If the company sells many products, consider only those that will compete with your idea. For example:
 - How much money are they making from those products?
 - How do they price products?
 - How often do they improve or replace products?
 - What is their market share, and is it rising or falling?
 - How and where do they distribute their products?
 - How widely do they advertise their products and their brand?
 - How good is their technical and after-sales support?
 - What is their reputation among customers and within the trade?
- Be aware that a company's ability to compete **may depend more on marketing than on technology**, so do not underestimate the threat from a technically inferior product if the company selling it can afford to spend a lot of money marketing it.

Can your idea compete successfully?

- Launching a new product is never easy because **the market already belongs to the competition.**
- They are known, experienced and perhaps trusted, while your product is an unknown quantity.
- You must consider carefully whether your idea really does have the potential to take enough of the market to be a tempting business opportunity for a company or investor.

Questions to consider

- **Does anyone actually need your product?**
 - The problem your invention solves may interest you, but do enough other people feel the same way? If they do not, the market may be too small and unprofitable to be worth bothering with.
- **What is the best market for your product?**
 - This is rarely as easy to answer as many inventors think. The same invention can often be developed in different ways, so look for gaps in the market - areas where existing provision or competition is weak.
- **What is the easiest market to enter?**
 - Minimising risk has to be a priority when launching a new product. If your 'best' market is costly to enter, it may be a good idea to start with one that is cheaper to enter, **even if it is less profitable**. Success in this market may make it easier to enter more profitable markets later.

Questions to consider

- **How healthy is your target market?**

- Is it growing or shrinking? You should hesitate to enter a declining market unless you feel your product can revive it. Looking into the future, are there any emerging technological, social, regulatory or legal changes that might radically affect its fortunes?

- **At what price might your product have to sell?**

- If the price of your product is not similar to prices charged by competitors, you may find it difficult either to make sales or make a profit. Your competitors have done much of your research for you: they have discovered the price the market will bear.

- **Will your product meet standards?**

- Most products need to meet national or international standards of safety, performance etc before they can legally be sold. Achieving compliance can be a long and expensive process, so find out what will be required.

Research guidelines

- You will probably have to do your own [market research](#). Professional research is often too expensive, and if your idea is still at concept stage there is a risk that other people will not fully understand it.
- Universities are a possible source of low cost research assistance. For example, some departments may need [real-life project material for their students](#). A problem is that students differ in ability, and so quality cannot be guaranteed.
- All [your research needs to look professional](#). This is important because at some point you may have to present your research to other professionals as part of a proposal for funding.
- Use [only reliable or first-hand sources of information](#), and record each source. Never do what some inventors do, and present as evidence a collection of articles from popular newspapers and magazines.
- Consumer surveys may seem like a good idea, but many people say one thing to researchers and do the exact opposite later. [Surveys may therefore be a poor guide to actual buying behaviour](#).
- [Do not trust the opinions of family and friends!](#) Most will lie to you in order to avoid arguments, or because they do not want to hurt your feelings.
- Do [not ignore someone whose opinion is different from all the rest](#). That person may be the only one to identify a major weakness in your idea.

Free or cheap market information sources

- Mainly the [internet](#). Be careful though, as much of the data you find may be outdated or inaccurate.
- Many academic and large public libraries have business information departments, staffed by helpful [librarians](#) with fact-finding expertise.
- Use [Espacenet](#) to look at recent patent applications. This can give you clues about the products and technologies major companies may be working on.
- Visit relevant [trade fairs](#) and [exhibitions](#). Talk to people, find out who is doing what.

Section 4: From invention to commercial product (EPO Handbook)

Risk Assessment

Source:



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



University of Cyprus
Department of Computer Science



Assessing the risk ahead

- 'Is there enough evidence to justify taking my idea any further?'
- This matters for three reasons:
 - Even if an idea is novel and appears to have market potential, that does not automatically make it worth exploiting.
 - Up to now, your idea should have cost you little. But if you decide to exploit it commercially, the costs and risks will soon become much higher.
 - Thinking about exploiting an idea is easy. Doing it is much more difficult. You will therefore need to be confident of your own skills and abilities before deciding to go ahead.

Key questions

- To help you make the big decision - do I take this idea further or not? - you should address three key questions:
 - Is my idea significantly **novel**?
 - Does my idea have significant **commercial potential**?
 - Am I ready for the **personal challenge** of turning my idea into a business opportunity?

Significant novelty

- Your idea should be **different** from existing products or documented ideas. But **being only a little bit different** will not be enough. Your idea should offer **clear technical or commercial advantages** that existing products or other ideas do not offer.
- These advantages should also have the potential to be **strongly protectable** in law, because in most cases only strong intellectual property (IP) has commercial value.
- To estimate the degree of novelty of your idea, you need to look in detail at the products and patents you have found in your searches. Any element of your idea that can be found in existing products and ideas will reduce its novelty. And **anything that reduces the novelty of your idea is likely also to reduce its potential commercial value.**

Evaluating patents

- This is an exercise that must be done thoroughly, and patents can be complex, highly technical documents. You may therefore need the help of a patent attorney to do some or all of the following. If you think your idea has good commercial potential, this will be money well spent.
1. **List**, in order of importance, the **novel features of your idea**.
 2. Assemble all the **patents** you have found **that seem relevant** to your idea.
 3. **Search** each patent in full **for similarities to your idea**. Look particularly closely at the claims made or granted for it, and at official search reports. (If a search report cites other patents, you may need to look at them too.)
 4. Whenever you find a **feature** of your idea **covered by prior art, remove it** from your list.
 5. At the end of the exercise, **how many features of your idea remain on your list?**
 - If one or more of its main features are gone, what remains may be too weak to be of significant commercial value.

Is there room for your idea?

- If there are large numbers of patents in a particular technology area, there may be few strong prospects for new ideas.
- For example, there are currently over 60 patents for floating soap - a fairly simple product, so one has to question how strong many of those patents can be.
- Anyone with yet another idea for floating soap might find it difficult to acquire **worthwhile** IP.

Who owns what?

- Find **who owns the patents** that are most relevant to your idea.
- If major companies have a strong IP presence in 'your' technology area, it may be difficult to compete with them even if your idea is different from any of theirs.
- Inventors occasionally win in 'David and Goliath' encounters, but in such a situation your idea will need to have outstanding commercial potential if you are to stand any chance of success - particularly when it comes to attracting investment.

Significant commercial potential

- You may think your idea has good commercial potential, but something else matters more: other people have to think so too.
- **Significant commercial potential means the prospect of sales and profit on a large enough scale to make all the risk generated by your idea worth taking.**
- Businesses in particular will need strong evidence that your product will sell, as they are the ones who may have to spend millions of euros to get it to market.
- In business [there is no such thing as a guaranteed winner](#). For every new product that sells well, there will be other new products that sell poorly.

Significant commercial potential

- What most companies will look for is:
 - Something that can give them (usually through strong IP) a commanding or even **monopoly** position in the market.
 - Something that consumers will want in preference to competing products.
 - Something that offers a good return on investment.
 - Something that offers a clear, low-risk route to market.

From your searches and investigations, what evidence can you present to companies or investors that your idea has the potential to meet these requirements?

New product categories

- New products tend to fall into three broad categories:
 - **Exceptional** products which dominate their market and set new standards.
 - **Good but unexciting** products which offer opportunities for a business to increase its profits or its market share.
 - **Unexceptional** products which offer just one more choice among alternatives.
- In which category would most people place your idea?
- You need to evaluate any opinion you have had so far from businesses or individuals with expert knowledge of relevant markets.
- A **lack of evidence in favour of your idea** could mean one of three things:
 - The commercial prospects for your idea are poor.
 - Your idea may need re-thinking to make it more commercially viable.
 - Your idea may only succeed if you become an entrepreneur and market it yourself.

Personal challenge

- Inventors often fail to appreciate how much of the spotlight will be on them when they present their idea to businesses. **Experienced investors tend to back the person rather than the idea, so they will look closely at your ability to help make your idea succeed.**
- How do you think you might measure up to the challenge?
 - Do you know how far you want to take your idea?
 - Do you have a plan for getting there?
 - How much of the actual work will you do?
 - Who will perform the tasks you cannot do?
- It is important to understand that:
 - Few individuals possess all the skills needed to develop an invention.
 - Many investors are reluctant to back one-person ventures.
 - Many businesses will not deal with individuals.
- Therefore, some kind of **team effort** is usually needed.
- Before you can answer this question, you perhaps need to consider the different ways in which you might benefit financially from your idea.

Section 4: From invention to commercial product (EPO Handbook)

Exploitation routes

Source:



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets



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Department of Computer Science



Exploitation routes

- There are basically four ways of exploiting an invention:
 - A licensing agreement with a company
 - Business start-up: get your idea to market yourself
 - A joint venture
 - Outright sale of your idea

Licensing (αδειοδότηση)

- One or more companies enter into a licensing agreement with you that allows them to use your IP in return for payment to you.
 - Payment normally takes the form of **royalties** paid at agreed, regular intervals for the duration of the agreement.
- The exact terms of the licence must be **negotiated** in a process that can be lengthy (often many months) and complex.
- The licence is a binding legal document, so it is usually essential to involve patent attorneys and other legal professionals.

Negotiation skills

- PwC Workshop: Introduction to Negotiation

- Slides: <https://www.slideshare.net/ucyc4e/introduction-to-negotiation-skills>

- Second workshop on negotiation will be held in this fall - check C4E Announcements.



8)

[shop-](#)



Licensing benefits

- Broadly, a licence:
 - Benefits you by making the licensee reward you for the use of your IP.
 - Benefits the licensee by giving them a product or technology advantage over competitors.
 - Allows you or the licensee (depending on the terms of the licence) to take legal action against others who steal or copy the idea.

KEY INGREDIENTS IN A LICENCE

It takes a variety of different ingredients to prepare a good licence agreement. Each licence is unique, depending on the specific terms which are agreed. It is a bit like creating a new dish:

You need to pick the right ingredients – in the appropriate quantity and with the right treatment.

Take a peek into our cooking pot and learn more about key ingredients in a licence.



Licensing benefits

- For many inventors, licensing is the best way to benefit from an invention:
 - The licensee bears the costs and risks of production and marketing.
 - Only established companies may have the resources to exploit an idea with major potential.
 - Licensing can provide the inventor with an income over many years for relatively little effort.
- Some inventors - mostly in high technology fields - set up companies solely to license out their IP and monitor the progress of their licensing agreements. This is a possible option if you want to start your own business but do not want it to grow too large.

When to go for licensing?

- Types of invention that may be better licensed include:
 - **Components** that many companies depend on, such as the drinks can ring-pull.
 - **Accessories** or **peripherals** dependent on a specific existing product. These may have little future unless licensed to the company controlling the host product.
 - Products with **high set-up costs**.
- However, only the **strongest forms of IP** will interest potential licensees. In most cases this means a patent.
 - If your idea cannot be patented, or if the claims you are allowed are not very strong, few companies are likely to want a licence from you.
 - Even if they are interested, they may not want to pay much for the license.

- Business start-up may be your first choice if you have ambitions to be an entrepreneur, or it may be an option that you have to consider if you cannot interest any companies in a licensing agreement.
- Types of invention that may succeed as business start-ups include:
 - Products in **knowledge-based industries** - for example information technology or high-value medical technology - where small companies can thrive.
 - **Cheap-to-make products** which depend primarily on marketing.
 - Products that **cannot be patented strongly**.
 - Products that do **not have enough profit potential** to interest larger companies.
- Starting a business is not for everyone. However, experience suggests that inventors who become entrepreneurs tend to be more likely to succeed than those who rely on finding licensees.

Joint venture

- Another form of entrepreneurship: a **joint venture with a company - or an individual, or perhaps a university** - whose expertise and resources you need.
 - For example, your joint venture partner could be a company willing to help you to develop your idea further in order to give them a better idea of its potential.
- Such a joint venture is perhaps best viewed as an experiment that may or may not succeed. You should therefore **not expect to make a profit from it**.
 - If successful, it could result in a licensing agreement, a spin-off company or some other form of more permanent business relationship.

Outright sale

- It is possible that a company may offer to buy the IP in your invention for a fixed sum.
 - In the case of an invention with **good market potential**, it might be wiser to **refuse**.
 - But a sale may be worth considering if your idea is of relatively **low or short-term value**, both to the company and you.
 - The company benefits by not being tied for years to a licensing agreement.
 - You benefit from (a) a cash windfall and (b) freedom from all responsibilities and expenses of ownership of the idea, which may include the maintenance of patents.
- Much, of course, depends on the size of the sum offered. You should seek **professional advice on a realistic valuation** of your idea, but for both sides it will always be something of a gamble. You may regret it if the product goes on to make unexpectedly large profits. The company may regret it if the product fails to sell.

Invention promotion agencies

- Some companies would like you to think that there is a fifth option - **paying them to market your idea**. Be **very cautious about dealing with any such company**.
- Invention promotion companies tend to operate in broadly the same way.
 - They will offer to give you an opinion of the market prospects of your idea, for a fee of typically a few hundred euros.
 - They will usually send you a highly favourable report, with little or no mention of prior art. (It is not in their interests to tell you about prior art!)
 - They will then tell you that for a fee of several thousand euros, they can help you market your idea.
 - In many cases, their 'help' amounts to little more than a supply of stationery and a list of company addresses. You have to contact the companies yourself.
 - Often the invention promoter will be based in a different country from you, making it difficult for you to seek compensation.
- Untrustworthy invention promotion companies only thrive because of the gullibility of some inventors, so **you must be suspicious of anyone who praises your invention and offers to market it at your expense**.

Entrepreneurial option

- What if your idea is **not novel** but does have **commercial potential**?
 - If there is prior art for your idea but no commercial product, and you are convinced that a product could be successful, a possible strategy is to **stop trying to be an inventor and consider becoming an entrepreneur**.
 - Try contacting the owner of the IP in the idea. If the owner is not 'working' the IP, it may be worth discussing a deal in which you take a licence to exploit the idea.
 - Or there may be an existing product but it is not being sold in your country. You could consider becoming an **importer**, or a **manufacturer under licence**.
 - Or you might discuss with the IP owner the possibility of your redesigning or modifying the invention for a different application or a different market.
- If you are entrepreneurially minded, something may be possible!

Section 4

Outline



- From invention to commercial product
- Disclosure and confidentiality
- Assessing Novelty
- Competition and Market Potential
- Risk Assessment
- Exploitation Routes
- Prototyping and Proof of Concept
- Protecting your Invention

Section 4: From invention to commercial product (EPO Handbook)

Prototyping and Proof of Concept

Source:



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Proving the invention

- The need for **prototypes**: you need to prove - first to yourself, later to investors or companies - that your idea works.
 - For an invention that is a **process** or a **business method**, physical proof may **not be possible or necessary**.
 - For an invention that is a **substance** (for example, a new kind of shampoo), **samples** to test may be sufficient.
 - If your invention is a manufacturable product, you need to show it looking as close to a finished article as you can manage or afford. That usually means producing at least one and often a series of prototypes. This may be where your first serious costs begin, so you need to **plan** and **control** your prototyping activities.
 - For some inherently costly ideas you may need to seek funding for the prototype itself. In that case you must gather convincing evidence that your idea will work, and has the potential to make enough profit to justify the much greater level of risk.

Planning an MVP



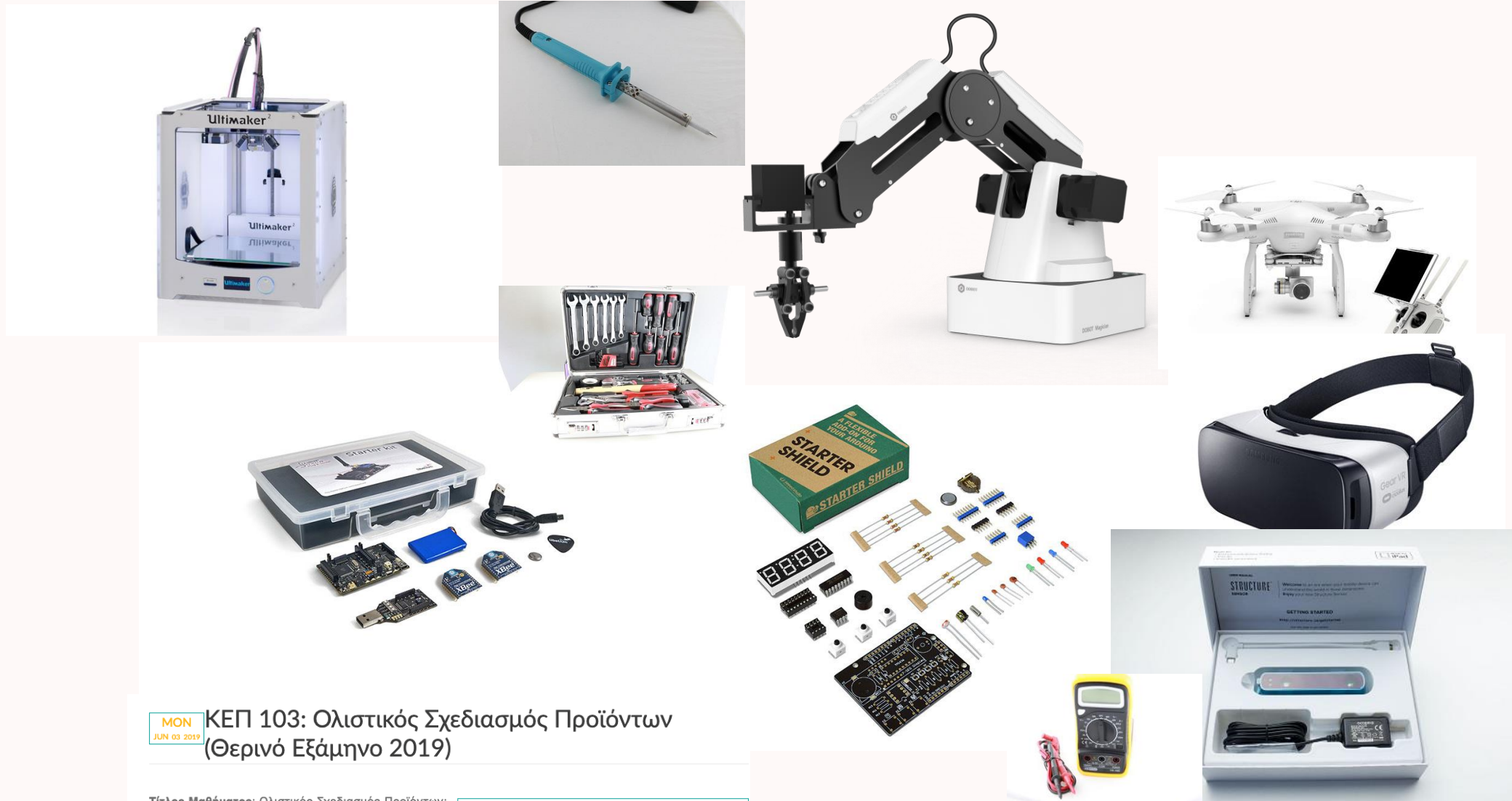
Watch the video from Y Combinator:



<https://www.startupschool.org/videos/65>

Prototyping @ UCY: C4E Makerspace

Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)



MON ΚΕΠ 103: Ολιστικός Σχεδιασμός Προϊόντων
JUN 03 2019 (Θερινό Εξάμηνο 2019)

Τίτλος Μαθήματος: Ολιστικός Σχεδιασμός Προϊόντων:
Από τον πραγματικό κόσμο στο ψηφιακό και
αντίστροφα.



<https://www.c4e.org.cy/activities/makerspace/>

Prototype Strategy: First prototypes

- First prototypes are **for you alone**. No one else need see them, so they can be made from any suitable cheap materials. Their purpose is:
 - To convince you that your idea works.
 - To enable you to solve or at least identify technical and design problems.
 - To enable you to improve the idea through trial and error.
- If you can, use computer aided design (**CAD**) for much of this stage.
 - CAD can save significant time and cost, and may provide you with much additional data that might be difficult or impossible to collect from physical prototypes.
- It is advisable **not to move beyond first prototype stage until you have done all the problem-solving and design refinement you can**. This may be frustrating, but solving problems or redesigning your idea at a later stage is likely to be much more **difficult** and **expensive**.

Finished or presentation prototypes

- These are the prototypes which you will use to demonstrate your idea to other people - in particular, to potential investors or licensees.
- They should look and perform **as much as possible like a finished product**. The main reasons are:
 - Most potential investors or licensees will want to see ideas with **as few unresolved problems as possible**, because that reduces their risk.
 - **Few people have the ability** to look at a rough early prototype and **visualise a finished, quality product**.
 - The closer your prototype is to a finished product, **the more you will learn about the design, production and cost aspects of your idea**. This knowledge will be invaluable when you need to convince people of the technical and commercial viability of your idea.
- You may need professional help to produce a finished prototype: for example, from a **product designer** or a **company that specialises in prototypes**. The cost may be worthwhile if it enables other people to understand more fully (a) the potential of your invention and (b) your own professionalism and commitment.
- However, if you use professionals try to **avoid unnecessary costs**. Designing and making an entirely original prototype will be expensive. Using at least some standard industrial components, or parts 'borrowed' from existing products, may be much cheaper.
- You must set a budget that balances **quality** and **affordability**, and you should always question any proposal that substantially increases cost for only a marginal gain in function or appearance.

Finished product

- Without doubt, **the best form of finished prototype is a saleable product.**
- You can prove that your idea sells, even if only on a small scale, and you have a supply of samples to speed up evaluation by companies.
- This strategy will not be suitable for every invention, but it may be worth considering if there is relatively little difference between the cost of a single prototype and the cost of a trial batch of, for example, 100 further units.
 - In most forms of manufacturing, the **greatest cost is the set-up**; the **products themselves cost relatively little.**

Working prototype plus model

- If you cannot afford a high quality prototype, an acceptable alternative may be a combination of the best of your **first prototypes** (to demonstrate performance) and a **non-working model** (to demonstrate appearance).
- For the **model** you can use any cheap workable material - for example, painted wood to represent plastic.

A short video

- A video may be essential support material if:
 - Your prototype has a lengthy operating cycle.
 - Demonstrating your prototype requires a site visit or a special environment.
 - You have to show people using your prototype.
 - Your prototype cannot be guaranteed to work on every occasion.
 - You need to record a unique event: for example, trials of your prototype tested against competing products.
- Edit the video to **no longer than a few minutes** so that it does not occupy too much time during a typical first meeting of 30-45 minutes.
- **Video can be easily copied and will count as disclosure**, so be careful to ensure that (a) your idea has **adequate legal protection** and (b) you **do not allow unauthorised viewing and copying** of the video. The video itself **should be protected by copyright!**

Other support materials

- Additional material that may help you present your idea could include:
 - **Product packaging.** This may be expensive to do well, and so may only be worth the effort if packaging is of more than usual importance to your target market.
 - A **draft advertisement or brochure** to show how you see the product being marketed.
 - A **website** on which you can put information about your idea (**landing page**). This can be an inexpensive way of meeting business information needs.
- However, seek advice from a patent attorney to ensure that you do not disclose anything that may compromise a future patent application.

Help with design or re-design

- **Design** - in terms of both **function** and **appearance** - is a key factor in the success of commercial products. You therefore need to think about the design of your invention from day one, because its potential may not be recognised if all other people can see is an impractical or unappealing design.
- An [experienced product designer](#) can help you deal with manufacturers or component suppliers, either at prototype or full production stage.
 - Manufacturers need detailed specifications before they can make anything, and if queries or problems arise they need to talk to someone who is technically knowledgeable.
- The [cost](#) of professional design may be [offset](#) if your designer can find ways of improving product quality or reducing manufacturing costs through good design.
- However, if your designer contributes ideas which significantly improve your invention, the designer may be legally entitled to a share of the IP.
 - You should [first discuss how any new IP in the idea will be shared](#), in order to prevent disputes arising later. Your agreement should be based on advice from a patent attorney and documented before work starts.

Manufacturing prototypes

- If you need to involve a manufacturer in prototyping your idea, ask several companies for prices as manufacturing costs can vary widely.
- Small companies tend to be cheaper and more prepared to accept very small orders. Larger companies tend to be cheaper only at high volume, but for that reason it may be useful to know how cheaply your product could be manufactured in larger quantities.
- Ask for prices based on the detailed drawings that you or your designer have produced but make sure that those drawings represent exactly what you want.
 - A late request for even a minor modification may increase costs considerably.

Proof of concept

- If you cannot make a prototype without financial help, you must focus on **proof of concept**: presenting enough evidence to persuade an investor or innovation support organisation to pay for at least a prototype.
- In producing proof of concept, your aim should be to make it difficult for anyone to say, *'You have not told us this'* or *'Where is your evidence for that?'*
 - You must produce detailed and credible data - including mathematical proof where relevant - to support every technical claim you make for your idea. You must also make a strong case that your idea has excellent commercial prospects.
- It may help greatly if you can produce independent expert evaluations of your idea alongside your proof of concept. For example, it may be possible to obtain expert opinion at relatively low cost from a university that specialises in your technology area.

Subcontracting product development

- Armed with proof of concept, it may be possible to approach a company specializing in product development and prototyping.
 - They may be prepared to develop your invention in return for a stake in your IP.
- This solution may be worth considering if it is clear that your idea cannot be developed or even prototyped without substantial funding and specialist expertise.
 - However, companies willing to share the product development risk are likely to consider only ideas with outstanding profit and growth potential in high-value markets.
 - They may have little interest in 'ordinary' consumer products.
 - For that reason, they typically reject most of the ideas offered to them for development.
- Such companies should not be confused with invention promoters. None-the-less, they should be selected with care:
 - You could start by seeking impartial advice from government approved technology support agencies.
 - Before entering into any agreement to share your IP, you will certainly need detailed advice from your own patent attorney.

Section 4: From invention to commercial product (EPO Handbook)

Protecting your invention

Source:



Europäisches
Patentamt
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Protecting your idea

- At some point you must legally protect your intellectual property (IP) or you will not be able to:
 - Disclose it safely.
 - Be recognised in law as its owner.
 - Profit from its commercial exploitation.
 - Prevent or discourage its unauthorised use by others.
- There are several forms of protection known as intellectual property rights (IPR). Usually, the best way to protect an invention as it evolves is to **use a strategic combination of IPR**.
- Many inventors assume that the only way to protect their idea is to patent it. While patents tend to be of primary importance, other forms of IPR should also be considered. One or more of these may have an important role to play in protecting your idea.

- **Confidential information** and **non-disclosure agreements** (NDAs)

- Although not covered by any statutory IPRs, confidential information is closely related to, and often regarded as, intellectual property.
- The most common form of protection for confidential information is a **non-disclosure agreement (NDA)**. An NDA can protect you by documenting someone's promise not to use or pass on information about your idea. Anyone who breaks the terms of an NDA risks legal action.
- NDAs can help to protect you at every stage of the development of your idea - no matter what other forms of IPR you have, and even long after your invention is on the market.
- You can find many [free examples of NDAs on the internet](#). It may however be wise to [seek the advice](#) of a patent attorney when constructing your own version.
- Your main problem is likely to be persuading other people to sign your NDA. Many large companies take the view that NDAs only have a use when they are seriously interested in an idea. That can only be after they know what it is! ([To overcome this problem, train yourself to communicate the business benefits of your idea without disclosing its novel aspects.](#))
- [NDAs are widely used](#) in all forms of business, so you should certainly consider using them yourself. But remember that they are binding legal agreements, and use them only when both parties accept that significant disclosure is necessary.
- In addition, NDAs can only restrain others from disclosing or exploiting specific and unique secrets which they get only from you. Any information that is already general knowledge is free for anyone to continue using, regardless of the NDA. Similarly, if the confidential information covered by the NDA later becomes public knowledge by some other means, then the original parties to the NDA will no longer be bound by it.

- **Know-how is undocumented information known only to you.** It is similar to trade secrets. Without your know-how, others may find it difficult or unrewarding to exploit your idea. For example, you may know how to reduce production costs significantly by using conventional equipment in an unconventional way.
- Know-how can be commercially valuable, and can be included in licensing agreements. However, genuinely valuable know-how is rare. There is also no way of registering it and its theft - usually by employees or associates - can be hard to establish.
- Furthermore, if your know-how is information that ought to be included in a patent, you may risk invalidating the patent by leaving it out. You should always seek the advice of a patent attorney when considering what to treat as know-how.

- Copyright protects for many years against the **unauthorised copying** or **adapting** of **drawn, written or photographic descriptions of your idea**. It **does not protect the idea itself**, but in some cases - for example computer code - may be the only effective way of protecting your IP.
- **Copyright arises automatically and is free**. It is important because it can easily establish dates of origin of an idea, or of changes to an idea. However, it gives you **no protection** against someone who independently comes up with the same or a similar idea. A competitor may say that their idea is similar to yours by coincidence, or that your idea is a copy of theirs.
- How can you prove that your idea was the original? The following steps may help you to prove that you are the copyright owner in a later dispute:
 - Make written descriptions, drawings, photos etc of your idea and print them out or perhaps burn them to a CD or DVD.
 - Place your documents or disc in a **securely sealed envelope bearing a signed and dated statement from an independent witness**, certifying that the envelope was sealed on the date when he or she examined it.
 - **Send the envelope by registered mail to yourself** or a place of safe keeping, and keep the clearly dated postage receipt.
 - The envelope must remain unopened until required by a court of law. (It may be advisable to have more than one envelope, in case your copyright claim is tested more than once. An opened envelope is no longer valid as proof of copyright.)

Unregistered design right (UDR)

- In the EU, [unregistered design right \(UDR\)](#) protects the **outward appearance of a product**, including its shape, pattern, texture and decorations. In some national UDR laws (for example, the UK) internal configurations may be protected even if these are invisible to the user.
- UDR is similar to copyright in that it is free and gives you a right to prevent unauthorised copying for a number of years. However, there is no official design right register and so it can be difficult for others to know of your design.
- UDR may protect those features of the design which are new, have an individual character, and which come from a 'freedom' of design. It may not protect copied or routine designs; those which are immediately suggestive of other designs; and those parts of a design which are dictated by functional needs to fit or match with other components.
 - For example, a novel wing tea pot can be shaped in many different ways, and so can be protected because the designer has exercised his or her design 'freedom'. But a vehicle brake pad can only have one shape if it is to fit in the brake callipers. It therefore has no design 'freedom' and so no protection.
- UDR arises automatically when the design is created, but you should follow the same 'sealed envelope' procedure described above for copyright to provide yourself with evidence of a priority date. This is because you can only take legal action against someone when you can prove that they must have copied your design, rather than made something similar by coincidence.
- Though often useful as part of an IPR strategy, UDR on its own will not protect most inventions.

Design registration

- More robust protection for designs comes through formal registration, which can last **up to 25 years**. Applications can be made to most [national IP offices](#), or to the [European Union Intellectual Property Office \(EUIPO\)](#) where a single application can be registered for the whole of the European Community.
- The same criteria apply as for UDR: to be validly registered the design must be new, have 'individual character' and be the result of a 'freedom' of design. A [single registration may protect patterns, ornaments, decorations and logos](#) which are suitable for application across a range of articles (for example, a floral design applied to table linen, bedding, curtains, crockery etc).
- You can take action against anyone who makes, sells, uses or imports articles which look like the article registered. Unlike UDR, there is no need to prove that another design was copied from yours - you only need to prove that it looks similar. Even designs which are similar by accident can be challenged by the owner of a registered design.
- The application process is fast and relatively cheap, but design registration usually only makes sense if the outward appearance of your invention is going to be a strong selling feature.

- A trade mark can be a **word, slogan, logo** or combination that distinguishes your product or business from others. Trade marks can be valid indefinitely if correctly used and maintained, so a trade mark associated with a popular brand name can be of enormous value to its owner.
- The granting and registration of trade marks is administered by national IP offices, to whom you apply. For multinational cover you can make a single application for either an **International Trade Mark** under the Madrid system at the World Intellectual Property Organization (WIPO), or a **Community Trade Mark** (for protection in the EU) at the EUIPO. To avoid problems, you will probably need help from a trade mark attorney. (Many patent attorneys are also trade mark attorneys.)
- Trade marks do not protect ideas, or products per se. But if you want to market your own invention, a trade mark could be a very worthwhile long-term investment. It might eventually become your most valuable form of IPR.

- Patent systems exist in most countries and their purpose is to encourage the development of new technologies. A patent is [a form of legal monopoly](#) - the right to say: 'This is mine and you cannot use it without paying me' - which governments grant in return for public disclosure of ideas. And that is all it is.
- It is important to understand what a patent can and cannot do. [Patenting your idea will not necessarily increase its commercial value](#). If no one wants your invention, a patent is unlikely to make any difference. But [if your invention has commercial potential, a patent may be your only way of ensuring that you can benefit financially from it](#). Many inventors of commercially successful products acknowledge that they owe their financial rewards almost entirely to strong patent protection.
- The cost and complexity of patenting can be a problem for many inventors. Therefore, a decision to apply for a patent should never be taken without careful consideration of several factors. You should ideally seek the advice of a patent attorney before making your decision.
- If you decide to go ahead, you should let a patent attorney represent you during the lengthy, complicated and rigorous application process. If you do not use a patent attorney, you run a large risk of making mistakes which could leave you with no effective patent protection. There may then be little prospect of ever benefiting from your invention.
- In general, [patents last for 20 years](#) but [only if annual renewal fees are paid](#).

The patenting process

- An invention is patentable only if it is:
 - New and previously undisclosed.
 - Distinguished by an inventive step **not obvious to someone expert in that technology**.
 - **Capable of industrial application** - that is, it is physically possible to make the invention.
 - Computer software on its own can be protected by copyright but **not by patents** in Europe. However, an invention that is implemented on computers by means of software - for example, an improved data handling system - is patentable in Europe. You will certainly need the advice of a patent attorney when patenting inventions which are run on computers because practice can differ between Europe and the USA.
- Business methods may be patentable in the USA but not easily patentable elsewhere.
- Always seek advice from a patent attorney if you have concerns about whether your idea is patentable.

Issues to consider

- **Do you really need a patent?** Would some combination of other forms of IPR protect your idea adequately? And be honest with yourself - are you perhaps motivated more by vanity (the prospect of a patent in your name) than by commercial necessity?
- **Have you studied the total cost of patenting** (which should include annual renewal fees in every country in which you have protection)? **Is your invention likely to earn enough income to justify the cost?** Normally, you should not apply for a patent until you have thoroughly researched the commercial and financial potential of your idea.
- **Is the time right to apply for a patent?** Application starts a sequence of events which cannot be delayed. Do you apply for a patent early on, or wait until the invention is market-ready and more capable of quickly recouping its IPR costs? Later may be better than sooner, but circumstances will vary so you should always seek the advice of a patent attorney.

Issues to consider

- **Does your invention have a short product life cycle?** Patenting process typically takes **3-4 years**. If your invention is aimed at a highly competitive market in which products are rapidly replaced or improved, your patent may be worth little by the time it is granted.
- **Who will pay to enforce your patent?** National IP offices do not enforce patents or monitor them for **infringement**. These are the responsibilities of the patent owner or a licensee. Until funds are potentially available to enforce your patent - from royalties or sales income - it may offer limited practical protection.
- **How strongly might your patent resist legal challenge?** You will definitely need a patent attorney's advice on the strength of your claims: the validity of patent claims is often challenged, usually by competitors who want to copy a successful product. If they succeed, you may be left with a valueless patent and an order to pay the victor's legal costs.

Applying for a patent

- Applying for a patent is a legal process governed by strict timescales and usually immovable deadlines. It is not something to rush into!
- To maximise your chances of a worthwhile patent you should:
 - Study the application procedure in detail.
 - Aim to apply not in haste, but strategically - at a time and for a reason that most benefits your exploitation plans.
 - Use a patent attorney! Do not do it all yourself - the risk of making mistakes is too great.
- See guide for the application process for a **European Patent** according to the European Patent Convention (EPC): <https://www.epo.org/applying/basics.html>
 - Applying for a patent at a **national IP office** is roughly similar to stages 1-6 below, but an application must be made in the local language.
 - Making an **international application** through the **Patent Co-operation Treaty (PCT)** involves a single procedure for stages 1-4 (below) but 30 months after filing the application goes through stages 5 and 6 in every national or regional IP office where you wish to take up protection. For more information on the PCT see www.wipo.int/pct

Where to apply?

- Choosing your route for a patent application (EPC, PCT, national and regional, or combinations thereof) will depend on:
 - Your invention.
 - Your business plan.
 - Your available funds.
 - Your intended market.
 - The likeliest sources of infringing products.

Applying for a patent: Stage 1

- Your patent attorney must provide documentation consisting of:
 - A request for a patent.
 - Details of the applicant (you).
 - A description of the invention.
 - Claims.
 - Drawings (if any).
 - An abstract.
- A fee must also be paid. In order to avoid delay, it is vital that all documentation conforms in every detail to official requirements. Your patent attorney will ensure that it does. At the EPO, applications are accepted in English, French or German.
- For your patent attorney to prepare all the information about your invention, he or she will obviously need to work closely with you. Do not assume that you know best because it is your invention. You must trust the skill and judgement of your patent attorney, as patenting involves a complex mix of law and technology. The claims in particular need to be drafted with skill, as they are the most important aspect of a patent.

Stage 2: Filing date & initial examination

- If your documentation appears correct, your application is given a **filing date** - also known as your **priority date**.
 - After filing there is a formalities examination to ensure that your documentation is correct and complete.
- At any time in the next 12 months you can file for patent protection in other countries and have those later filings treated as if they had been filed on your priority date.
 - In practice, this gives you a year to decide how many countries you wish to include in your patent protection.

Stage 3: Search

- A search report is sent to you, listing and including copies of all prior art documents found by an experienced examiner and regarded as relevant to your invention.
- The search is based mainly on your claims for novelty, but your description and any drawings will also be taken into account.
- The report will often include an initial opinion on the patentability of your invention.

Stage 4: Publication

- Your application is published **18 months after the filing date**. Your invention will appear in databases accessible to other people around the world. It will **act as prior art** against any future patent applications from other inventors or companies for similar inventions.
- You then have **six further months** to make two decisions:
 - Do you want to continue with your application? You indicate 'yes' by requesting a more thorough ('substantive') examination.
 - Which countries do you want to include ('designate') in your patent protection? Designation fees must be paid.
- After your patent is granted, you may claim damages for infringements originating **as far back as the publication date of your application**.
 - However, to enjoy this right in some countries it may be necessary to file a translation of your claims with their national IP office and for them to publish the translated claims.

Stage 5: Substantive examination

- If you request substantive examination, the EPO has to decide whether your invention and your application meet the requirements of the European Patent Convention.
- For maximum objectivity there are usually three EPO examiners, one of whom maintains contact with your patent attorney.
- This stage will often involve dialogue between the examiners and your patent attorney, which may result in the re-drafting of key parts of your application.
- Your patent attorney will defend your application, and this is one more reason why it is essential to have professional representation.

Stage 6: Decision to grant a patent

- If the examiners decide to grant a patent, and all fees have been paid and any claims translations filed, the decision is reported in the European Patent Bulletin.
- The decision to grant takes effect on the date of publication.

Stage 7: Validation

- What you have now got is a 'bundle' of individual national patents.
- After the EPO decision to grant is published, your patent has to be validated in each designated state within a specific time limit.
- If this is not done, your patent may not be enforceable in that state.
- In some states, validation may include having to file (and pay for) a translation of the whole patent, or just a translation of the granted claims.

Stage 8: Opposition

- A granted patent may be **opposed by third parties** - usually the applicant's competitors - if they believe it should not have been granted.
- After the grant is reported in the European Patent Bulletin they have **nine months** in which to **file notice of opposition**.
 - The most common charge is that the invention is not novel or lacks an inventive step. The case will be examined by an EPO team, again of three examiners.
- Opposition is the last chance to attack a European patent as a single entity in a single forum.
- Later, the patent can only be challenged in national courts and a ruling in one country has no effect on the patents for the same invention in other countries.
- This gives competitors a strong incentive to challenge an invention during the opposition period, as challenging patents in separate national courts can be much more expensive.

Stage 9: Appeal

- All EPO decisions are open to appeal.
- Responsibility for decisions on appeals is taken by independent boards of appeal.

Patenting strategy

- There is more to patenting than simply meeting the formal requirements of a patent office.
- You should try to fit your patent application into the broader framework of developing your invention.
- Points to discuss with your patent attorney may include these:
 - When to apply
 - Pressure to patent
 - Continuing prior art searching
 - Licensing or business start-up?
 - Re-filing
 - Temporary advantage
 - Funding

When to apply?

- Because of the formality of the patent application process, the timing of your application may make a big difference to the pressures you find yourself under later.
- **Is it better to apply for a patent earlier, or later?**
 - There is no easy answer to this question. Many inventors are keen to apply for a patent as early as possible - yet **many successful companies delay filing until products are almost ready for market.**
 - One disadvantage of early filing is that you may incur **substantial costs** before you know whether your idea is commercially viable. Applicants have up to two years from filing before becoming liable for significant patent fees, but this is rarely long enough to reach a licensing agreement with a company. It may not even be long enough to establish the commercial prospects of an invention.
 - One **disadvantage of late filing** is that someone may file a very similar idea before you.
- For many private inventors, **cost will be a major factor. The later you file, the longer you delay the costs.** But how late can you afford to leave it?
- As long as he or she knows all the facts, your patent attorney may be able to identify an optimum date for filing, and advise on the steps you can take to protect your idea in the meantime.

Pressure to patent

- You may be tempted to apply for a patent prematurely because business advisers or potential licensee companies tell you that this is what you should do.
- Always consider whose interests are best served by this advice. In many cases there will be little benefit in it for you.

Continuing prior art searching

- The world does not stand still once you have filed your application.
- You must keep up your patent and product searching, as something may happen after you have filed which may affect your later decision whether to continue with your application.

Licensing or business start-up?

- The period between filing and requesting substantive examination should be used to seek opportunities to exploit the invention.
- Even if your preference is a licensing agreement, it may be worth setting a date after which you plan instead for business start-up.
- The reason is that if no company shows interest in your idea, you do not want to reach substantive examination stage with no other option to pursue.

Re-filing

- You may be able to gain extra time to seek a licensing agreement by withdrawing your application and re-filing it later.
- This is a tactic that you must discuss with your patent attorney, or you may lose more than you gain.

Temporary advantage

- It is possible to use a patent application for purely temporary advantage, and to [decline substantive examination](#).
 - For example, you might wish to use it to protect your idea for long enough to achieve your exploitation objectives.
 - Again, you must discuss this with your patent attorney as there may be risks that you have not considered: One almost certain outcome of abandoning an application is that you will find it much more difficult - in fact, probably impossible - to license your invention to anyone.
- Just having your patent application published may be enough. Once published, potential customers and business partners can find out about your invention and contact you if they are interested.
- Your published application will also be prior art, which could prevent competitors from patenting the same or a similar idea in the future. This might leave you free to operate in that market even if your application is not subsequently granted.
- If this suits your business strategy, you might then choose to go no further with the patenting process, especially if you could not afford the expense of acquiring or subsequently enforcing a patent.

Funding

- A granted patent may help persuade investors that your idea is worth backing, and by that means the cost of patenting may be covered.
- You should therefore think of a patent not just as a means of protecting the idea, but also as an instrument for raising funding.

Knowledge Check



- Describe the difference between Invention, Research, Innovation
- Explain how AlphaGo became a source of future Innovation
- What is the business model that Martin Luther disrupted?

Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

MAI 622: AI Entrepreneurship



MAI 622: AI Entrepreneurship- Module 2

Business Modeling



Module 2

Contents



- The Business Model Canvas
- The Mission Statement
- The AI-First Company

Planning



Week 3 and 4:

- 4 90-minute lectures
- 2 60-minute precepts

Learning Objectives

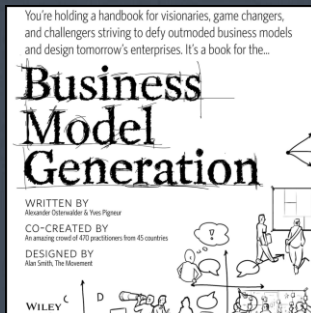


After attending this module, studying the suggested readings, and watching proposed videos students should be able to:

- Understand the concept of **Business Model** and its **key constituents**.
- Recognize and apply the **Business Model Canvas** methodology to develop a business model.
- Understand, recognize and explain the concepts of **multi-sided markets, platforms, SaaS, the Gig economy** and the “**attention**” economy, and **network effects**.
- Understand and explain the particular characteristics and challenges of **AI companies**.
- Understand **how to prepare a mission statement** for your company and **create meaningful mission statements**.

Module 2

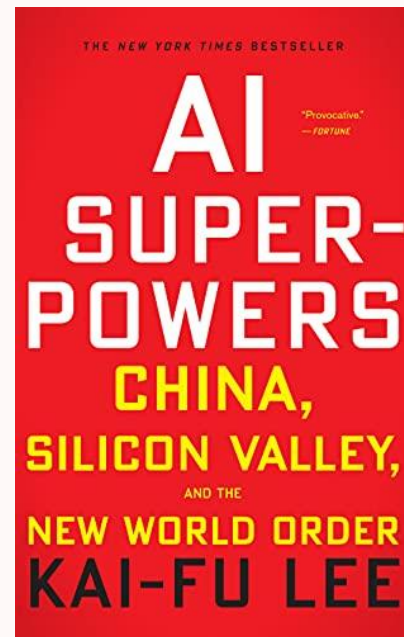
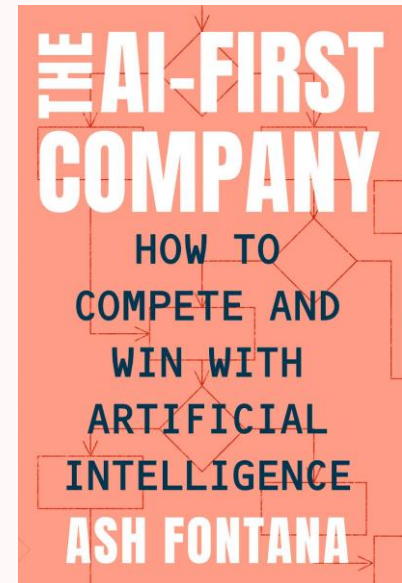
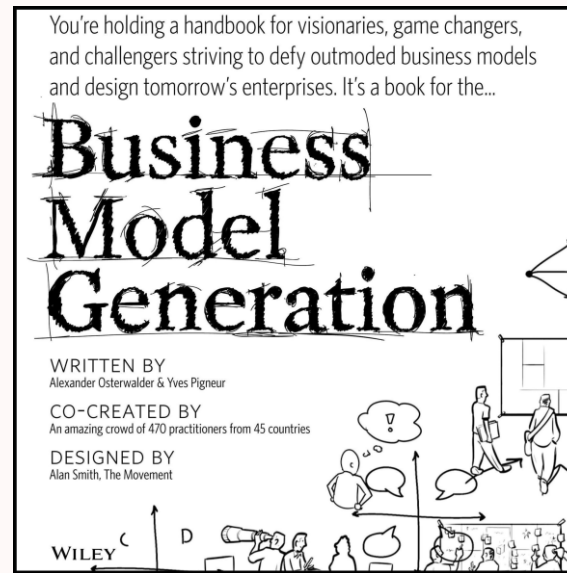
Reading List



- **Business Model Generation**, Alexander Osterwalder and Yves Pigneur, Wiley 2010.
- **The Startup Scorecard** for product opportunity evaluation.
 - <http://nealcabbage.com/framework/opportunity-heuristics/>
- **The mission statement: The basis for startups' strategic planning**
 - <https://learn.marsdd.com/mars-library/the-mission-statement-the-basis-for-startups-strategic-planning/>
- **How to define a mission and vision for your startup.** 2014
 - <https://ideamensch.com/how-to-define-a-mission-and-vision-for-your-startup/>
- **30 Inspiring Billion-Dollar Startup Company Mission Statements** by Larry Kim.
 - <https://www.inc.com/larry-kim/30-inspiring-billion-dollar-startup-company-mission-statements.html>



Reference Readings



Online Videos & Courses



- **From Business Ideas to Business Models, Strategyzer**
 - <https://youtu.be/wwShFsSFb-Y>
- **Business Model Canvas, Strategyzer:**
 - <https://youtu.be/wIKP-BaC0jA>
- **Is there any space for more e-commerce or gig-economy startups?** James Mi, Founding Lightspeed China Partners (LCP), (2018).
 - <https://youtu.be/XGVUEjWJTEM>
- **Interview of Cindy Mi, founder and CEO of VIPKID, with the Y Combinator (2019)**
 - <https://www.youtube.com/watch?v=EoffBerre24>

Online Videos & Courses



- From Business Ideas to Business Models, Strategyzer:
 - <https://youtu.be/wwShFsSFb-Y>
- Business Model Canvas, Strategyzer:
 - <https://youtu.be/wIKP-BaC0jA>
- Business Model Canvas explained, Strategyzer:
 - <https://youtu.be/QoAOzMTLP5s>
- The Business Model Canvas - 9 Steps to Creating a Successful Business Model by Business Channel.
 - <https://youtu.be/IP0cUBWTgpY>
- The Business Model Canvas course at Coursera:
 - <https://www.coursera.org/learn/business-model-canvas>

Module 2: Business Modeling

Section 1: The Business Model Canvas



Business Model Canvas



- Business Model: Introduction
- Customer Segments
- Value Proposition
- Channels
- Customer Relationships
- Revenue Streams
- Key Resources
- Key Activities
- Key Partnerships
- Cost Structure
- Mission Statement

Business Model

Describes the rationale of how an organisation

creates,

delivers, and

captures

value

The business model is like a **blueprint** for a strategy to be implemented through organizational **structures, processes,** and **systems.**

Business Model description

- A business model can be described through **nine basic building blocks** that show the logic of how a company intends to make money.
- The nine blocks cover the **main areas** of a business.
 - Which are ??

Main areas of a business

- Customers
- Offer
- Infrastructure
- Financial viability

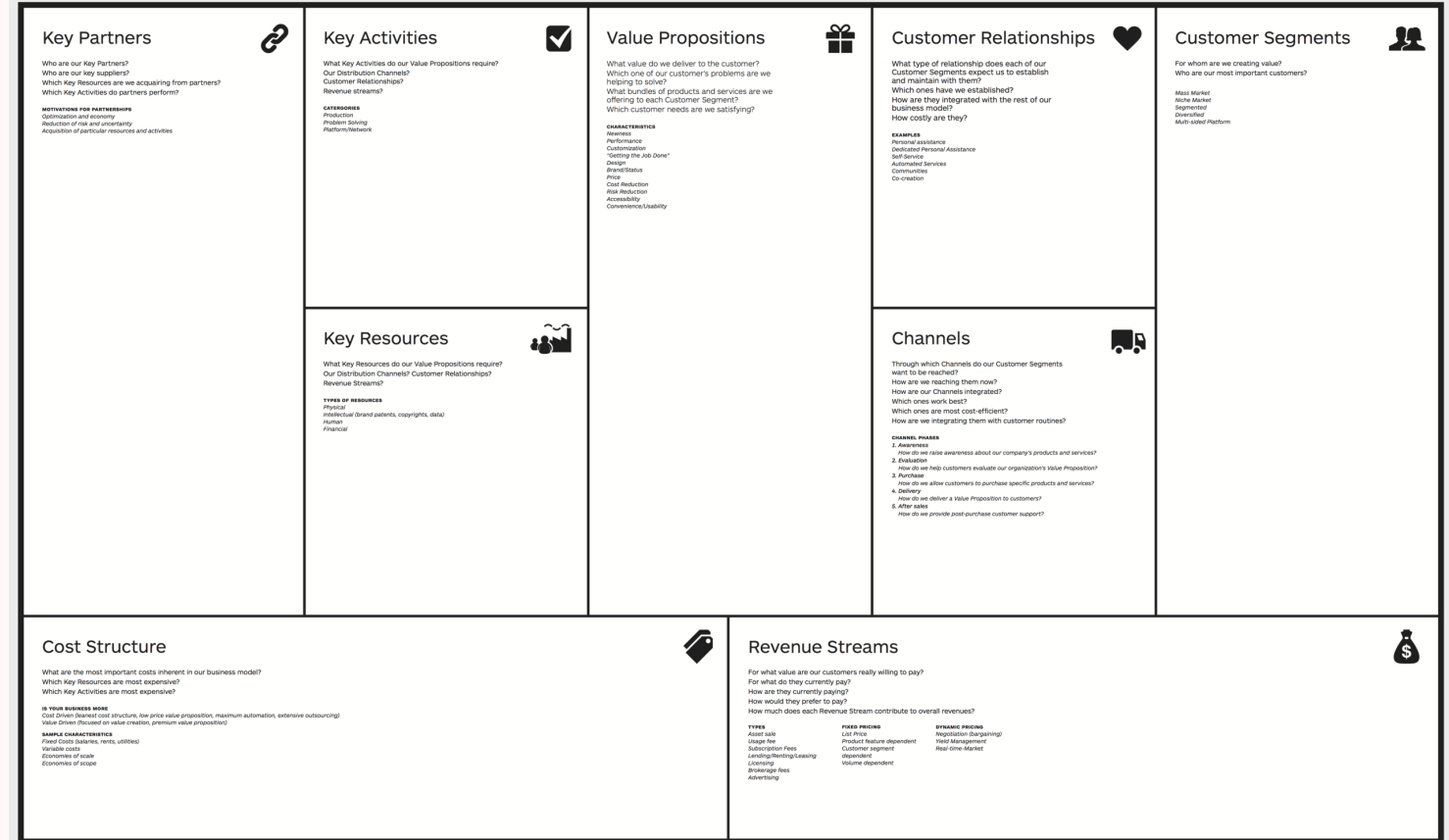
The Business Model Canvas

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Designed by:

Date:

Version:



Assignment



Search for online tools and apps that can help you develop and elaborate business model canvases and ideation workshops

- Look at <https://miro.com/> and other offerings

Business Model Canvas



- Business Model: Introduction
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Customer segments

Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

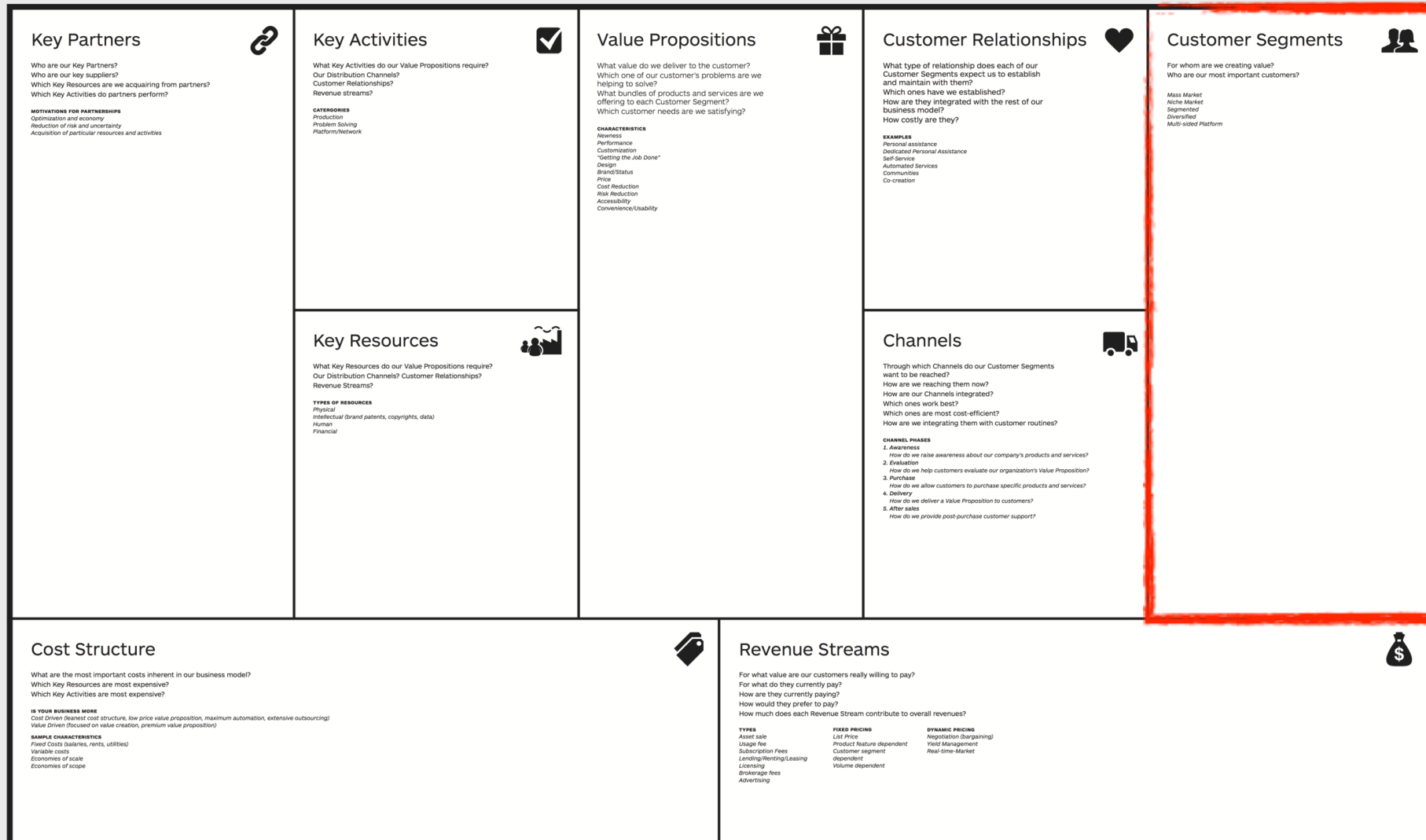
The Business Model Canvas

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Customers comprise the heart of any business model.

Without (profitable) customers, no company can survive for long.

- The Customer Segments Building Block defines the **different groups of people or organizations** an enterprise **aims to reach and serve**.
- In order satisfy customers, a company may group them into segments with **common needs**, **common behaviours**, or other **attributes**.
- An organization must make a conscious decision about which segments to **serve** and which segments to **ignore**.
 - Once this decision is made, a business model can be carefully designed around a strong understanding of specific customer needs.
 - The business model may define **one or several large** or **small** Customer Segments.

Customer segment identification

- Customer, groups represent **separate segments** if:
 - Their **needs** require and justify a **distinct** offer.
 - They are reached through different **Distribution Channels**.
 - They require different types of **relationships**.
 - They have substantially different **profitabilities**.
 - They are willing to pay for different **aspects** of the offer.

Mass markets

- The Value Propositions, Distribution Channels, and Customer Relationships all focus on **one large group of customers with broadly similar needs and problems.**
- Business models focused on mass markets don't distinguish between different Customer Segments.
- Found in consumer electronics sector.

- The Value Propositions, Distribution Channels, and Customer Relationships are all tailored to the **specific requirements of a niche market**.
 - Such business models are often found in **supplier-buyer relationships**.
- Business models targeting niche markets cater to specific, specialized Customer Segments.
- E.g: many car part manufacturers depend heavily on purchases from major automobile manufacturers.

Segmented markets

- An organization with a **diversified customer business model** serves two unrelated Customer Segments with very different needs and problems.
- The retail arm of a bank like Credit Suisse, for example, may distinguish between:
 - a large group of customers, each possessing assets of **up to \$100,000**, and
 - a smaller group of affluent clients, each of whose net worth **exceeds \$500,000**.
 - Both segments have similar but varying needs and problems.
- This has **implications** for the other building blocks of Credit Suisse's business model, such as the Value Proposition, Distribution Channels, Customer Relationships, and Revenue streams.
- Micro Precision Systems, which specializes in providing outsourced micromechanical design and manufacturing solutions, serves three different Customer Segments and offers each slightly different value propositions:
 - the watch industry, the medical industry, and the industrial automation sector

Diversified



- An organization with a diversified customer business model serves **two unrelated Customer Segments** with very **different needs** and **problems**.
- For example, in 2006 Amazon.com decided to diversify its retail business by selling “cloud computing” services: online storage space and on-demand server usage. Thus it started catering to a totally different Customer Segment—Web companies—with a totally different Value Proposition.
- The strategic rationale behind this diversification can be found in Amazon.com’s powerful IT infrastructure, which can be shared by its retail sales operations and the new cloud computing service unit.

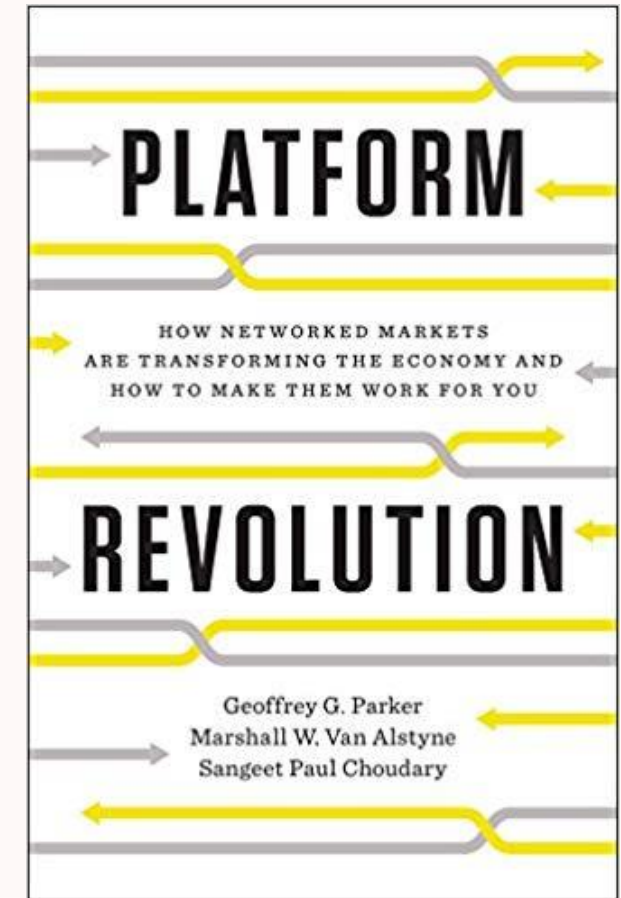
Multi-sided platforms (or markets)

- Some organizations serve **two or more interdependent Customer Segments**.
 - A credit card company needs a large base of **credit card holders** and a large base of **merchants** who accept those credit cards.
 - Similarly, an enterprise offering a *free news- paper* needs a **large reader base** to attract advertisers. On the other hand, it also needs **advertisers** to finance production and distribution.
 - Both segments are required to make the business model work.

Reading Assignment



- Check out the following books:



Reading
Assignment

Online Videos & Courses



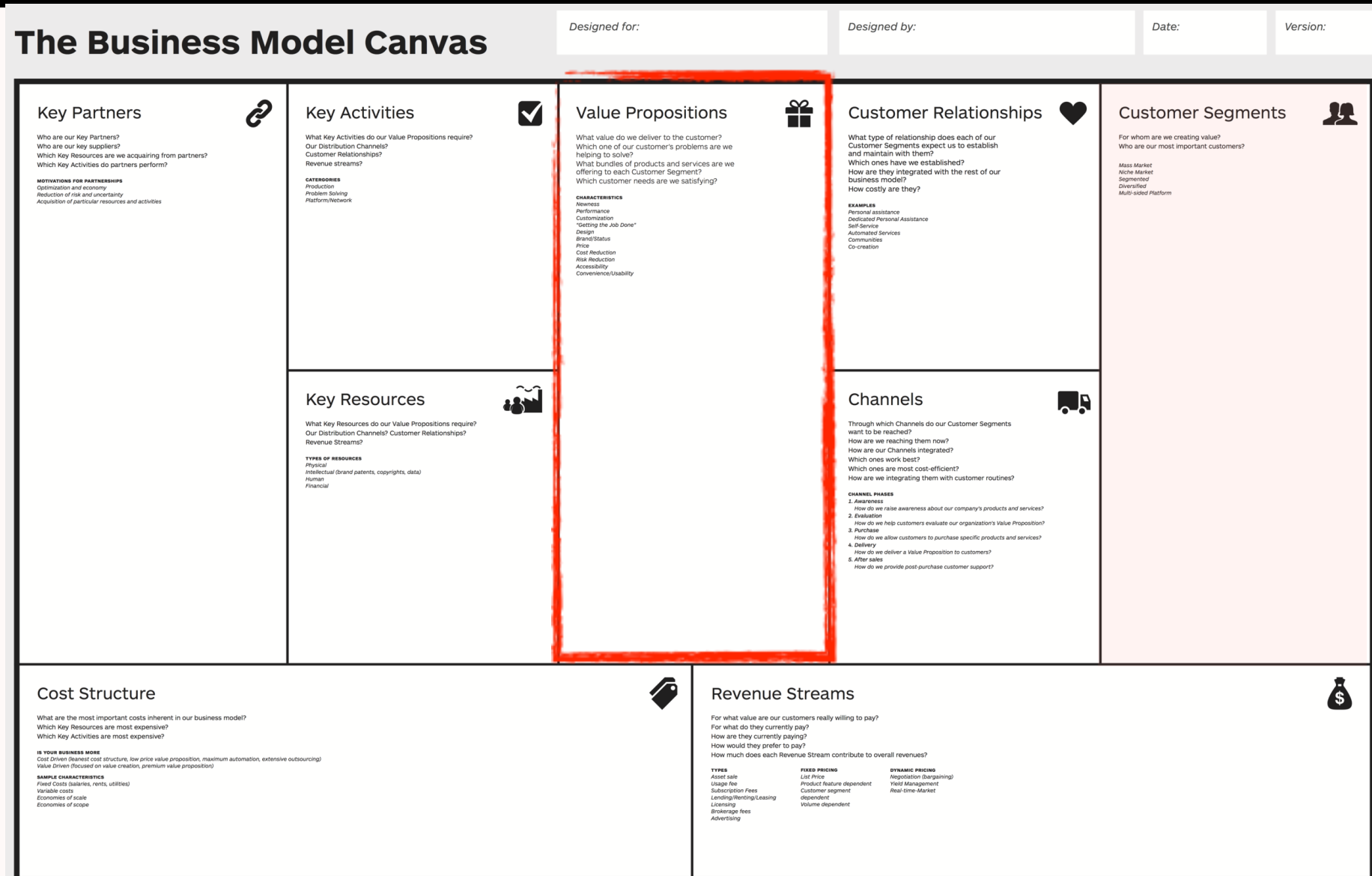
- **Is there any space for more e-commerce or gig-economy startups?** James Mi, Founding Lightspeed China Partners (LCP), a leading China-focused early-stage venture capital firm (2018).
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Business Model Canvas



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Value Propositions



Value Proposition

- Describes the bundle of products and/or services that caters to the requirements of a specific Customer Segment.
- It is an aggregation, or bundle, of benefits that a company offers customers.

Key questions re Value Prop.

- What **value** do we deliver to the customer?
- Which one of our customer's **problems** are we helping to solve?
- Which customer **needs** are we satisfying?
- What bundles of products and services are we **offering** to each Customer Segment?

Value Proposition characteristics

- A Value Proposition creates value for a Customer Segment through a distinct mix of elements catering to that segment's needs.
- Some Value Propositions may be **innovative** and represent a new or disruptive offer.
- Others may be similar to existing market offers, but with **added features** and attributes.
- Values may be **quantitative** (eg. price, speed of service) or **qualitative** (eg. design, customer experience).

How to create value?



How to create value?

- **Novelty:** Some Value Propositions satisfy an **entirely new set of needs** that customers previously didn't perceive because there was no similar offering. This is often, but not always, technology related.
 - *Cell phones*, for instance, created a whole new industry around mobile telecommunication.
 - On the other hand, products such as *ethical investment funds* have little to do with new technology.

How to create value?

- **Performance:** Improving product or service performance has traditionally been a common way to create value.
 - The PC sector has traditionally relied on this factor by bringing more powerful machines to market. But improved performance has its limits. In recent years, for example, faster PCs, more disk storage space, and better graphics have failed to produce corresponding growth in customer demand.
- **Customization:** Tailoring products and services to the specific needs of individual customers or Customer Segments creates value.
 - In recent years, the concepts of mass customization and customer co-creation have gained importance. This approach allows for customized products and services, while still taking advantage of economies of scale.

How to create value?

- **Getting the job done:** Value can be created simply by helping a customer get certain jobs done.
 - **Rolls-Royce's** airline customers rely entirely on Rolls-Royce to manufacture and service their jet engines. This arrangement allows customers to focus on running their airlines. In return, the airlines pay Rolls-Royce a fee for every hour an engine runs.
- **Design**
 - Design is an important but difficult element to measure.
 - A product may stand out because of superior design.
 - In the fashion and consumer electronics industries, design can be a particularly important part of the Value Proposition.

How to create value?

- **Brand/ Status**
- Customers may find value in the simple act of **using and displaying a specific brand**.
 - Wearing a Rolex watch signifies wealth, for example.
 - On the other end of the spectrum, skateboarders may wear the latest "underground" brands to show that they are "in."

How to create value?



• Cost reduction

- Helping customers reduce costs is an important way to create value.
- [Salesforce.com](https://www.salesforce.com), for example, sells a hosted Customer Relationship management (CRM) application.
- This relieves buyers from the expense and trouble of having to buy, install, and manage CRM software themselves.
- Salesforce is an example of a **Software as a Service** offer: a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. It is sometimes referred to as "on-demand software"

Knowledge Check



- Think of other possible cost-reduction offerings based on the SaaS model

How to create value?

- **Risk reduction**
- Customers value reducing the risks they incur when purchasing products or services.
- For a used car buyer, a one-year service guarantee reduces the risk of post-purchase breakdowns and repairs.
- A service-level guarantee partially reduces the risk undertaken by a purchaser of outsourced IT services.

How to create value?

- **Accessibility**
- Making **products and services available** to customers who **previously lacked access** to them is another way to create value.
- This can result from business model innovation, new technologies, or a combination of both.
 - **NetJets**, for instance, popularized the concept of fractional private jet ownership. NetJets offers individuals and corporations access to private jets, a service previously unaffordable to most customers.
 - **Mutual funds** provide another example of value creation through increased accessibility. This innovative financial product made it possible even for those with modest wealth to build diversified investment portfolios.

How to create value?

- **Convenience/ Usability**
- Making things more convenient or easier to use can create substantial value.
 - With **iPod** and **iTunes**, Apple offered customers unprecedented convenience searching, buying, downloading, and listening to digital music.
 - It dominated the market (circa 2010)
 - Is it true now?

Business Model Canvas



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Channels

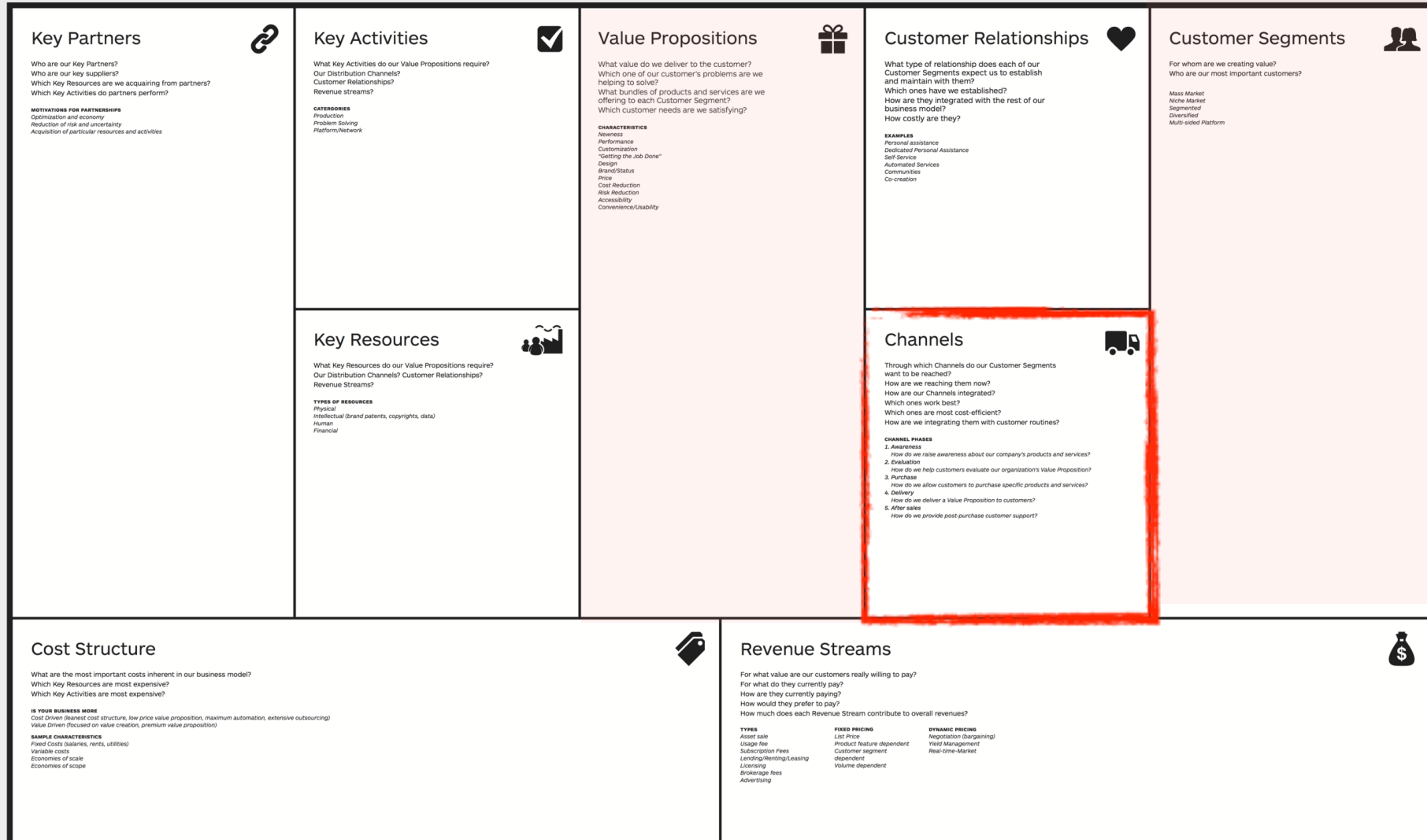
The Business Model Canvas

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Date:

Version:



- The Channels Building Block describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition Communication, distribution, and sales.
- Channels comprise a company's interface with customers.
 - Channels play an important role in the customer experience.

Channels' functions

- Raising awareness among customers about a company's products and services
- Helping customers evaluate the Value Proposition of a company
- Allowing customers to purchase specific products and services
- Delivering a Value Proposition to customers
- Providing post-purchase customer support

Key questions

- Through which Channels do our Customer Segments want to be reached?
- How are we reaching them now?
- How are our Channels integrated?
- Which ones work best?
- Which ones are most cost—efficient?
- How are we integrating them with customer routines?

Channel categories

- We can distinguish between **direct** Channels and **indirect** ones, as well as between **owned** Channels and **partner** Channels.
- An organization can choose between reaching its customers through its *own* Channels, through *partner* Channels, or through a **mix** of both.
- Finding the **right mix of Channels** to satisfy how customers want to be reached is **crucial** in bringing a Value Proposition to market.

Channel categories

- **Owned** Channels can be:
 - **direct**, such as an in-house sales force or a Web site
 - **indirect**, such as retail stores owned or operated by the organization.
- **Partner** Channels are **indirect** and span a whole range of options, such as wholesale distribution, retail, or partner-owned Web sites.

Owned vs Partner Channels

- **Partner Channels** lead to **lower margins**, but they allow an organization to expand its reach and benefit from partner strengths.
- **Owned Channels** and particularly direct ones have higher margins, but can be costly to put in place and to operate.
- The trick is to find the right balance between the different types of Channels, to:
 - integrate them in a way to create a great customer experience, and to
 - maximize revenues.

Channel Types and Phases

Channel Types			Channel Phases				
Own	Direct	Sales force					
		Web sales					
Partner	Indirect	Own stores					
		Partner Stores					
		Wholesaler					

Channel Types and Phases

Channel Types		Channel Phases				
Own	Direct	Sales force	1. Awareness			
		Web sales				
Partner	Indirect	Own stores	How do we raise awareness about our company's products and services?			
		Partner Stores				
		Wholesaler				

Channel Types and Phases

Channel Types		Channel Phases					
Own	Direct	Sales force	1. Awareness	2. Evaluation			
		Web sales	How do we raise awareness about our company's products and services?	How do we help customers evaluate our organization's Value Proposition?			
Partner	Indirect	Own stores					
		Partner Stores					
		Wholesaler					

Channel Types and Phases

Channel Types		Channel Phases				
Own	Direct	Sales force	1. Awareness	2. Evaluation ^[L] _[SEP]	3. Purchase ^[L] _[SEP]	
		Web sales	How do we raise awareness about our company's products and services?	How do we help customers evaluate our organization's Value Proposition?	How do we allow customers to purchase specific products and services?	
Partner	Indirect	Own stores				
		Partner Stores				
		Wholesaler				

Channel Types and Phases

Channel Types			Channel Phases				
Own	Direct	Sales force	1. Awareness	2. Evaluation <small>[L] [SEP]</small>	3. Purchase <small>[L] [SEP]</small>	4. Delivery <small>[L] [SEP]</small>	
		Web sales	How do we raise awareness about our company's products and services?	How do we help customers evaluate our organization's Value Proposition?	How do we allow customers to purchase specific products and services?	How do we deliver a Value Proposition to customers?	
Partner	Indirect	Own stores					
		Partner Stores					
		Wholesaler					

Channel Types and Phases

Channel Types		Channel Phases					
Own	Direct	Sales force	1. Awareness	2. Evaluation <small>[L] [SEP]</small>	3. Purchase <small>[L] [SEP]</small>	4. Delivery <small>[L] [SEP]</small>	5. After Sales <small>[L] [SEP]</small>
		Web sales	How do we raise awareness about our company's products and services?	How do we help customers evaluate our organization's Value Proposition?	How do we allow customers to purchase specific products and services?	How do we deliver a Value Proposition to customers?	How do we provide post-purchase customer support?
Own stores							
Partner	Indirect	Partner Stores					
		Wholesaler					

Business Model Canvas



- Business Model: Introduction
- Customer Segments
- Value Proposition
- Channels
- Customer Relationships
- Revenue Streams
- Key Resources
- Key Activities
- Key Partnerships
- Cost Structure

Customer Relationships

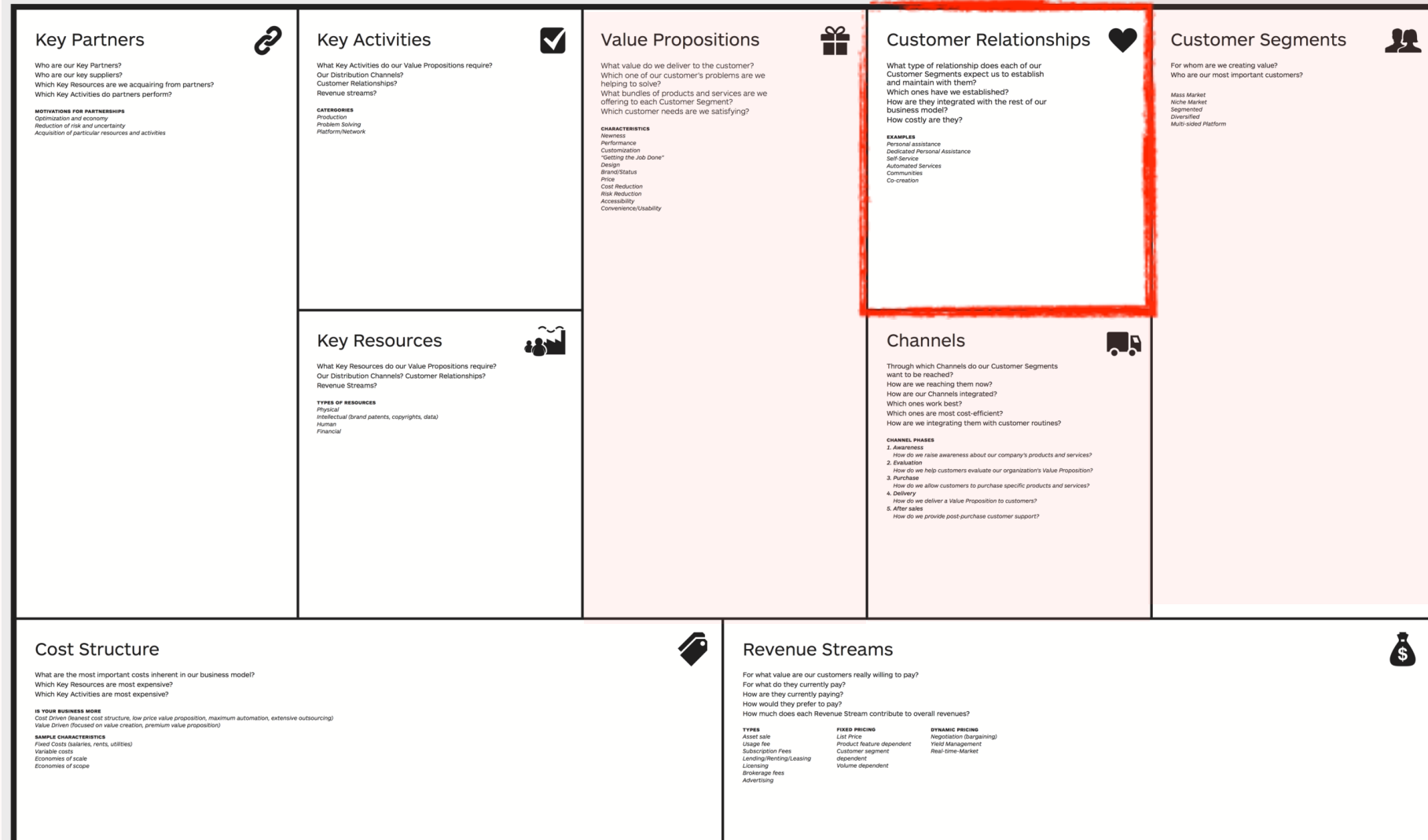
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Customer Relationships

- A company should clarify **the type of relationship it wants to establish** with each Customer Segment.
- Relationships can range from **personal** to **automated**.
- Customer relationships may be driven by the following motivations:
 - Customer **acquisition**
 - Customer **retention**
 - Boostings sales (**up-selling**)

Customer Relationships

- In the early days of Mobile telephony, Mobile network operator Customer relationships were driven by aggressive acquisition strategies involving free mobile phones.
- When the market became saturated, operators switched to *focusing on customer retention and increasing average revenue per customer*.
- The Customer Relationships called for by a company's business model **deeply influence the overall customer experience**.

Key questions

- What **type of relationship** does each of our Customer Segments expect us to establish and maintain with them?
- Which ones have we **established**?
- How **costly** are they?
- How are they **integrated** with the rest of our business model?

Customer Relationship categories

- Several categories of Customer Relationships exist.
 - These may co-exist in a company's relationship with a particular customer segment
- **Personal assistance:** This relationship is based on human interaction.
 - The customer can communicate with a real customer representative to get help during the sales process or after the purchase is complete.
 - This may happen [on-site](#) at the point of sale, through [call centers](#), by [e-mail](#), or through other means.
- **Dedicated personal assistance:** This relationship involves [dedicating a customer representative](#) specifically to an individual client.
 - It represents the deepest and most intimate type of relationship and normally develops over a long period of time.
 - In private banking services, for example, dedicated bankers serve high net worth individuals.
 - Similar relationships can be found in other businesses in the form of key [account managers](#) who maintain personal relationships with important customers.

Customer Relationship categories

- **Self-service:** In this type of relationship, a company maintains **no direct relationship** with customers.
 - It provides all the **necessary means** for customers to help themselves.
- **Automated services:** Mixes a more sophisticated form of customer **self-service** with **automated processes**.
 - For example, personal online profiles give customers access to customized services.
 - Automated services can recognize individual customers and their characteristics, and offer information related to orders or transactions.
 - At their best, automated services can simulate a personal relationship (e.g. offering book or movie recommendations).

Customer Relationship categories

- **Communities:** Increasingly, companies are utilizing user communities to:
 - become **more involved with customers/prospects** and
 - **facilitate connections** between community members; online communities allow users to exchange knowledge and solve each other's problems.
 - help companies **better understand their customers**.
 - Pharmaceutical giant GlaxoSmithKline launched a private online community when it introduced *alli*, a new prescription-free weight-loss product.
 - GlaxoSmithKline wanted to increase its understanding of the challenges faced by overweight adults, and thereby learn to better manage customer expectations.

Customer Relationship categories

- **Co-creation:** More companies are going beyond the traditional customer-vendor relationship to **co-create value** with customers.
 - Amazon.com invites customers to write reviews and thus create value for other book lovers.
 - Some companies engage customers to assist with the design of new and innovative products.
 - Others, such as YouTube.com, solicit customers to create content for public consumption.

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Revenue streams

Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

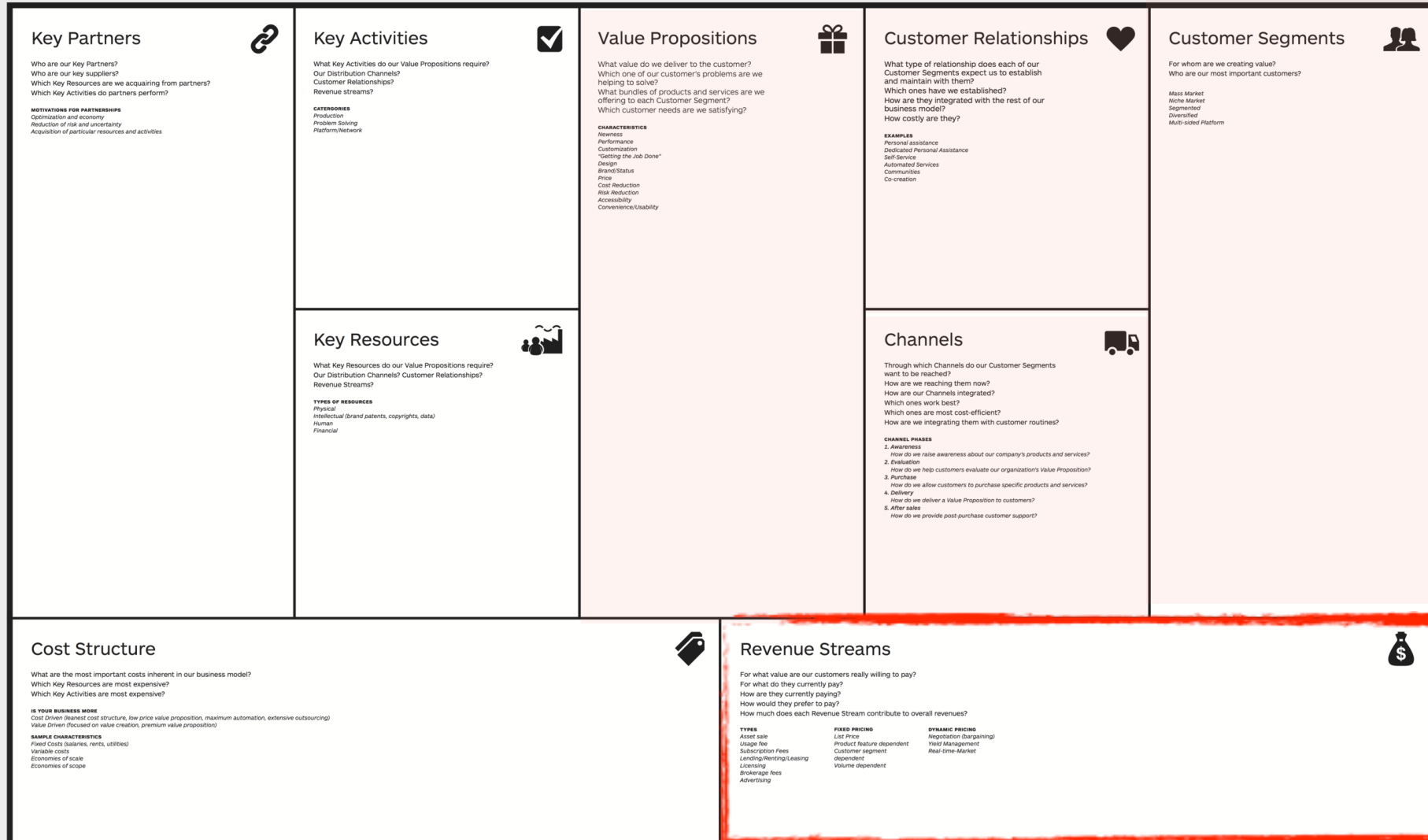
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Revenue Streams

- The Revenue Streams Building Block represents the **cash a company generates from each Customer Segment** (costs must be subtracted from revenues to create earnings)
- If customers comprise the heart of a business model, Revenue Streams are its arteries.
- Each revenue stream may have different **pricing mechanisms, prices, bargaining, auctioning, market-dependent, volume-dependent or yield management.**

Revenue Streams categories

- **Transaction revenues** resulting from one-time customer payments
- **Recurring revenues** resulting from ongoing payments to either deliver a Value Proposition to customers or provide customer support post-purchase

Key questions

- For what value are our customers really **willing to pay?**
 - Successfully answering that question allows the firm to generate one or more Revenue Streams from each Customer Segment.
- For what do they **currently pay? How** are they currently paying?
- How would they **prefer to pay?**
- How much does **each Revenue Stream contribute to overall revenues?**

Generating Revenue Streams

- **Asset sale:** The most widely understood Revenue Stream derives from selling ownership rights to a physical product.
 - [Amazon.com](https://www.amazon.com) sells books, music, consumer electronics, and more online. Fiat sells automobiles, which buyers are free to drive, resell, or even destroy.
- **Usage fee:** This Revenue Stream is generated by the use of a particular service. The more a service is used, The more a service is used, the more the customer pays.
 - A telecom operator may charge customers for the number of minutes spent on the phone.
 - A hotel charges customers for the number of nights rooms are used.
 - A package delivery service charges customers for the delivery of a Parcel from one location to another.

Revenue Streams: Subscription Fees

- This Revenue Stream is generated by selling continuous access to a service.
 - A gym sells its members monthly or yearly subscriptions in exchange for access to its exercise facilities.
 - World of Warcraft Online, a Web-based computer game, allows users to play its online game in exchange for a monthly subscription fee.
 - Spotify gives users access to a music library for a subscription fee.

Lending/Renting/Leasing

- This Revenue Stream is created by temporarily granting someone the exclusive right to use a particular asset for a fixed period in return for a fee.
 - For the lender this provides the advantage of recurring revenues.
 - Renters or lessees, on the other hand, enjoy the benefits of incurring expenses for only a limited time rather than bearing the full costs.
 - Zipcar.com provides a good illustration. The company allows customers to rent cars by the hour in North American cities.
 - Zipcar.com's service has led many people to decide to rent rather than purchase automobiles.

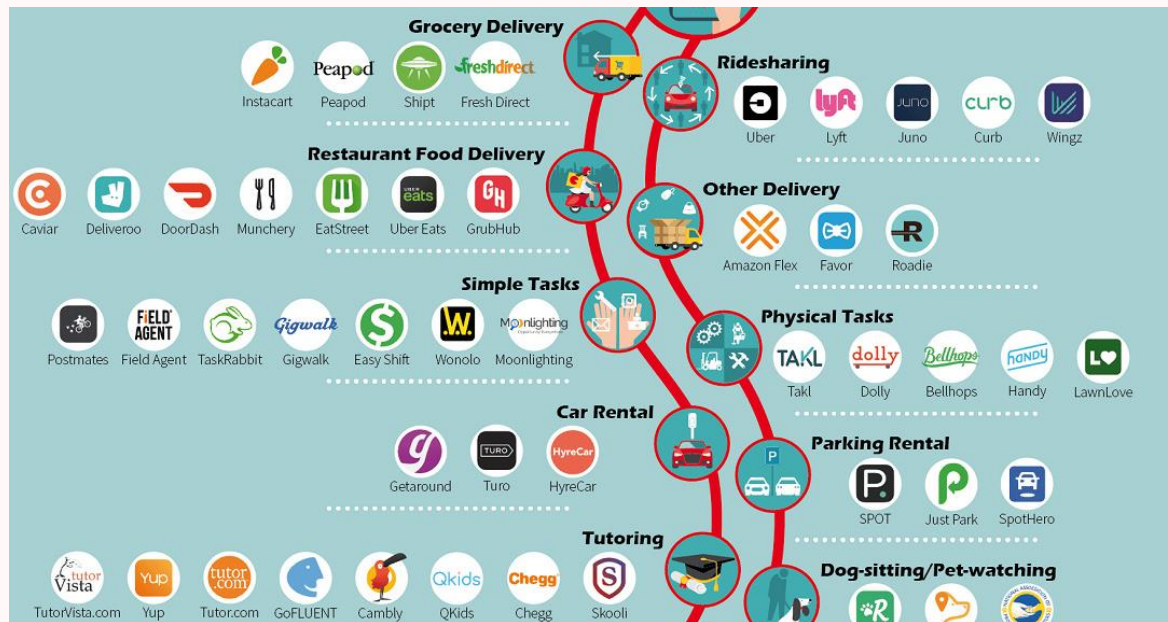
- This Revenue Stream is generated by giving customers **permission to use protected intellectual property** in exchange for licensing fees.
- Licensing allows rights-holders to generate revenues from their property without having to manufacture a product or commercialize a service.
- Licensing is common in the media industry, where content owners retain copyright while selling usage licenses to third parties.
- Similarly, in technology sectors, patent holders grant other companies the right to use a patented technology in return for a license fee.

Brokerage fees

- This Revenue Stream derives from **intermediation services** performed on behalf of two or more parties.
 - Credit card providers, for example, earn revenues by taking a percentage of the value of each sales transaction executed between credit card merchants and customers.
 - Brokers and real estate agents earn a commission each time they successfully match a buyer and seller.

“Gig” economy

- A gig economy is a free market system in which temporary positions are common and organizations contract with independent workers for short-term engagements. The term "gig" is a slang word meaning "a job for a specified period of time" and is typically used in referring to musicians.



- This Revenue Stream results from **fees for advertising** a particular **product**, **service**, or **brand**.
 - Traditionally, the media industry and event organizers relied heavily on revenues from advertising.
 - In recent years other sectors, including software and services, have started relying more heavily on advertising revenues.

Case Study: Wired, 1/2018



“the core business model underlying [Internet] platforms is harvesting attention with a massive surveillance infrastructure to allow for targeted, mostly automated advertising at very large scale”



Zeynep Tufeksi, UNC
Wired, 1/2018



Case study: Antitrust Case against Facebook

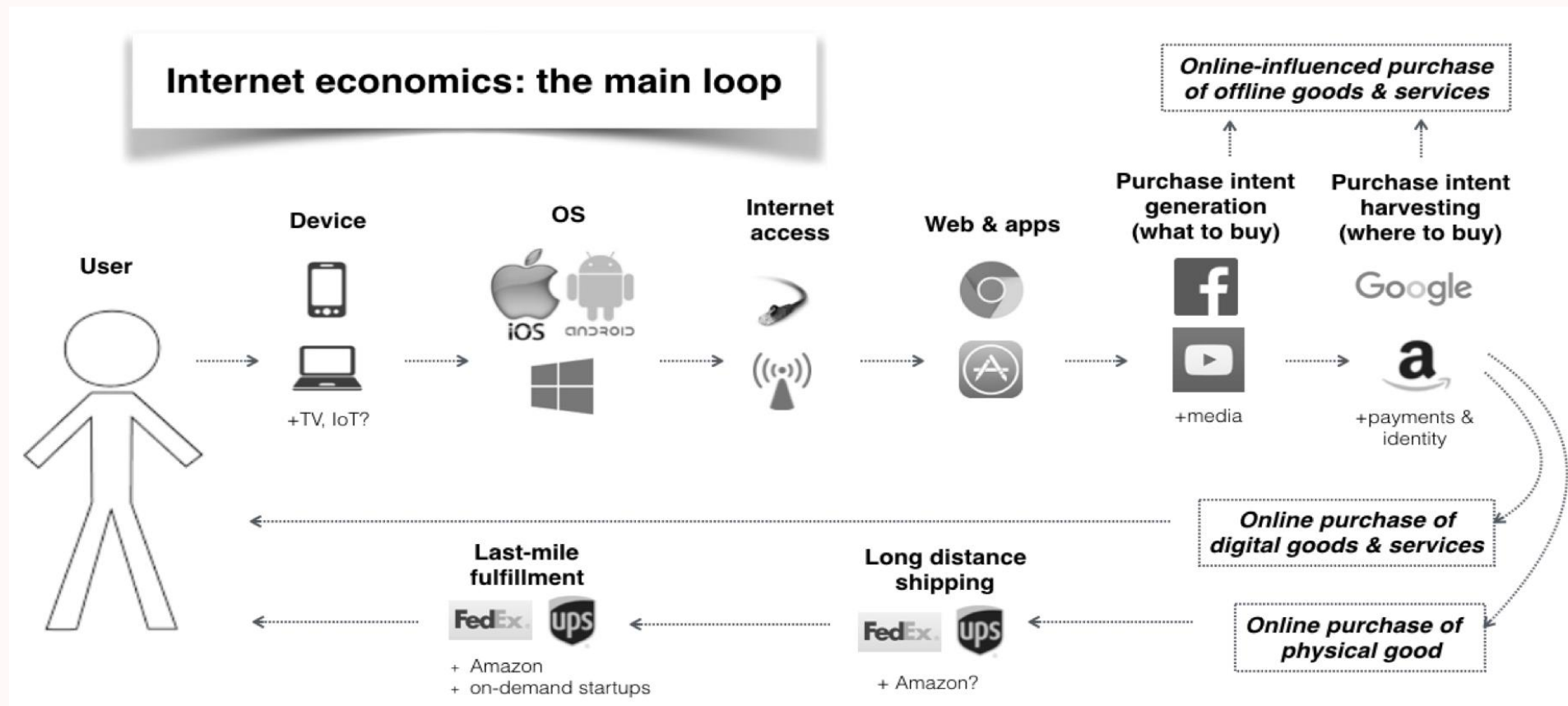


“Today, using Facebook means to accept a product linked to broad-scale commercial surveillance.”

“The Antitrust Case Against Facebook,” Dina Srinivasan, Berkeley Business Law Journal, 2001



The “attention” economy



Case Study: Cambridge Analytica



“We were able to form a model to predict the personality of every single adult in the United States....

If you know the personality of the people you're targeting, you can nuance your messaging to resonate more effectively with those key audience groups. ...

We ... understand exactly which messages are going to appeal to which audiences....

Today, communication is ... being individualized for every single person in this room.”

Alexander Nix, CEO, Cambridge Analytica

September 2016

Case Study



“New retail: our marketplace platforms handle billions of transactions each month in shopping, daily services & payments.

These transactions provide us with the best insights into consumer behavior & shifting consumption trends.

we are the most comprehensive ecosystem of commerce platforms, logistics & payments to support the digital transformation of the retail sector.”

*Joe Chai, co-founder, **Alibaba Group** September 2016*





Does Personalized Targeting Work?



Computational Advertising Impact

Targeted messaging based on people's personalities resulted in up to 40% more clicks and up to 54% more purchases than mismatched messaging

“Psychological Targeting as an Effective Approach to Digital Market Persuasion” S. Matz et al. PNAS (2017)

Reading Assignment



Revenue Streams and Pricing

- Each Revenue Stream might have different pricing mechanisms.
- The type of pricing mechanism chosen can make a big difference in terms of revenues generated.
- There are two main types of pricing mechanisms: **fixed** and **dynamic** pricing.

Pricing Mechanisms

Fixed Menu Pricing	Dynamic Pricing
<i>Predefined prices are based on static variables</i>	<i>Prices change based on market conditions</i>

Pricing Mechanisms

Fixed Menu Pricing		Dynamic Pricing
<i>Predefined prices are based on static variables</i>		
<i>List price</i>	Fixed prices for individual products, services, or other Value Propositions	
<i>Product feature-dependent</i>	Price depends on the number or quality of dependent Value Proposition features	
<i>Customer segment dependent</i>	Price depends on the type and characteristic of a Customer Segment	
<i>Volume dependent</i>	Price as a function of the quantity purchased	

Pricing Mechanisms

Fixed Menu Pricing	Dynamic Pricing	
	<i>Prices change based on market conditions</i>	
	<i>Negotiation (bargaining)</i>	Price negotiated between two or more partners depending on negotiation power and/or negotiation skills
	<i>Yield management</i>	Price depends on inventory and time of purchase (normally used for perishable resources such as hotel rooms or airline seats)
	<i>Real-time-market</i>	Price is established dynamically based on supply and demand
	<i>Auctions</i>	Price determined by outcome of competitive bidding

Pricing Mechanisms

Fixed Menu Pricing		Dynamic Pricing	
<i>Predefined prices are based on static variables</i>		<i>Prices change based on market conditions</i>	
<i>List price</i>	Fixed prices for individual products, services, or other Value Propositions	<i>Negotiation (bargaining)</i>	Price negotiated between two or more partners depending on negotiation power and/or negotiation skills
<i>Product feature-dependent</i>	Price depends on the number or quality of dependent Value Proposition features	<i>Yield management</i>	Price depends on inventory and time of purchase (normally used for perishable resources such as hotel rooms or airline seats)
<i>Customer segment dependent</i>	Price depends on the type and characteristic of a Customer Segment	<i>Real-time-market</i>	Price is established dynamically based on supply and demand
<i>Volume dependent</i>	Price as a function of the quantity purchased	<i>Auctions</i>	Price determined by outcome of competitive bidding

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- Customer Segments
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- Revenue Streams
- Key Resources
- Key Activities
- Key Partnerships
- Cost Structure



Key Resources

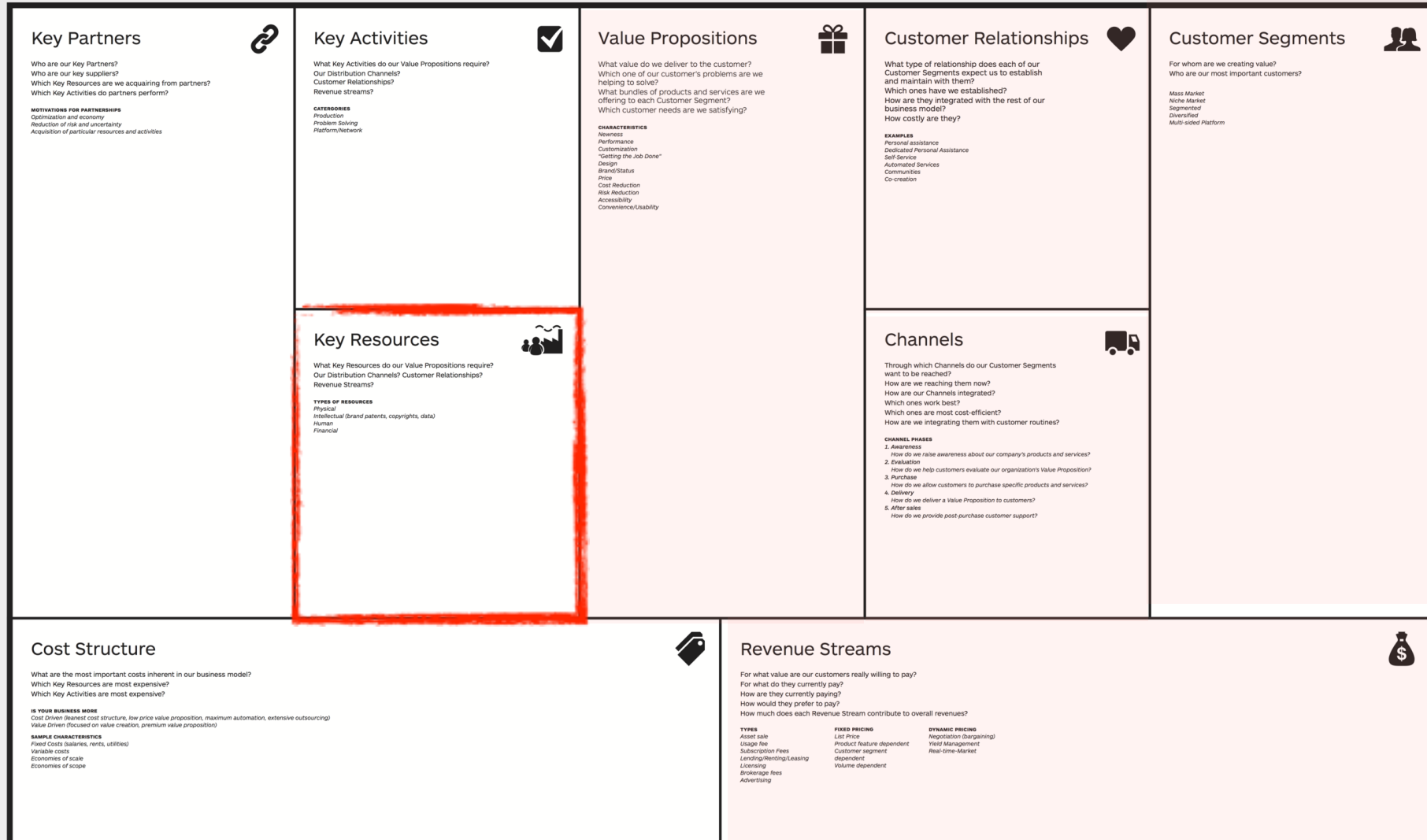
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Key Resources

- The Key Resources Building Block describes the **most important assets required** to make a business model work
- Why do we need Key Resources for a business model?
- To allow an enterprise to:
 - create and offer a Value Proposition;
 - reach markets
 - maintain relationships with Customer Segments, and
 - earn revenues.
- Different Key Resources are needed depending on the type of business model.
 - A microchip manufacturer requires capital-intensive production facilities, whereas a microchip designer focuses more on human resources.
- Key resources can be **physical**, **financial**, **intellectual**, or **human**.
- Key resources can be **owned** or **leased** by the company or **acquired from key partners**.

Key questions

- What Key Resources are required due to:
 - Your Value Propositions?
 - Your Distribution Channels?
 - Your Customer Relationships?
 - Your Revenue Streams?

KR: Physical Resources

- Physical assets such as manufacturing facilities, buildings, vehicles, machines, systems, point-of-sales systems, and distribution networks.
- Retailers like Walmart and Amazon.com rely heavily on physical resources, which are often capital—intensive.
 - The former has an enormous global network of stores and related logistics infrastructure.
 - The latter has an extensive IT, warehouse, and logistics infrastructure.

KR: Intellectual Resources

- Intellectual resources such as **brands**, **proprietary knowledge**, **patents** and **copyrights**, **partnerships**, and **customer databases** are increasingly important components of a strong business model.
- Intellectual resources are *difficult to develop* but when successfully created may offer substantial value.
 - Consumer goods companies such as Nike and Sony rely heavily on brand as a Key Resource.
 - Microsoft and SAP depend on software and related intellectual property developed over many years.
 - Qualcomm, a designer and supplier of chipsets for broadband mobile devices, built its business model around patented microchip designs that earn the company substantial licensing fees.

- Every enterprise requires human resources, but people are particularly prominent in certain business models. For example: human resources are crucial in **knowledge-intensive** and **creative industries**.
 - A pharmaceutical company such as Novartis, for example, relies heavily on human resources:
 - Its business model is predicated on an army of experienced scientists and a large and skilled sales force.

KR: Financial Resources

- Some business models call for **financial resources** and/or **financial guarantees**, such as: **cash**, **lines of credit**, or a **stock option pool for hiring** key employees.
- Ericsson, the telecom manufacturer, provides an example of financial resource leverage within a business model.
 - Ericsson may opt to borrow funds from banks and capital markets, then use a portion of the proceeds to provide vendor financing to equipment customers, thus ensuring that orders are placed with Ericsson rather than competitors.

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Key Activities

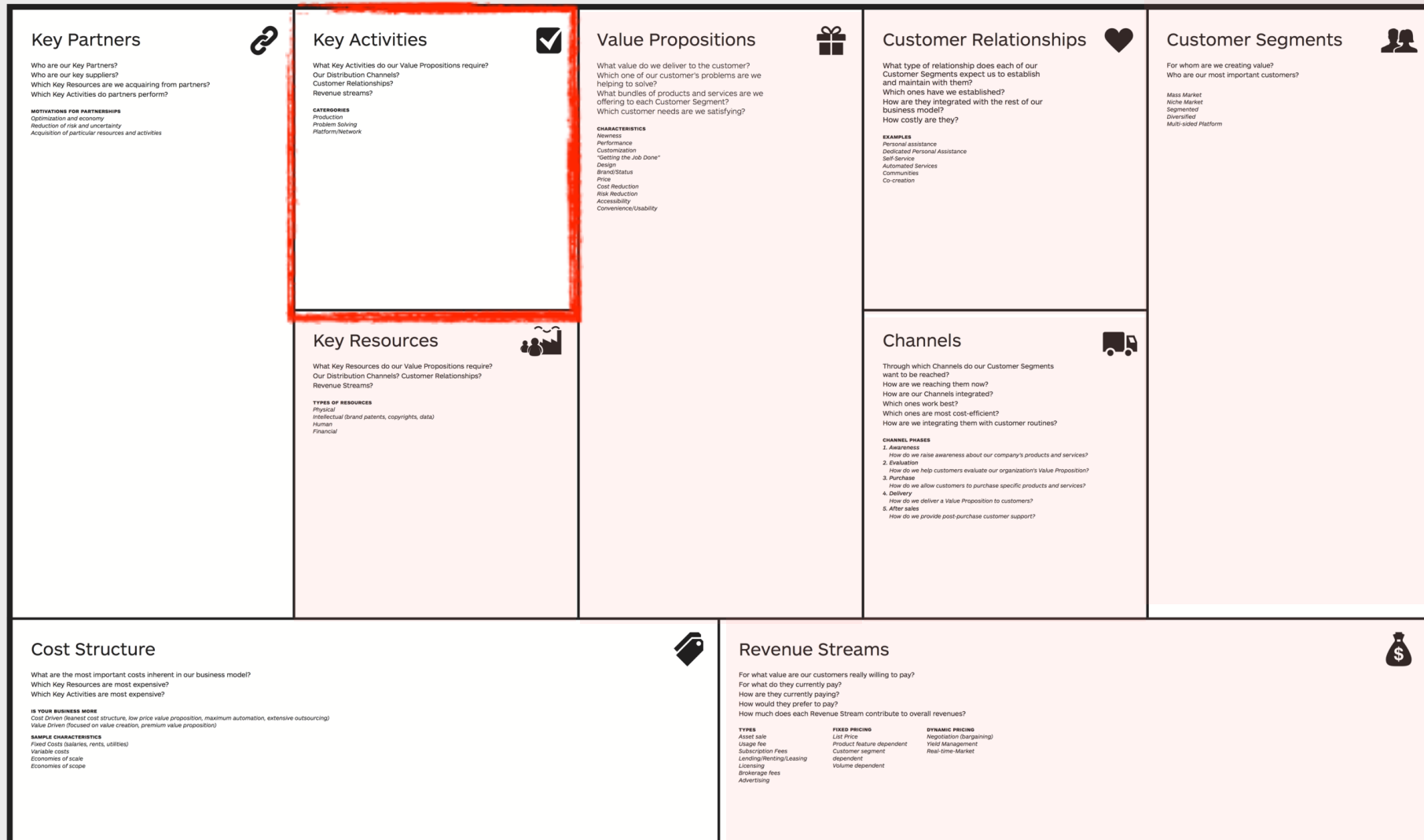
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Key Activities

- The Key Activities building block describes the:
 - most important things a company must do to make its business model work.
 - most important actions a company must take to operate successfully.
- Key Activities:
 - Are required to create and offer a Value Proposition, reach markets, maintain Customer Relationships, and earn revenues.
 - Differ depending on business model type.
- For software maker Microsoft, Key Activities include software development.
- For PC manufacturer Dell, Key Activities include supply chain management.
- For consultancy McKinsey, Key Activities include problem solving.

KA: Production

- These activities relate to **designing, making, and delivering** a product in **substantial quantities** and/or of **superior quality**.
- Production activity dominates the business models of manufacturing firms.

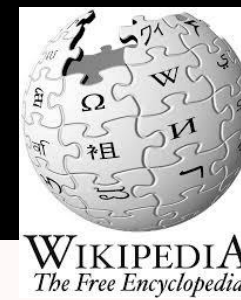
KA: Problem solving

- Key Activities of this type relate to coming up with **new solutions** to **individual customer problems**.
- The operations of **consultancies, hospitals,** and other **service organizations** are typically dominated by problem-solving activities.
- Their business models call for activities such as **knowledge management** and **continuous training**.

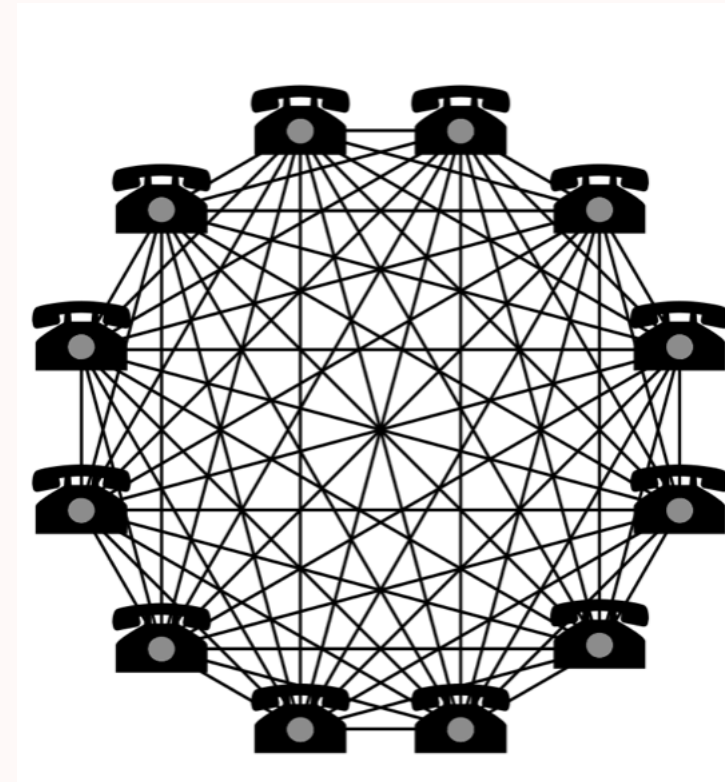
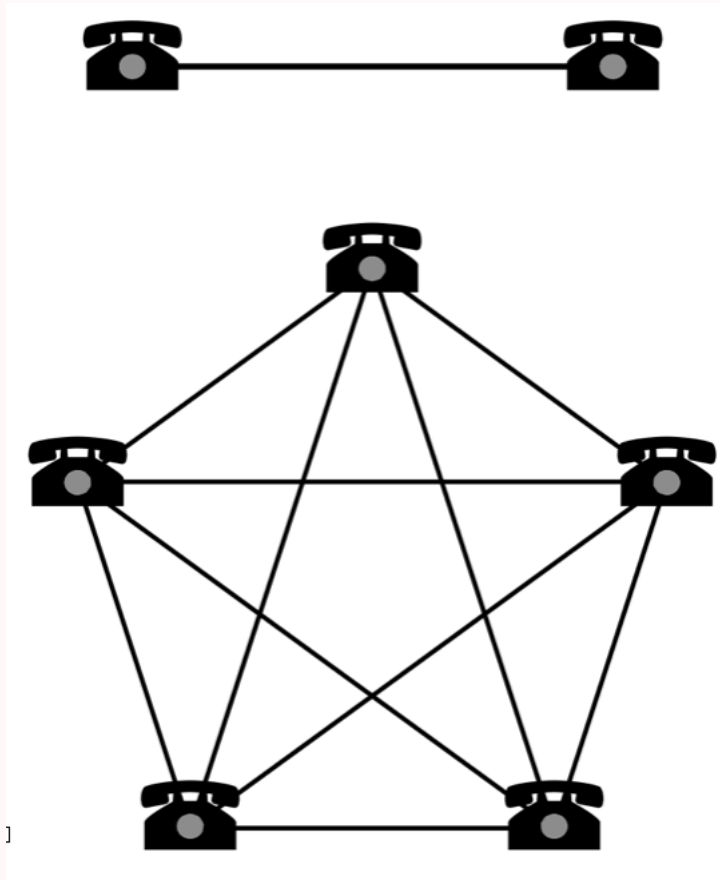
KA: Platform/Network

- Business models designed, with a platform as a Key Resource are dominated by [platform](#) or [network-related](#) Key Activities.
- [Networks](#), [matchmaking platforms](#), [software](#), and even [brands](#) can function as a platform.
 - eBay's business model requires that the company continually develop and maintain its platform: the Web site at eBay.com.
 - Visa's business model requires activities related to its Visa credit card transaction platform for merchants, customers and banks.
 - Microsoft's business model requires managing the interface between other vendors' software and its Windows operating system platform.
- Key activities in this category relate to [platform management](#), [service provisioning](#), and [platform promotion](#).

Network effects



- “A network effect is the effect described in economics and business that an additional user of a good or service has on the value of that product to others.
- When a network effect is present, **the value of a product or service increases according to the number of others using it.**
 - The classic example is the telephone, where a greater number of users increases the value to each. A positive externality is created when a telephone is purchased without its owner intending to create value for other users, but does so regardless.
 - Online social networks work similarly, with sites like Twitter and Facebook increasing in value to each member as more users join.” [Metcalfe’s Law]



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Key Partnerships

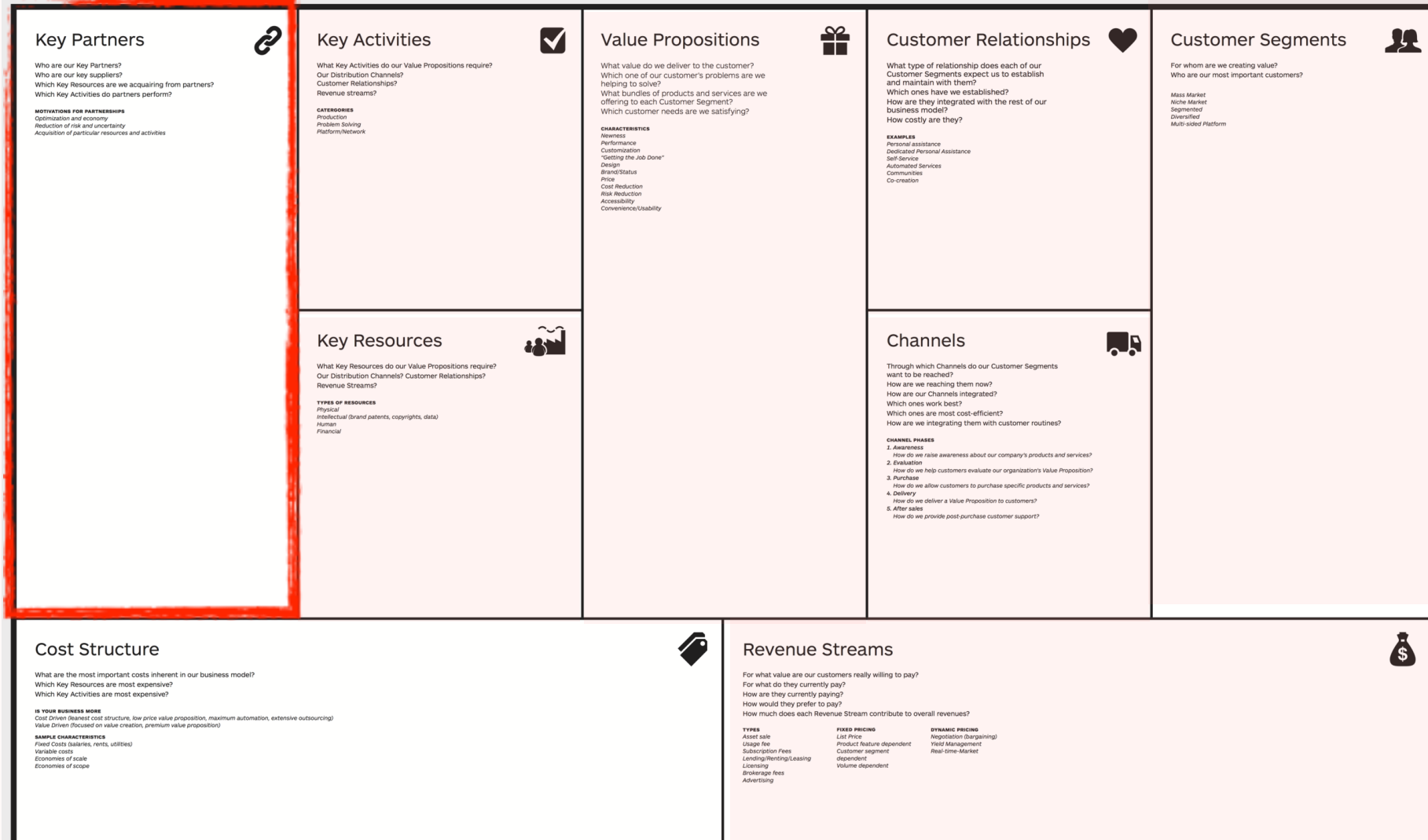
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Key Partnerships

- The Key Partnerships Building Block describes the **network of suppliers** and **partners** that make the business model work.
- Companies forge partnerships for many reasons, and partnerships are becoming a cornerstone of many business models.
- Companies create **alliances** to:
 - optimize their business models,
 - reduce risk, or
 - acquire resources.

Main Partnership Types

- **Strategic alliances** between non-competitors
- **Coopetition**: strategic partnerships between competitors
- **Joint ventures** to develop new businesses
- **Buyer-supplier relationships** to assure reliable supplies

Key questions

- Who are your Key Partners?
- Who are your key suppliers?
- Which Key Resources are you acquiring from partners?
- Which Key Activities do partners perform?

Motivations for partnerships

- **Optimization** and **economy of scale**
- The most basic form of partnership or **buyer-supplier relationship** is designed to optimize the allocation of resources and activities.
- It is illogical for a company to own all resources or perform every activity by itself.
- Optimization and economy of scale partnerships are usually formed to reduce costs, and often involve **outsourcing** or **sharing infrastructure**.

Reduction of risk and uncertainty

- Partnerships can help **reduce risk** in a competitive environment characterized by uncertainty.
- It is not unusual for competitors to form a strategic alliance in one area while competing in another.
 - Blu-ray, for example, is an optical disc format jointly developed by a group of the world's leading consumer electronics, personal computer, and media manufacturers. The group cooperated to bring Blu-ray technology to market, yet individual members compete in selling their own Blu-ray products.

Acquisition of particular resources and activities

- Few companies own all the resources or perform all the activities described by their business models.
- Rather, they extend their own capabilities by relying on other firms to furnish particular resources or perform certain activities.
- Such partnerships can be motivated by needs to acquire **knowledge**, **licenses**, or **access to customers**.
 - A mobile phone manufacturer, for example, may license an operating system for its handsets rather than developing one in-house.
 - An insurer may choose to rely on independent brokers to sell its policies rather than develop its own sales force.

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Cost Structure

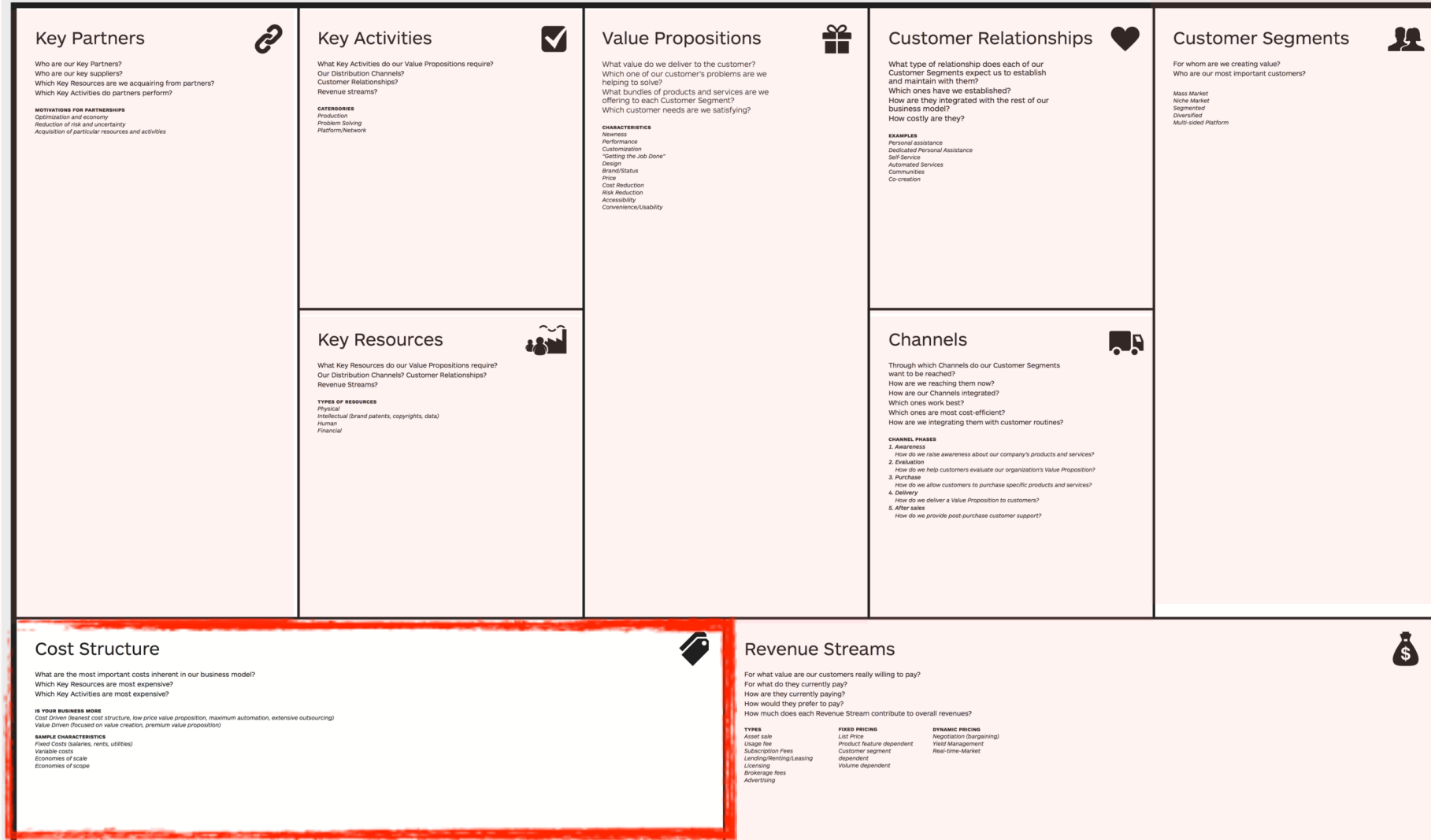
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- The Cost Structure describes **all costs** incurred to operate a business model.
- This building block describes **the most important costs** incurred while operating under a particular business model.
- Costs are incurred when **creating and delivering value, maintaining Customer Relationships, and generating revenue.**
- Such costs can be **calculated relatively easily** after defining Key Resources, Key Activities, and Key Partnerships.
 - Some business models, though, are more cost-driven than others. So-called “no frills” airlines, for instance, have built business models entirely around low Cost Structures.

Key questions

- What are the most important costs inherent in your business model?
- Which Key Resources are most expensive?
- Which Key Activities are most expensive?

- Naturally enough, costs should be minimized in every business model.
- But low Cost Structures are more important to some business models than to others.
- Therefore it can be useful to distinguish between two broad classes of business model Cost Structures:
 - cost-driven
 - value-driven
 - (many business models fall in between these two extremes).

- Cost-driven business models focus on minimizing costs wherever possible. This approach aims at creating and maintaining the leanest possible
- Cost Structure, using low price Value Propositions, maximum automation, and extensive outsourcing.
 - No frills airlines, such as easyJet, and Ryanair typify cost-driven business models.

Value-driven

- Some companies are less concerned with the cost implications of a particular business model design, and instead focus on value creation.
- Premium Value Propositions and a high degree of personalized service usually characterize value-driven business models.
 - Luxury hotels, with their lavish facilities and exclusive services, fall into this category.

Cost-structure characteristics

Fixed costs

- Costs that remain the same despite the volume of goods or services produced.
 - Examples include salaries rents, and physical manufacturing facilities.
- Some businesses, such as manufacturing companies, are characterized by a high proportion of fixed costs.

Variable costs

- Costs that vary proportionally with the volume of goods or services produced.
- Some businesses, such as music festivals, are characterized by a high proportion of variable costs.

Cost-structure characteristics

Economies of scale

- Cost advantages that a business enjoys as its output expands.
- Larger companies, for instance, benefit from lower bulk purchase rates. This and other factors cause average cost per unit to fall as output rises.

Economies of scope

- Cost advantages that a business enjoys due to a larger scope of operations. In a large enterprise, for example, the same marketing activities or Distribution Channels may support multiple products.

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- Mission Statement

Module 2: Business Modeling

Section 3: Mission Statement



Reading Assignment



Read the following articles on how to evaluate opportunities and how to prepare a mission statement for your company:

- **The Startup Scorecard: How to Evaluate Opportunities**
 - <http://nealcabbage.com/framework/opportunity-heuristics/>
- **The Startup Scorecard for product opportunity evaluation.**
 - <http://nealcabbage.com/framework/opportunity-heuristics/>
- **The mission statement: The basis for startups' strategic planning**
 - <https://learn.marsdd.com/mars-library/the-mission-statement-the-basis-for-startups-strategic-planning/>
- **How to define a mission and vision for your startup. (2014)**
 - <https://ideamensch.com/how-to-define-a-mission-and-vision-for-your-startup/>
- **30 Inspiring Billion-Dollar Startup Company Mission Statements** by Larry Kim.
 - <https://www.inc.com/larry-kim/30-inspiring-billion-dollar-startup-company-mission-statements.html>



Project and Writing Assignment

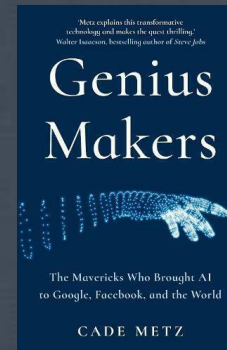
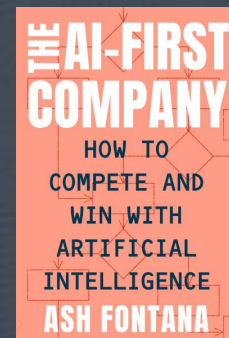
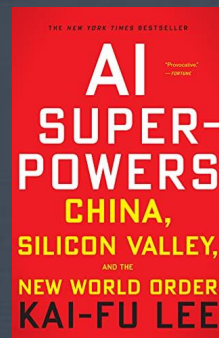


- Setup teams with each team selecting an AI company idea to work on.
- Do a preliminary review of a business model for your company idea, applying the Business Model Canvas methodology.
- Work together to prepare a mission statement for your company.
- Present your mission statement to the class and defend your proposal.

Module 2: Business Modeling

Section 3: AI Companies

Source:



Learning Objectives



After attending this section, studying the suggested readings and case studies you should be able to:

- Understand the **opportunities arising** because of the advances in AI technology.
- Understand and explain the particular characteristics and challenges of **AI companies**.
- Recognize and describe some **key concepts, terminology** you need to know and **questions you need to ask**, to be able to take advantage of machine learning and AI for the benefit of your business.

The Human Formula

- How humans learn?
 - Collecting information across and between generations
 - Human ability to get information from a collective - a network - and derive new information from: a form of cooperation in space and time
 - Allows for compounding growth as we are not always going backwards to relearn things.
 - The more you know, the more you can know, the more information you can access across your network, the faster you learn.

The Machine Formula

- Machines can form collectives - networks - to compute information:
 - Capture a critical mass of data
 - Develop capabilities to process that data into information
 - Feed that information into a computer that runs calculations over data to learn something new
- **Data Learning Effects: economies of scale to data + data processing capabilities + data network effects**
 - Get lots of data, process it into something useful in terms of making a decision, and create a system that automatically generates more useful data

Learning Effects

- Economists study learning effects:
 - The process through which information leads to economic benefit
- Example:
 - Management consulting firms develop strategic frameworks, best practices, and resource allocation models from information accumulated across all of their clients
- Traditional learning effects accumulate:
 - Information on individuals or organizations
 - Structured or unstructured information
 - When information is processed by people or machines
 - A qualitative or quantitative benefit
- Limits: they grow slowly because information must be processed or structured by a human before it can be processed by a machine
 - Humans can process only certain types of information
 - Organizations generally limit the internal and external flow of information

DLE: the **accumulation of information from data that automatically compounds**.

Now possible now thanks to:

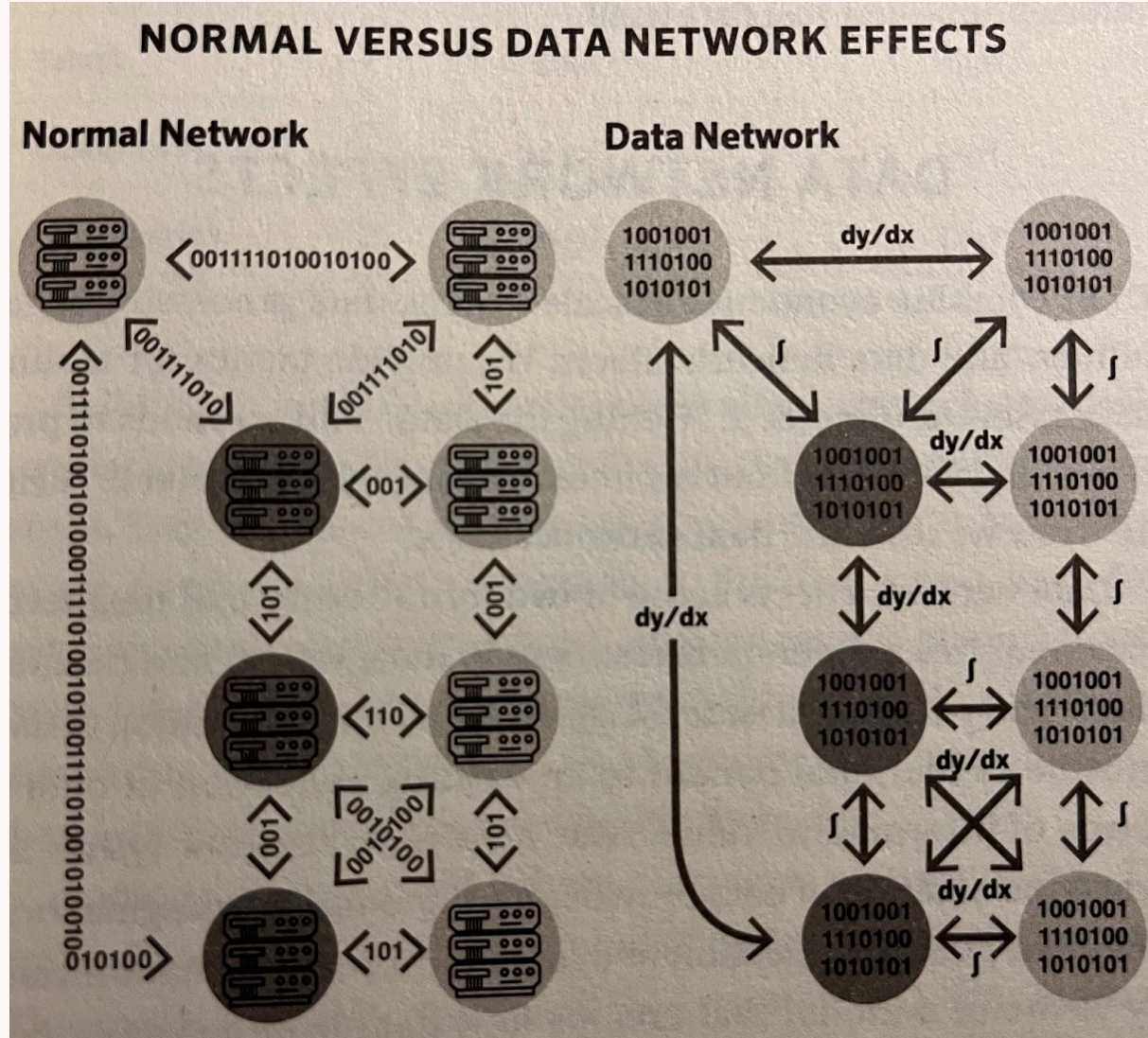
- **Economies of scale to data**: data deluge in Internet, captured by sensors on personal, industrial, Internet devices and platforms
- **Data processing capabilities**: Cloud runs calculations over data at a reasonable cost and people can make connections between disparate datasets
- **Data network effects**: Intelligent systems allow data to be organized into networks, wherein calculations run on one part of the network, results are sent to another part for more calculations, and come up with new information

- DLEs can accumulate information:
 - Across single or multiple organizations
 - That is structured
 - When processed by machines
 - That has a quantitative benefit
- DLES have few limits:
 - They grow fast because structured information feeds into machines that calculate faster than humans
 - Modern computers can process multiple types of information fast

- Scale effects refer to competitive advantages gained from increased scale in supply.
- Accumulation of assets or capabilities can lead to lower costs, reduced prices, increased demand and more scale gained.
- There are scale effects with data: more data can offer a competitive advantage.
- However, more data makes a product useful up to a point, after which it has less utility because it is effectively the same data:
 - The distinction between data and Information informs whether data has marginal utility - information is measured in how much uncertainty it resolves to the receiver.
 - One way that data becomes information is by interacting with other data; interactions typically happen across a network

- Network effects means that the value of a network is larger than the sum of the value of its nodes; and the value of the network grows faster than the size of its nodes.
- Network effects occur when, from a consumer's perspective, a product becomes more useful as more people use it.
- Data Network Effect:
 - Usefulness of a product/service is enhanced by the addition of data to the network
 - Network edges are informational and calculate, delivering information to other nodes on the network
 - “Data” networks transmit derivatives of data, namely information, not just data itself.

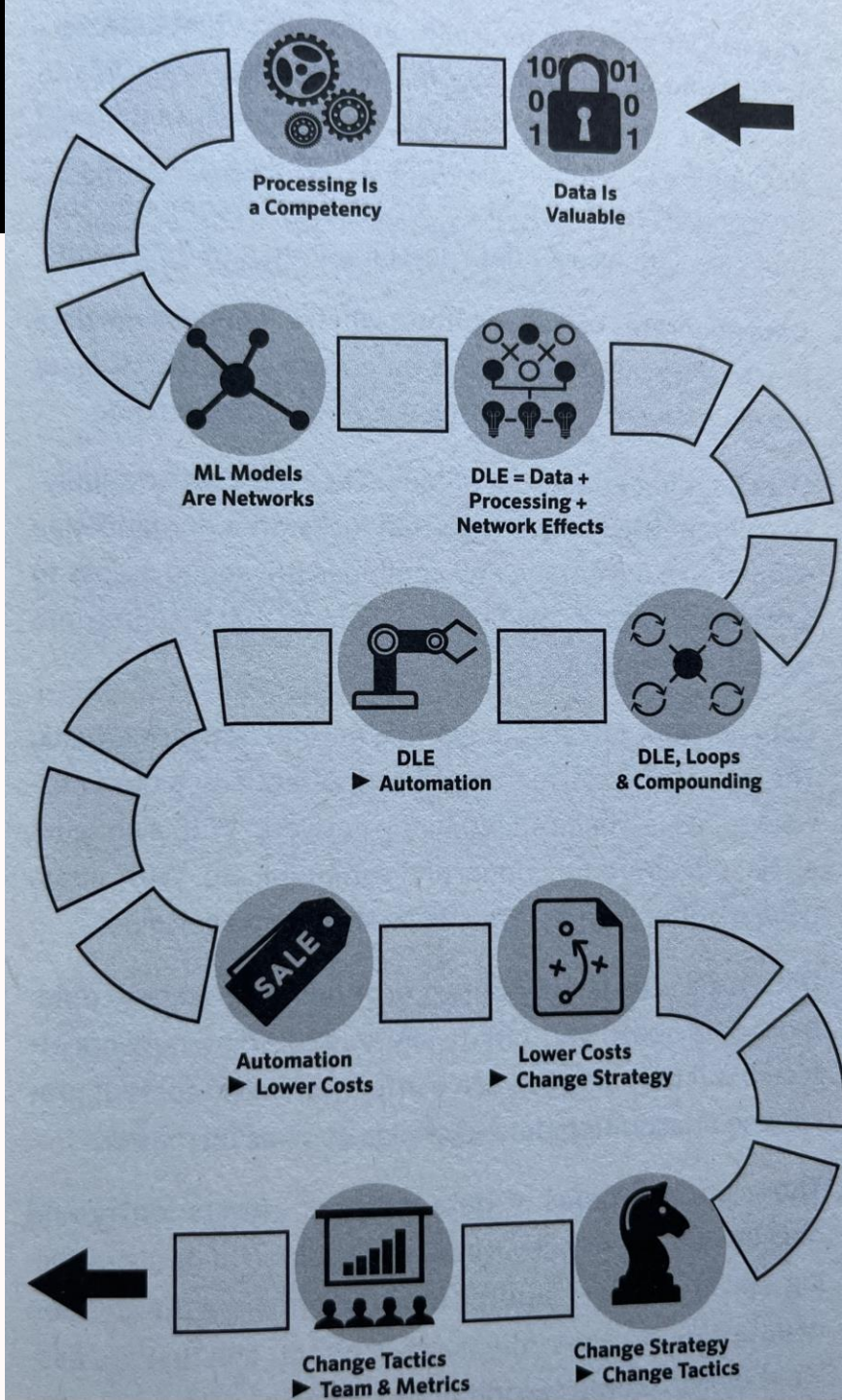
Normal vs Data Network Effects



Building Data Learning Effects

Steps:

- Capture a **critical mass of data**;
- Develop capabilities to **process that data into information**;
- Feed that information into a computer that runs calculations over data, **learning from new data points**.



Data Learning Effects: Remarks

- Data generates **marginal output** when combined with data **processing capabilities** and data **network effects**.
- Data learning effects articulate the **value chain around data**.
- Data learning effects:
 - start with a **supply side competitive advantage** that ...
 - ... kicks off a **demand-side competitive advantage** and ...
 - ... combines privileged access to a resource with capabilities **to transform that resource into something valuable**.

Before developing an AI solution

- Data Engineering
 - Instrumenting data sources to consistently collect good data
 - Building infrastructure in which to store the data
 - Extract data from existing data stores
 - Transform the data that does not match the structure of existing data
 - Make it easy to load the data into different databases
- Data Science
 - Understand the meaning of data
 - Detect anomalies
 - Setup analytical processes to on the data on regular intervals
 - Segment data
 - Aggregated datasets to put data into context
 - Figuring our which **features** of an algorithm might predict something useful

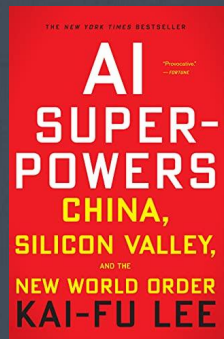
Start small

- Use statistics
 - Histograms, scatter plots
 - Clustering to group similar objects
 - Dimensionality reduction, to reduce the measures associated with each data point (PCA)
 - Try to pinpoint interesting features to include in a ML model:
 - Variable importance plots

Getting to the AI solution / product

- Test if identified features are predictive of something
- Experiment with more data
- Design new algorithms
- Train models
- Deploy models in the real world
- Joint undertaking with customers:
 - Figure out what they need: analytics or AI
 - Do the data engineering and data science
 - Do the ML engineering to build a small model
 - Do testing to guide how to package the AI model and build the right team to bring that model to market

Reading Assignment

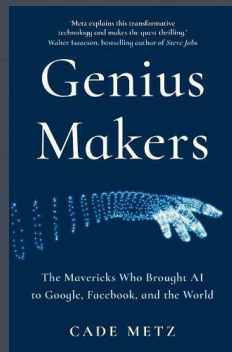


Read Chapter 5 (The Four Waves of AI) of the book “AI Super-Powers” by Kai-Fu Lee.

- The chapter identifies “four waves” of AI progress with distinct characteristics:
 - Internet AI
 - Business AI
 - Perception AI
 - Autonomous AI
- Identify the characteristics of and discuss opportunities arising from the four waves of AI.
- What are the necessary means to reap these opportunities in different entrepreneurial scenarios?



Reading Assignment



Read Chapter 14 (Hybris) of the book “Genious Makers” by Cade Metz.

- The chapter discusses Google’s failed attempt to enter the AI market of China and Baidu’s strategy.
- Identify the characteristics which, according to Baidu’s Chief Operations Officer, are necessary to enable the emergence of AI-based innovations with a large impact.



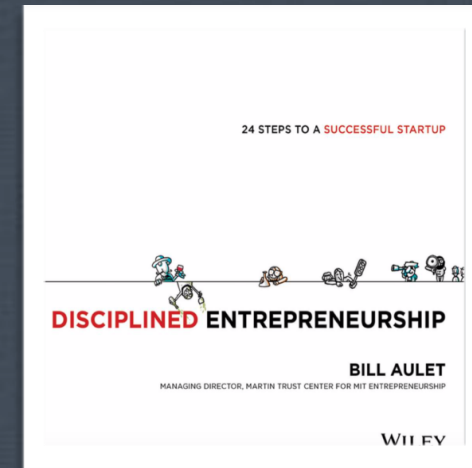
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MAI 622: AI Entrepreneurship



MAI 622: AI Entrepreneurship- Module 3

Disciplined Entrepreneurship



Module 3

Contents



- Disciplined Entrepreneurship Methodology (24-steps)
 - Who is your customer?
 - What you can do for your customer?
 - How does your customer acquire your product?
 - Business Model Design
 - Pricing, Life-time Value and Cost of Customer Acquisition
 - Design and Build your Product
- Lean Startup
- Lean AI

Planning



Weeks 5, 6, 7, 8, 9, 10, 11:

- 14 90-minute lectures
- 7 60-minute precepts

Learning Objectives

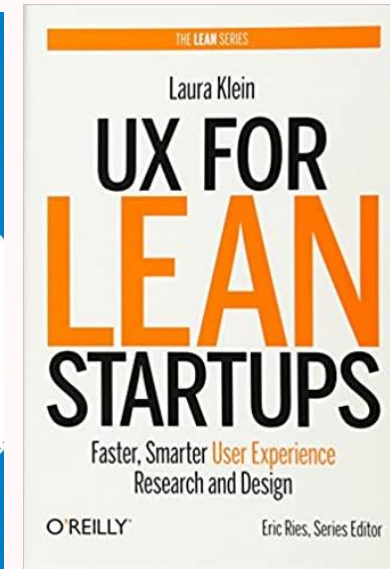
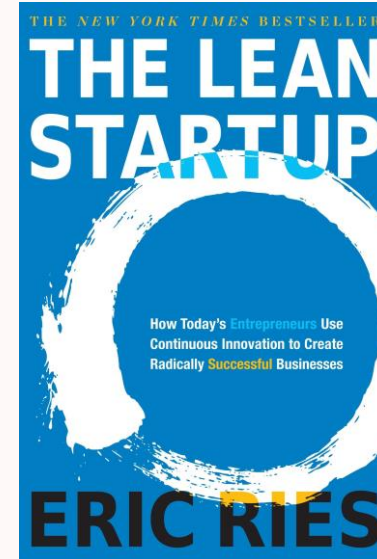
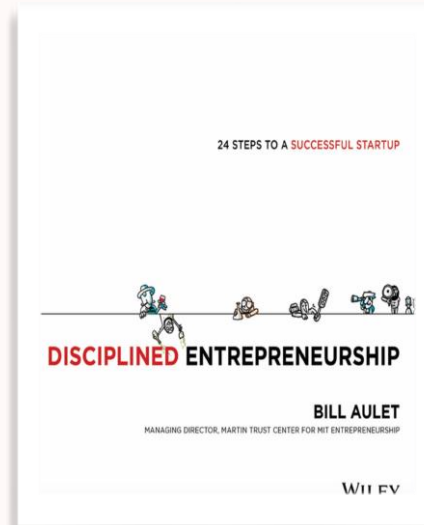


After attending this module, studying the suggested readings, and watching proposed videos students should be able to:

- Understand, explain, and apply the 24 steps of the Disciplined Entrepreneurship concept.
- Understand, explain, and follow the principles of Lean Startup.
- Recognize and describe particular opportunities, challenges, and playbooks for AI startups.

Module 3

Reference Readings



- **Disciplined Entrepreneurship: 24 Steps to a Successful Startup.** Bill Aulet, Wiley 2013.
- **The Lean Startup.** Eric Ries, 2011.
- **UX for Lean Startups.** Laura Klein, O'Reilly, 2013.

Online Videos & Courses



- **From Business Ideas to Business Models, Strategyzer**
 - <https://youtu.be/wwShFsSFb-Y>
- **Business Model Canvas, Strategyzer:**
 - <https://youtu.be/wIKP-BaC0jA>
- **Is there any space for more e-commerce or gig-economy startups?** James Mi, Founding Lightspeed China Partners (LCP), (2018).
 - <https://youtu.be/XGVUEjWJTEM>
- **Interview of Cindy Mi, founder and CEO of VIPKID, with the Y Combinator (2019)**
 - <https://www.youtube.com/watch?v=EoffBerre24>

Online Videos & Courses



- **From Business Ideas to Business Models, Strategyzer:**
 - <https://youtu.be/wwShFsSFb-Y>
- **Business Model Canvas, Strategyzer:**
 - <https://youtu.be/wIKP-BaC0jA>
- **Business Model Canvas explained, Strategyzer:**
 - <https://youtu.be/QoAOzMTLP5s>
- **The Business Model Canvas - 9 Steps to Creating a Successful Business Model by Business Channel.**
 - <https://youtu.be/IP0cUBWTgpY>
- **The Business Model Canvas course at Coursera:**
 - <https://www.coursera.org/learn/business-model-canvas>

Module 3: Disciplined Entrepreneurship

Section 1: 24 Steps Introduction



Three ways to start a new venture

- **Have an Idea:** You have thought of something new that can change the world—or some small part of it—in a positive way, or something that can improve an existing process you're familiar with and you want to **implement** it.
- **Have a Technology:** You have come up with a technological breakthrough and want to capitalize on it, or simply expedite its deployment to have a positive effect on society. Or, you have learned about a technological breakthrough and you see great potential for a business.
- **Have a Passion:** You are confident and you are comfortable pushing yourself to develop your skills in the most comprehensive way possible. You also might believe that being an entrepreneur is the way to have the biggest impact on the world. You simply might know that you want to work for yourself and control your own destiny, so you'd like to learn about entrepreneurship while looking for a good idea, technology, and/or partner.

Idea:

“I want to start a company in Africa that will create a sustainable business model to improve life for the people there and empower them with jobs.”

Here, the idea is that a sustainable business model will reduce poverty in Africa more effectively than charitable contributions to the poor. This sentence is enough to move on to the next step of Market Segmentation, though as you will see, you will have to be much more specific before you can turn the idea into a business.

Technology:

“I have a robot that allows you to feel objects rendered by a computer.”

This statement radiates with potential. How could someone benefit from being able to have a three-dimensional object on their computer screen and still be able to feel it, in some way, in physical space?

SensAble Technologies, featured in the book, is a company built around this very technology.

Passion:

“I have a master's in mechanical engineering and I can quickly prototype most any technological gadget you want and I want to put my skills to use in the most impactful way possible, and be my own boss.”

This person has identified a personal comparative advantage, the ability to prototype gadgets quickly, which can help a business go through product iterations faster. The person may want to consider a hardware-based business, as it would line up well with the comparative advantage.



Key question:

What can I do well that I would love to do
for an extended period of time?



Consider your skill set

- **Knowledge:** What was the focus of your education or career?
- **Capability:** What are you most proficient at?
- **Connections:** Who do you know that has expertise in different industries? Do you know other entrepreneurs?
- **Financial assets:** Do you have access to significant financial capital, or will you be relying on a meagre savings account to start out?
- **Name recognition:** What are you or your partners well-known for? Skills in engineering? Understanding fiber optics?
- **Past work experience:** In previous jobs you've held, what inefficiencies or "pain points" existed?
- **Passion for a particular market:** Does the idea of improving healthcare excite you? How about education? Energy? Transportation?
- **Commitment:** Do you have the time and effort to devote to this endeavor? Are you ready to make a new venture your primary (or only) focus?

User entrepreneurship

- Often, you will find an idea or technology that improves something for you personally, then realize that idea or technology has the potential to help many others.
- This phenomenon is called “user entrepreneurship”
- Nearly *half of all innovation-based startups* that are at least five years old were founded by user entrepreneurs.

Find a great team

- Your choice of co-founders is extremely important.
- Businesses with multiple founders are more successful than those founded by an individual.
- There are many resources that go into more depth about finding good co-founders.

Reading & Video Assignment



Watch the following videos:

- Finding a Co-founder in College, Y Combinator
 - <https://blog.ycombinator.com/advice-on-finding-a-cofounder/>



How to Find a Cofounder - Kat Manalac

12,608 views • Published on May 23, 2019

300 5 SHARE



Kevin Hale - How to Work Together

13,155 views • Published on Aug 22, 2019

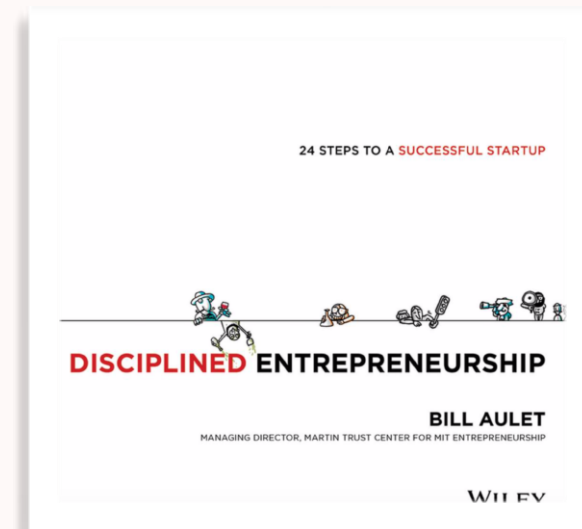
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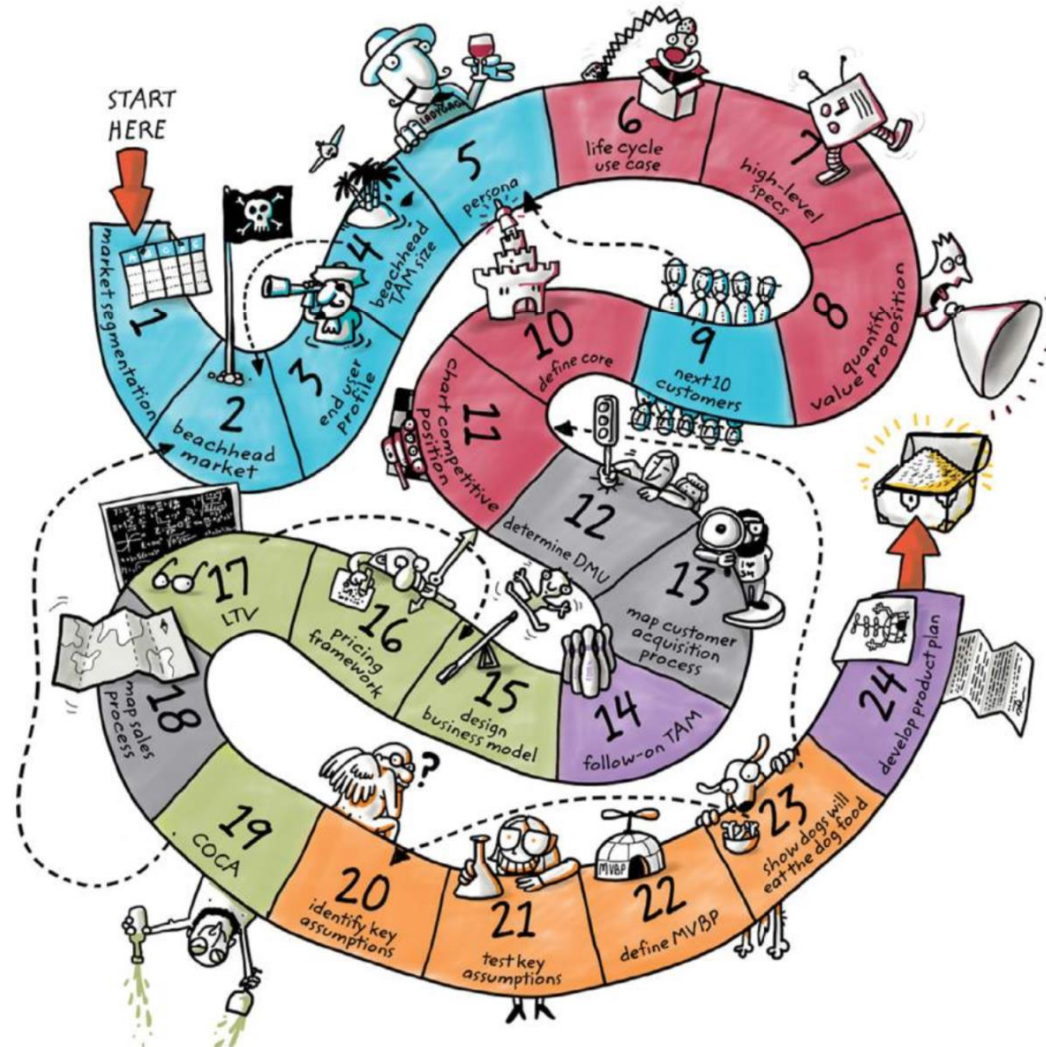
24 steps

- Once you have identified an idea or technology as the basis for your innovation-driven business, you must rigorously test and flesh out your proposal through **the 24 Steps**.



Bill Aulet





HOW DO YOU SCALE YOUR BUSINESS?

- 14 Calculate the TAM Size for Follow-on Markets
- 24 Develop a Product Plan

Six Themes of the 24 Steps

WHO IS YOUR CUSTOMER?

- 1 Market Segmentation
- 2 Select a Beachhead Market
- 3 Build an End User Profile
- 4 Calculate the TAM Size for the Beachhead Market
- 5 Profile the Persona for the Beachhead Market
- 9 Identify Your Next 10 Customers

WHAT CAN YOU DO FOR YOUR CUSTOMER?

- 6 Full Life Cycle Use Case
- 7 High-Level Product Specification
- 8 Quantify the Value Proposition
- 10 Define Your Core
- 11 Chart Your Competitive Position

HOW DOES YOUR CUSTOMER ACQUIRE YOUR PRODUCT?

- 12 Determine the Customer's Decision-Making Unit (DMU)
- 13 Map The Process to Acquire a Paying Customer
- 18 Map the Sales Process to Acquire a Customer

HOW DO YOU MAKE MONEY OFF YOUR PRODUCT?

- 15 Design a Business Model
- 16 Set Your Pricing Framework
- 17 Calculate the Lifetime Value (LTV) of an Acquired Customer
- 19 Calculate the Cost of Customer Acquisition (COCA)

HOW DO YOU DESIGN & BUILD YOUR PRODUCT?

- 20 Identify Key Assumptions
- 21 Test Key Assumptions
- 22 Define the Minimum Viable Business Product (MVBP)
- 23 Show That "The Dogs Will Eat the Dog Food"

HOW DO YOU SCALE YOUR BUSINESS?

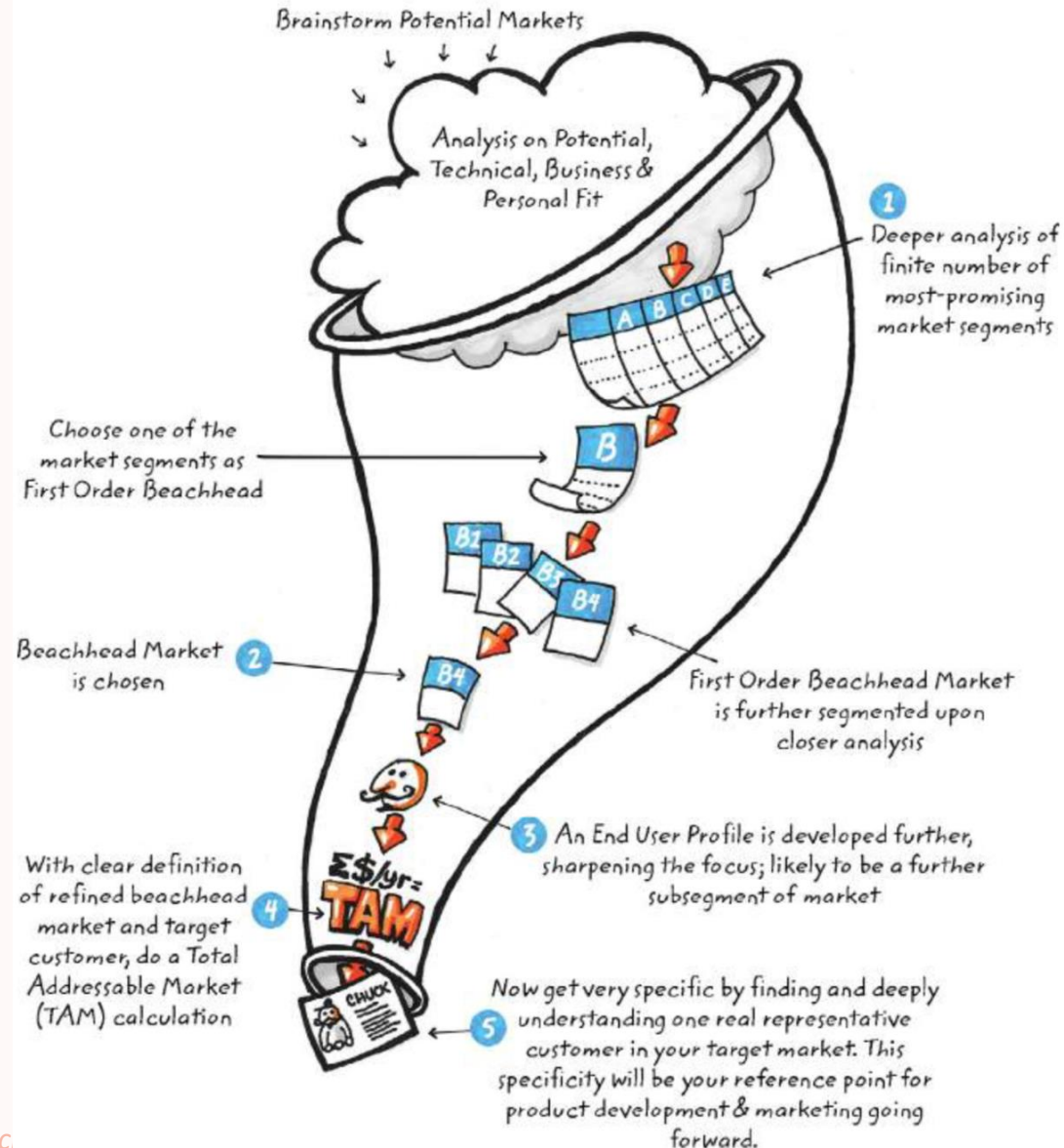
- 14 Calculate the TAM Size for Follow-on Markets
- 24 Develop a Product Plan

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Focus!

- Your first goal is to assess the needs of potential customers, **focusing on a target customer with the goal of achieving product-market fit**—a product that matches what customers in a specific market are interested in buying.
- **Focus** is very important because entrepreneurs have very **limited time and resources** and so must be **hyper-efficient**.
- Focus is so crucial to determining your target customer that **the first five steps** of the 24 Steps—from Market Segmentation to profiling your Persona—is defined as **“The Search for the Holy Grail of Specificity.”**

THE SEARCH FOR THE HOLY GRAIL OF SPECIFICITY



Reading Assignment



Download, review, read, and become familiar with the Disciplined Entrepreneurship Workbook Worksheets:

<https://www.dropbox.com/sh/6zcx3h7z0xlu5a/AACKoK7bLJhU-80ER5kwLEcza?dl=0>

Explore the Disciplined Entrepreneurship Toolbox:

<https://mariusursache.us20.list-manage.com/track/click?u=a6f7c430d8a4d381f8349128e&id=b8df57057c&e=14fa150b71>



Module 3: Disciplined Entrepreneurship

Section 2: Who is Your Customer?



Section 2

Contents



- **DH Step 1: Market Segmentation**
- **Talking to Customers**
- **DH Step 2: Select Beachhead Market**
- **DH Step 3: Build End-User Profile**
- DH Step 4: Total Addressable Market (TAM) size of Beachhead Market
- DH Step 5: Persona of the Beachhead Market
- DH Step 9 : Identify Your Next 10 Customers

Learning Objectives



After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Grasp the importance of customer understanding in the entrepreneurial pursuit.
- Understand, explain and implement market analysis.
- Know how to do market segmentation.
- Understand the concept of and identify your beachhead market.
- Understand how to talk to your potential customers and organize your market research.
- Understand the concept of the Total Addressable Market (TAM) and be able to calculate the TAM size of your beachhead market.
- Build and analyze an end-user profile.
- Create the persona for your Beachhead Market.
- Review the Lean Product Methodology
- Understand the concept of Value Proposition and learn how Lean Methodology addresses Market Segmentation and identifies underserved customer needs.
- Understand and apply how to define a Persona for your product.
- Understand and apply methodologies for exploring customer needs.



Learning Objectives



- Understand the concept of and identify your beachhead market.
- Understand the concept of the Total Addressable Market (TAM) and calculate the TAM size of your beachhead market.
- Build and analyze an end-user profile.
- Create the persona for your Beachhead Market.

Reading

List



- Chapters 2, 3, 4, 5. *Disciplined Entrepreneurship*, Bill Aulet, Wiley, 2013.
- How to calculate your total addressable market and make a great TAM slide for investors. by David Skok
 - <https://www.forentrepreneurs.com/calculating-tam/>

Section 2a: Who is Your Customer?

Step 1: Market Segmentation



Market Segmentation

- Brainstorm a wide array of potential customers and markets for your business.
- Narrow your list down to your **top 6–12 markets**.
- Gather **primary market research** on your top 6–12 markets.

Market segmentation



Seeing the world
through
the eyes of the
customer

vs.



Seeing the world
through
the perspective
of the company

*For success in entrepreneurship, there are some glasses that
are better than others to view the situation.*

THE SINGLE NECESSARY AND SUFFICIENT CONDITION FOR A BUSINESS ?



THE SINGLE NECESSARY AND SUFFICIENT CONDITION FOR A BUSINESS

A paying customer!



Key condition

- The day someone pays you money for your product or service, you have a business, and **not a day before**.
- You cannot define a business as a product, because **if nobody buys your product**, you simply **do not have a business**.
- **The marketplace is the final arbiter of success.**

Is it enough?

- A paying customer does not mean you have a good business.
- In order to have a good, sustainable business, you will need to gain **enough customers paying enough money** within a **relatively short period of time** so you do not run out of capital, but instead, become **profitable**.
- As a startup, you have few resources, so every action you take must be hyper-efficient.
- Therefore, you will not start by building a product or hiring developers or recruiting salespeople.
- Instead, you will take a **customer-driven approach** by **finding an unmet need and building your business around it**.

A new market

- Creating an innovative product where no market currently exists is essential to the success of a startup.
- By **creating a new market**, you will have a **very high, if not dominant, market share** that you can use as a basis for future expansion.
- Being a “me-too” company in an existing market is a more difficult proposition given your limited resources.

Target customer

- To create a company in a newly defined market space, you will focus on a **target customer**:
 - a group of potential customers who share many characteristics and who would all have similar reasons to buy a particular product.
- You must focus on identifying and understanding customers through primary market research

- **Wanting to sell to everyone**: you, a fledgling startup with little to no resources, can make products that fit the needs of anyone you run across.
- **The China Syndrome**: choose a huge existing market, get a fraction of the market share, and reap the rewards.

China syndrome

- If you could get even a tenth of a percent of the toothbrush market in China (population 1.3 billion), wouldn't you make a lot of money?
- Big companies with lots of resources can afford to work hard to gain incremental market share, but entrepreneurs don't have the luxury of resources.
- Take your resources and apply them to a narrow, carefully defined new market that you can dominate.



What is a “customer”?

- An entity that pays for, acquires, and uses your product:
 - a household, organization, or individual
- Within the broad definition of a customer, there is:
 - the **end user**, who ultimately uses your product, and
 - the **economic buyer**, who makes the final decision about whether to acquire the product.
- The end user and economic buyer can be the same person, depending on the situation.

Complex paying customers

- There are cases in which the “customer” definition gets more complicated:
- The first is when your business model calls for **both primary customers** (end users) **and secondary customers** (economic buyers) in order to **make money**.
 - Often, these businesses are structured so that **the primary customer is charged at below cost, or gets a product for free**, and **a third party pays for access to the primary customer and/or the primary customer's information**.
 - For instance, Google's search engine is free to use, but Google sells advertisements on search results pages to make money.
- Google's ability to provide advertisers with keyword-targeted ad placement and demographic information about search users further enhances Google's value proposition to advertisers.



Complex paying customers

- **Two-sided** or **multi-sided market**, where you need multiple target customers for your business to exist.
 - If you have a multi-sided market, you will complete each step once for each side of the market.
- But you will likely find through your primary market research that **one side of the market is more critical to win for your business to succeed.**

Market Segmentation: How to?

Step 1A: Brainstorm

- Start by brainstorming a wide array of market opportunities. (even the “crazy ideas”).
- Talk about your idea or technology with potential customers to get you clear and accurate feedback for your market segmentation.
 - The best scenario is when **you** are the potential customer yourself and **have a deep understanding of the problem you are trying to solve.**

Step 1A: Brainstorm

- Start by identifying potential industries for your idea.
- Then, list **who might benefit in each industry from your idea.**
- Focus on **end users**, not customers, because you will need a committed group of end users to have a sustainable business.
- Identify the different tasks your end user performs.

Step 1A: Brainstorm (ctd)

- If you have an idea, you may think you already have a specific market and a specific application in mind.

Are your perceptions correct?

- Likely, your defined market is not specific enough, but you may also find that the market you have in mind is not a good match for your idea, or that other markets are better for starting a business.

Be open-minded and creative.

Step 1A: Brainstorm (ctd)

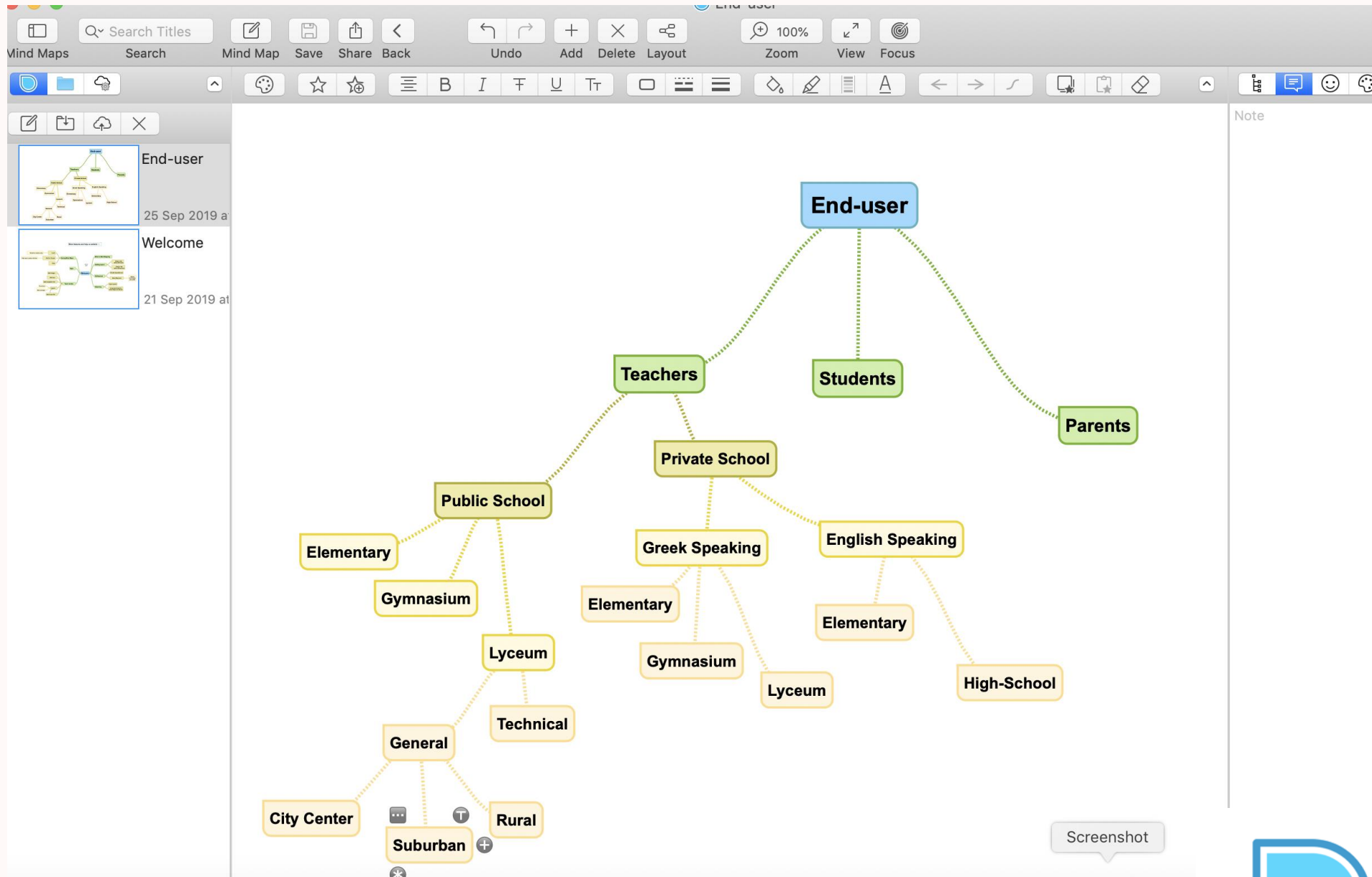
- For instance, if you are expressing your idea as “I want to create an online social network for high school teachers and parents to communicate about their children’s progress in school,” you may lock yourself into a path that does **not produce a sustainable business**.
- Start instead with **“I want to improve education with technology.”**
- Then ask yourself **why you are passionate about that idea?**
- If technology is your primary passion, you probably want to consider a wider range of industries than just education.
- If your passion is education, you can simply segment the education industry, but **be open to other solutions** besides one involving a high degree of technology.

Step 1A: Brainstorm (ctd)

- If you have a new technology, you probably can think of a large number of industries that could benefit from your product.
- While you may have domain expertise in a certain field, that field may not have any good applications for your technology, so **be open to different industries**.
- Later on, you will filter your ideas to take your passions into account.

Brainstorming example

- Mission: Improve education with tech
- Who is your end user?
 - Teachers, administrators, parents, students?
- Each category can be further subdivided.
- Are you focusing on end users in universities or in grade school?
 - What different types of schools are these end users associated with?
 - Which countries and regions do the end users work and live in?



SimpleMind





When you segment out your market, you will find there are a lot of segments, and that seemingly broad categories have a lot of important differences.

Segment first, and then determine whether any categories are common enough to merge.

Brainstorming example



- Identify the different tasks your end user performs.
- You may find enough similarities between certain subcategories that you can group them, depending on what your idea is, but you will find that out during your primary market research.
- Do not start combining categories without knowing more about your customer.
- A useful question to ask is: **why the consumer would purchase a product in a particular industry segment?**
 - For the education segmentation above, why would a parent purchase a product that improves education?

Step 1 A: Brainstorm



- Be broad and expansive when segmenting end users for your new product.
 - You are brainstorming now; later, you will narrow the list as you start to analyze each segment.
- Brainstorming result: You have *identified numerous potential end users and applications* for your idea or technology.

Step 1B: Narrow



- Your next task is to list the **top 6–12 particularly interesting market opportunities**
- A market opportunity consists of a specific end user and one or a handful of applications.
- As you do primary market research, the specific application you have in mind may not be one the end user is looking for, so it is better to focus on end users for now.

How to identify market opportunities?

- Is the target customer well-funded?
 - If the customer does not have money, the market is not attractive because it will not be sustainable and provide positive cash flow for the new venture to grow.
- Is the target customer readily accessible to your sales force?
 - Your product will go through iterations of improvement very rapidly, and **direct customer feedback is an essential part** of that process. Also, since your product is substantially new and never seen before (and potentially disruptive), third parties may not know how to be effective at creating demand for your product.
- Does the target customer have a compelling reason to buy?
 - Would the customer buy your product instead of another similar solution? Or, is the customer content with whatever solution is already being used? Remember that on many occasions, your primary competition will be **the customer doing nothing**.

How to identify market opportunities?

- Can you today, with the help of partners, deliver a whole product?
 - No one wants to buy a new alternator and install it in their car, even if the alternator is much better than what they currently have.
 - They want to buy a car. That is, they want to buy a whole functional solution, not assemble one themselves.
 - You will likely need to work with other vendors to deliver a solution that incorporates your product, which means that you will need to convince other manufacturers and distributors that your product is worth integrating into their workflows.
- Is there entrenched competition that could block you?
 - How strong are those competitors, from the customer's viewpoint (not your viewpoint or from a technical standpoint)?
 - Can the competition **block you** from starting a business relationship with a customer?
 - And how do you stand out from what your customer perceives as alternatives?

How to identify market opportunities?

- If you win this segment, can you leverage it to enter additional segments?
 - If you dominate this market opportunity, are there adjacent opportunities where you can sell your product with only slight modifications to your product or your sales strategy?
 - Or will you have to radically revise your product or sales strategy in order to take advantage of additional market opportunities and have a hard time scaling your business.
- Is the market consistent with the values, passions, and goals of the founding team?
 - You want to make sure that the founders' personal goals do not take a back seat to the other criteria presented here.

How to identify market opportunities?

- Start by asking these questions at an industry level.
- Then, consider what the answers would be for the end user of your product.
- Within an industry, if you have segmented your potential end users by branching out into many categories, **ask the questions at each branching level.**
- Your limiting factor is **time**—**you will research each of these markets in depth, and you do not have time to consider an unlimited number of options.**
 - Six to twelve market opportunities is more than sufficient—with a realistic number being much **closer to six** than **twelve.**

Step 1C: Primary Market Research



- **Primary Market Research**: talking directly with customers and observing customers will help you get a better sense of which market opportunity is best.
 - If there is already a market research report out there with all the information you need, it is probably too late for your new venture.
- You will gather the vast majority of your information from **direct interaction with real potential customers about their situations, pain points, opportunities, and market information**.
- While you should find out what you can about customers and markets before you talk to potential customers, it is impossible to **overstate the importance of doing direct customer research!**
 - any other sources of information and knowledge are frequently superficial and likely of minimal value.

Step 1C: Primary Market Research



- The goal of primary market research is to understand the customers' **pain points**, and later design a solution that will be of great value to them.
- To do so, you will need to thoroughly understand the **underlying issues** and **sources of opportunity**, whether by **speaking** with them or, even better, **watching** them as they work (*"primary observational research"*).
- You will want to talk with as many end users as possible, but individuals who are not end users may also give you valuable advice or may point you in the right direction.

Reading Assignment



Read the following articles:

- **How to Conduct a Market Research Survey for Your Startup Idea?** by Nick Freiling, Startup Grind
 - <https://medium.com/startup-grind/how-to-conduct-a-market-research-survey-for-your-product-idea-d048dc080259>
- **How Superhuman Built an Engine to Find Product/Market Fit** by Rahul Vorha.
 - <https://firstround.com/review/how-superhuman-built-an-engine-to-find-product-market-fit/>



Video Assignment



Watch the following videos:

- **How to Do Market Segmentation** by Bill Aulet, MIT Open Courseware
 - <https://ocw.mit.edu/courses/sloan-school-of-management/15-390-new-enterprises-spring-2013/video-tutorials/lecture-6/>
- **Building Product, Talking to Users, and Growing** by Adora Cheung, Startup School, Y Combinator.
 - <http://startupclass.samaltman.com/courses/lec01/>
- **Ideas, Products, Teams and Execution Part II** by Dustin Moskowitz, Sam Altman, Y Combinator.
 - <http://startupclass.samaltman.com/courses/lec02/>
- **How to Get Ideas and How to Measure?** by Stewart Butterfield & Adam D'Angelo, Y Combinator.
 - <https://www.startupschool.org/videos/3>



Section 2a: Who is Your Customer?

Talking to Customers



Reference Reading



“UX for Lean Startups.” Laura Klein, O’Reilly, 2013.

How to talk to potential customers?

- When you talk with potential customers, **encourage the flow of ideas**; **don't restrain them** or try to **gain a commitment**.
- If the potential customer senses you are trying to sell them something, they will change their behavior; they will either say little or say things that are related to the market opportunity you seem to be presenting them, rather than providing you with new, innovative ideas for markets.
 - As a result, you will get less market data, and what you do get will be biased.
- Likewise, you should **not count on your customer to design your product** or tell you the answer to their problems.

Key factors to collect accurate info

- You must have a high level of intellectual curiosity.
- You must be fearless about getting on the phone, in the car, or on a plane to pursue this information.
- You must have an ability to listen and get people to talk.
- You must be open-minded and unbiased, and never presuppose a solution (inquiry, not advocacy).
- You must have the ability to explain what the essence of your proposed offering might look like while also being flexible.
- You must have time and patience to devote to this important step.

Caveats

1. You do not have “the answer” for your potential customers and their needs.
2. Your potential customers do not have “the answer” for you.
3. Talk with potential customers in “inquiry” mode, not “advocacy/sales” mode. Listen to what they have to say, and don’t try to get them to buy anything.

Organise your research

The main categories you are trying to obtain information on for each market are:

- 1. End User:** Who specifically would be using your product? The end user is often your “champion,” who you need on board so that your product is successfully adopted. You have narrowed down your end user some already, but as you do primary market research you may find the category can be even further segmented.
- 2. Application:** What would the end user be using your product for? What is the task that would be dramatically improved by your new venture?

Organise your research

- 3. Benefits:** What is the actual value that the end user **would gain from the use of your new product?** Is it a time savings? A cost savings? Additional profit?
- 4. Lead Customers:** Who are the most influential customers that others look to for thought leadership and adoption of new technology?
- These are sometimes referred to as **“lighthouse customers”** because they are so respected that when they buy, others look to them and follow their lead, gaining you instant credibility.
 - Some people call these customers **“early adopters,”** but lead customers are not technological enthusiasts. They must be respected by others as innovative and successful customers who purchase because the product provides them with real value and not simply bragging rights.

Organise your research

5. **Market Characteristics:** What about this market would help or hinder the adoption of new technology?
6. **Partners/Players:** Which companies will you need to work with to provide a solution that integrates into the customer's workflow? Sometimes, this category will tie into the "Complementary Assets Required" category below.
7. **Size of the Market:** Roughly, how many potential customers exist if you achieve 100 percent market penetration?

Organise your research

- 8. Competition:** Who, if anyone, is making similar products—real or perceived? Remember, this is from the customer's perspective.
- 9. Complementary Assets Required:** What else does your customer need in order to get the “full solution,” that is, to get full functionality from your product?
- You will likely need to bundle your product with products from other manufacturers so that customers can easily buy your product and have full functionality.
 - At the very least, you will need to identify which other products your customer will need to buy to use your product.

Organise your research

- It is easiest to organize this information in a **matrix**, where:
 - each **potential market opportunity** is a **column header**, and
 - each **category of information** is a **row**.
- There may be other categories that are relevant to your situation.
- Also, some of the rows in the example matrix may be unnecessary for your situation; but this general format can be a good starting point for you to customize as appropriate.

Table I.1 The SensAble Market Segmentation Chart

Industry	Entertainment	Industrial Design	Medical Visualization	Surgical Simulation	Micro Surgery	Geophysical Visualization	Non Visual C.H.I.	Prototyping
End User	• Animator	• Stylist • Designer	• Radiologist • Surgeon	• Med Student • Surgeon	• Surgeon	• Geophysicist	• Blind Person	• Engineer
Application	• Sculpt • Animation • Paint	• Sculpt • Paint • Modeling	• Segmentation • Navigation • Surgical planning • Diagnosis	• Training • Surgical planning	• Ophthalm. Surgery • Neurosurgery	• View enhancement • Drill plan	• H.U.I.	• Design review • Model evaluation
Benefits	• Ease of use • Reduce cycle	• Reduce cycle • Increase accuracy	• Ease of use • Increase accuracy	• Increase accuracy • Increase accuracy	• Increase accuracy	• Increase yields	• Increase access, "mainstream"	• Reduce cycle • Improve designs
Lead Customers	• Disney • ILM • Dreamworks	• Toyota • Ford • Rollerblade	• Brigham & Women's • German Cancer Rsrch	• U. of Colorado • Penn • BDI	• Dr. Ohgami • Ottawa Eye	• BHP • WMC / CSIRO	• Certec • U. of Delaware	• Volkswagen • Stratasys • Toyota
Market Characteristics	• Early adopt. • High-priced talent • High growth	• Dislike CAD & computers • High-priced talent	• Mainstream • High-priced talent • HMO	• Mainstream • High-priced talent • HMO	• Early adopt • High-priced talent • HMO • Not computer automated	• Late main. • Oligopoly	• Late main. • No money • Gov't sponsor	• Mainstream • Pressure to reduce prod. cycle
Partners/ Players	• Alias • Soft Image • Discrete Logic	• PTC • Alias • Imageware	• GE • Siemens • Picker	• Smith & Neph • Heartport • Ethicon • US Surgical	• Toshiba • Hitachi	• Landmark • Fractal Graphics	• IBM • Apple • SUN • HP • Microsoft	• PTC • Solid Works
Size of Market	40,000	Information Category		X0,000	X,000	X,000	X,000,000	X00,000
Competition	Watcom			Immersion	None yet	None yet		None yet
Platform	• SGI • Windows	• SGI • SUN	• SGI • SUN	• ?	• None	• SGI • SUN	• Windows	• SUN, HF
Complementary Assets Required	• NURBS • Stylus • Dynamics	• NURBS • Stylus	• Voxels • Stylus • VRML	• 6 DOF • Custom devices	• 3 Finger scaling	• Voxels • Stylus	• Windows I/F • P300	• NURBS • VRML • Dynamics

Potential Market Opportunity

Information Category

Case study: Sensable Technologies



Figure 1.2 The SensAble PHANToM.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Case study: Sensable Technologies



Industry	Entertainment	Industrial Design	Medical Visualization	Surgical Simulation	Micro Surgery	Geophysical Visualization	Non Visual C.H.I.	Prototyping	V.R.
End User	• Animator	• Stylist • Designer	• Radiologist • Surgeon	• Med Student • Surgeon	• Surgeon	• Geophysicist	• Blind Person	• Engineer	• Researcher • Designer
Application	• Sculpt • Animation • Paint	• Sculpt • Paint • Modeling	• Segment-ation • Navigation • Surgical planning • Diagnosis	• Training • Surgical planning	• Ophthalm. Surgery • Neurosurgery	• View enhancement • Drill plan	• H.U.I.	• Design review • Model evaluation	• Architect Render • Simulation • Training
Benefits	• Ease of use • Reduce cycle	• Reduce cycle • Increase accuracy	• Ease of use • Increase accuracy	• Increase use of new tech. • Increase accuracy	• Reduce cycle • Increase accuracy	• Reduce errors • Increase yields	• Increase access, "mainstream"	• Reduce cycle • Improve designs	• Realism • Increase Accuracy
Lead Customers	• Disney • ILM • Dreamworks	• Toyota • Ford • Rollerblade	• Brigham & Women's • German Cancer Rsrch	• U of Colorado • Penn • BDI	• Dr. Ohgami • Ottawa Eye	• BHP • WMC / CSIRO	• Certec • U Delaware	• Volkswagen • Stratasys • Toyota	• Boeing • Corrie Latham • NASA
Market Characteristics	• Early adopt. • High-priced talent • High growth	• Dislike CAD & computers • High-priced talent	• Mainstream • High-priced talent • HMO	• Mainstream • High-priced talent • HMO	• Early adopt • High Priced talent • HMO • Not computer automated	• Late main. • Oligopoly	• Late main • No money • Gov't sponsor	• Mainstream • Pressure to reduce prod. cycle	• Early adopt • Fuzzy ROI • Slow accept
Partners/ Players	• Alias • Soft Image • Discrete Logic	• PTC • Alias • Imageware	• GE • Siemens • Picker	• Smith & Neph • Heartport • Ethicon • US Surgical	• Toshiba • Hitachi	• Landmark • Fractal Graphics	• IBM • Apple • SUN • HP • Microsoft	• PTC • Solid Works	• Sense 8 • Division • Coryphaeus
Size of Market	40,000	X00,000	X0,000	X0,000	X,000	X,000	X,000,000	X00,000	X,000
Competition	Watcom	None yet	None yet	Immersion	None yet	None yet		None yet	• None yet
Platform	• SGI • Windows	• SGI • SUN	• SGI • SUN	?	None	• SGI • SUN	• Windows	• SUN, HF	• SGI • SUN, HF
Needs	• NURBS • Stylus • Dynamics	• NURBS • Stylus	• Voxels • Stylus • VRML	• 6 DOF • Custom devices	• 3 Finger scaling	• Voxels • Stylus	• Windows I/F • P300	• NURBS • VRML • Dynamics	• Polygons • Dynamics • 2-finger?

Summary: primary market analysis



Potential Market
Opportunity

Information
Category

Define your Market: identify top 6-12 market opportunities

Table 1.1 The SensAble Market Segmentation Chart

Industry	Entertainment	Industrial Design	Medical Visualization	Surgical Simulation	Micro Surgery	Geophysical Visualization	Non Visual C.H.I.	Prototyping
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Benefits	• Ease of use • Reduce cycle	• Reduce cycle • Increase accuracy	• Ease of use • Increase accuracy	• Increase use of new tech. • Increase accuracy	• Reduce cycle • Increase accuracy	• Reduce errors • Increase yields	• Increase access, "mainstream"	• Reduce cycle • Improve designs
Lead Customers	• Disney • ILM • Dreamworks	• Toyota • Ford • Rollerblade	• Brigham & Women's • German Cancer Rsrch	• U. of Colorado • Penn • BDI	• Dr. Ohgami • Ottawa Eye	• BHP • WMC / CSIRO	• Certec • U. of Delaware	• Volkswagen • Stratasy • Toyota
Market Characteristics	• Early adopt. • High-priced talent • High growth	• Dislike CAD & computers • High-priced talent	• Mainstream • High-priced talent • HMO	• Mainstream • High-priced talent • HMO	• Early adopt • High-priced talent • HMO • Not computer automated	• Late main. • Oligopoly	• Late main. • No money • Gov't sponsor	• Mainstream • Pressure to reduce prod. cycle
Partners/ Players	• Alias • Soft Image • Discrete Logic	• PTC • Alias • Imageware	• GE • Siemens • Picker	• Smith & Neph • Heartport • Ethicon • US Surgical	• Toshiba • Hitachi	• Landmark • Fractal Graphics	• IBM • Apple • SUN • HP • Microsoft	• PTC • Solid Works
Size of Market	40,000	X00,000	X0,000	X0,000	X,000	X,000	X,000,000	X00,000
Competition	Watcom	None yet	None yet	Immersion	None yet	None yet		None yet
Platform	• SGI • Windows	• SGI • SUN	• SGI • SUN	• ?	None	• SGI • SUN	• Windows	• SUN, HF
Complementary Assets Required	• NURBS • Stylus • Dynamics	• NURBS • Stylus	• Voxels • Stylus • VRML	• 6 DOF • Custom devices	• 3 Finger scaling	• Voxels • Stylus	• Windows I/F • P300	• NURBS • VRML • Dynamics



Primary market research importance



- Primary market research is fundamental to your success.
- This is the only way you will collect the invaluable information that is not available anywhere else and you will understand what is behind the information.
- Once you have done this primary market research, it may well be the most valuable information you will have.
- Good, direct customer research is paramount to this process; you will not be able to simply think through the user profile on your own.

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

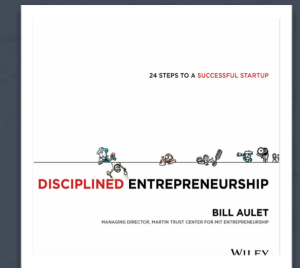
Video Assignment



Watch the following video and write down a short critical summary:

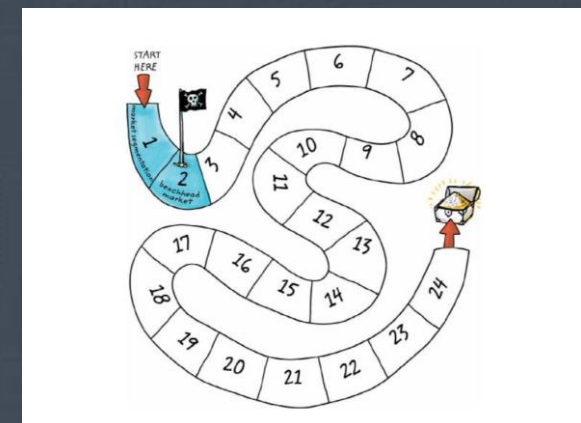
- **How To Find Product Market Fit** by David Rusenko, Y Combinator (2018).
 - <https://www.youtube.com/watch?v=0LNQxT9LvM0>





Section 2a: Who is Your Customer?

Step 2: Select Beachhead Market



Step 2: Goals

- Analyze your top 6–12 market opportunities and choose **one to pursue**.
- Further segment that market to determine your **beachhead market**.

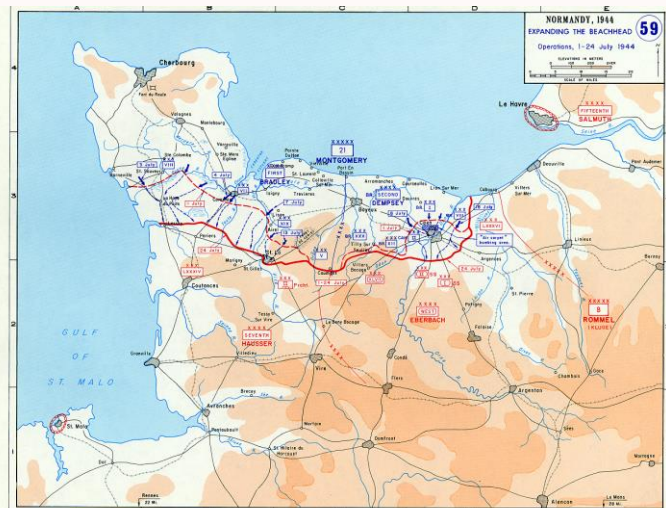
*Selecting a beachhead market is part of the critical process of narrowing your **focus** and attention to one critical area of attack.*

Focus!

- When people are given what appear to be multiple paths to success, they will try to retain all the paths as options.
- However, **selecting one specific path** would have guaranteed them the **most success**. [Dan Ariely]
- By choosing **a single market to excel in**, your startup can more easily establish a strong market position, and hopefully a state of positive cash flow, before it runs out of resources.
- By focusing in this way, you will position yourself to most quickly achieve the positive word of mouth (WOM) that can be the source of success or failure for entrepreneurs.

Beachhead

- If an army wants to invade enemy territory with water access, the army may employ a **beachhead strategy**:
- the army lands a force on a beach in enemy territory, controlling that area as their base to land more troops and supplies, and to attack other enemy areas.



Beachhead market

Your **beachhead market** is where:

- once you gain a dominant market share,
- you will have the strength to **attack adjacent markets** with different offerings,
- building a larger company with each new following.

Avoid analysis - paralysis

- In many cases, there are multiple paths to success, so it is not imperative to choose the absolute best market.
- Therefore, get started doing, rather than getting stuck in “analysis paralysis.”
 - Your goal is to start a company, not become a professional market analyst.
 - Action will produce real data that will tell you quickly if the market will or will not be viable.
 - If the one you have selected is not a viable market, you will still hopefully have time and resources to return to your matrix and attempt a second market.

Is this a good beachhead?



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How to choose a beachhead?

Seven criteria:

1. Is the target customer well-funded?
2. Is the target customer readily accessible to your sales force?
3. Does the target customer have a compelling reason to buy?
4. Can you today, with the help of partners, deliver a whole product?
5. Is there entrenched competition that could block you?
6. If you win this segment, can you leverage it to enter additional segments?
7. Is the market consistent with the values, passions, and goals of the founding team?

Start small

- It is better to avoid selecting the largest or very large markets, even if they seem like the “best” segments.
 - The first market you attack will be a significant learning experience for you, so you are better off learning in a smaller market where you can quickly get high exposure among the base of potential customers.
- Choose a smaller beachhead market—for example, if you live in a small geographic region, start there before trying to launch in a larger region.

And then, segment further!

- As you begin to focus on your beachhead market, you will quickly recognize that it almost surely can be segmented into smaller markets.
- This is standard **good practice**.
 - You should not worry about being focused on too small a market: You want to start in a market where you have great ability to dominate in a relatively short time period; a narrow, focused market is the best way to do so.

When do you stop?

How do you tell if your market is targeted enough?

- **Three criteria:**

- The customers within the market all buy similar products.
- The customers within the market have a similar sales cycle and expect products to provide value in similar ways.
 - Your salespeople can shift from selling to one customer to selling to a different customer and still be very effective with little or no loss of productivity.
- There is “word of mouth” between customers in the market, meaning they can serve as compelling and high-value references for each other in making purchases.

Case study: nanoparticles for the sunscreen market



- Invention: how to synthesize more quickly nanoparticles for medical uses. One particular application was a nano-scale polymer coating that binds to skin and can slowly release medication over a 24-hour period.
- Spent weeks researching different applications for this polymer, including **medical applications** in hospitals and outpatient services, including treating cancer.
- Another market segment considered was **sunscreen**, using the time-release feature to slowly release sun-blocking chemicals over a long period of time.
- A consumer market such as sunscreen required **less time and money than medical markets**, which need a thorough FDA review. The consumer market would allow the team to work closely with real customers and get a feedback loop going so they could more efficiently develop the technology into a product.
- However, the **sunscreen market proved to be too large** and **too diverse** for the team, which continued to subsegment the market through primary customer research. Eventually, they settled on one of the subsegments, **extreme athletes in their thirties who do triathlons**. These athletes are extremely competitive with a lot of disposable income that they spend on their fitness. When the team approached a number of these athletes with their idea, they were extremely positive toward the concept (or potential product). The team also realized that if these extreme athletes bought the product, other markets would be easier to enter.

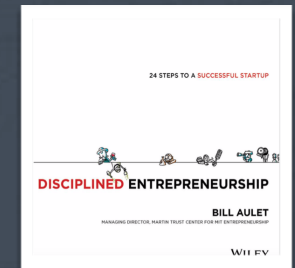
Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013



Video Assignment

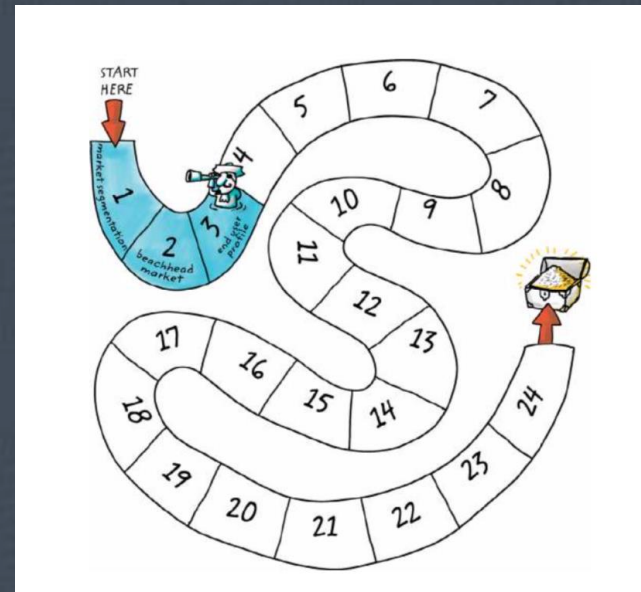


- What is a Beachhead Market by Bill Aulet, MIT Open Courseware
 - <https://ocw.mit.edu/courses/sloan-school-of-management/15-390-new-enterprises-spring-2013/video-tutorials/lecture-7/>



Section 2a: Who is Your Customer?

Step 3: Build End-User Profile





Who is the “Customer” ?

- Each customer actually consists of an **end user** and a **decision-making unit**.
- **End User**: The individual (a real person!) who will use your product.
 - The end user is usually a member of the household or organization that purchases your product. Very likely to be an integral part of the decision-making unit but **may** or **may not** be **the most important person** within it.
- **Decision-Making Unit**: The individual(s) who decide whether the customer will buy your product, consisting of:
 - **Champion**: The person who wants the customer to purchase the product; often the end user.
 - **Primary Economic Buyer**: The person with the authority to spend money to purchase the product. Sometimes this is the end user.
 - **Influencers, Veto Power, Purchasing Department**, and so on: People who have sway or direct control over the decisions of the Primary Economic Buyer.
- Your focus will be on the end user, because **if the end user does not want your product, you will be unable to reach your customer.**

End-user profile

- What is it? A description of a narrowly defined subset of end users with similar characteristics and with similar needs.
- Why is needed?
 - You need to build your business based on [the customer you are serving](#), rather than pushing the product or service you want to sell onto the market.
 - It helps you learn about your **target customer**
 - Trying to sell a product to a wide variety of end users is unfocused. Your sales strategy may not be equally effective for both 25-year-olds and 50-year-olds; your feature sets may differ depending on the priorities of the end user.
 - Do **not** try to describe **every** end user.
- Beware!
 - Look for a user subset the same way you looked for a beachhead market.
 - Typically requires a lot of time, thought, and further research.
 - Even in your narrow beachhead, the end users are not all alike.
 - Further focus by choosing a [specific demographic](#) of end users.

End-user profile characteristics

- What is their gender?
- What is their age range?
- What is their income range?
- What is their geographic location?
- What motivates them?
- What do they fear most?
- Who is their hero?
- Where do they go for vacation? For dinner? Before work?
- What newspapers do they read? Websites? What TV shows do they watch?
- What is the general reason they are buying this product? Savings? Image? Peer pressure?
- What makes them special and identifiable?
- What is their story?

You may not yet be able to answer many of the above questions; they also may not be relevant to your situation—or so you might think at this point. You will revisit many of these questions and more with greater specificity when you build the Persona.

End-user in the team

- Huge advantage: you can have a depth of understanding about your customer that could be a critical factor in your success:
 - You will not have to rely on assumptions, which are often inaccurate about who your end user is and what they want.
- If you don't have someone from the demographic already on your founding team, you should hire a target end user for your executive team.

Case study: SensAble



- Identified possible end-users

Industry	Entertainment	Industrial Design	Medical Visualization	Surgical Simulation	Micro Surgery	Geophysical Visualization	Non Visual C.H.I.	Prototyping
End User	• Animator	• Stylist • Designer	• Radiologist • Surgeon	• Med Student • Surgeon	• Surgeon	• Geophysicist	• Blind Person	• Engineer

- **Industrial design industry** complied to the seven criteria for beachhead selection:
 - Good funding, easily accessible to sales, have compelling reason to buy, feasibility of product delivery, lack of entrenched competition, ease of leveraging to additional segments, consistent with values and goals.

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013

Beachhead market selection



- Further analysis showed that industrial designers could and should be divided into **three distinct groups**:
 - One group handles rectangular shapes with sharp edges, incorporating a lot of simple geometry.
 - A second group handles highly stylized shapes with smooth surfaces, best represented by mathematical equations.
 - A third group works with highly organic and sculpted forms, often designing with clay.
- SensAble product was most appropriately suited for free-form designing, so the third group was the optimum market for us to focus on.
- The customers in this group were primarily **toy** and **footwear** companies with extensive clay studios and many sculptors among their designers

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013

Beachhead market selection



- **Toy and footwear companies** could be grouped as one market, because industrial designers in the toy and footwear industries acted so similarly that they completely met the three conditions of a beachhead market presented earlier:
 - **Buy similar products:** They both used lots of clay to sculpt highly organic, 3D art shapes that were shipped to China on a very tight schedule.
 - **Have similar sales cycle:** They would buy the same design products and use them in the same way. The pressures they faced were the same. The sales processes and value propositions were identical.
 - **“Word of mouth” exists:** Further, in a very telling sign, the designers frequently moved between toy and shoe companies to advance their careers; they even belonged to the same subgroup in the Industrial Design Society of America.

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013

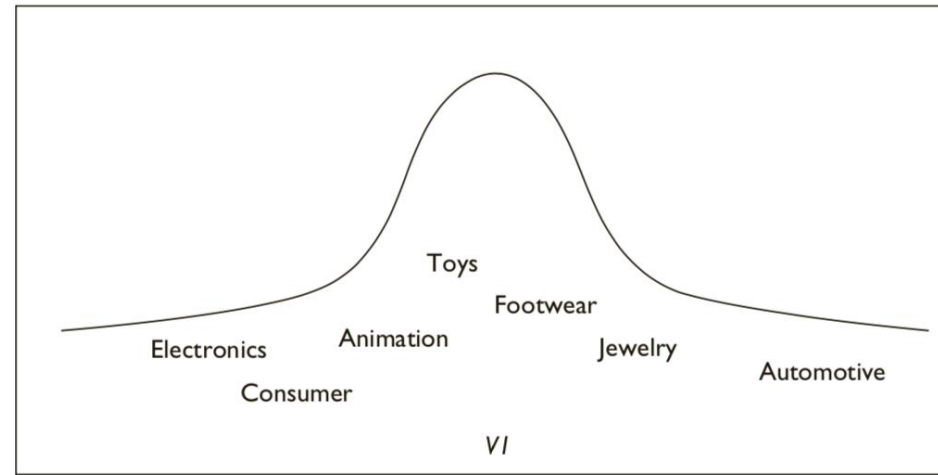


Figure 2.1 The toy and footwear markets were our primary focus. The next adjacent markets were likely animation and jewelry, but we would need to do more research when we prepared to scale.

End user profile for SensAble



Table 3.1 SensAble End User Profile

Industrial Designer in Toy and Footwear Companies

Gender	Male (90%), Female (10%)
Age	24–35, estimating that the average is close to 31
Level at Company	Individual contributor and not a manager
Income	\$50K–\$60K per year, depending on the region
Education	Rhode Island School of Design, Pasadena School of the Arts, or other high-end arts school
History	This is not their first job in the industry so they have some experience. However, this is not their end job either. This is something they will do as long as it is interesting and fulfilling. The industry is tough and they realize they can be laid off if things don't go well. This also leads to a lack of strong attachment to their job, so if another job comes up, they will move on without reservation.

End user profile for SensAble



Context

The designers see themselves as artists, not businesspeople. While they might want to be doing great art outside of the commercial world, they have realized that they need a paycheck to survive and have made that compromise. They may do some art on the side but they also are serious about wanting to create products that show off their artistic skills, and they are frustrated with products that don't properly convey their very specific design intent. Hence they have not given up using clay studios, which convey design intent much better than the new digital tools that are being forced on them. The new tools are engineering tools that have been modified for designers but make it very difficult to convey design intent. While the designers are tech-competent and even savvy when it comes to creative tools, that is not at their core. It is a means to an end. They might have an Apple computer at home and one in their department, but at the office, they are primarily working on their Windows-based PC.

Personality

The designers like to socialize but would never be confused with fraternity boys. They do not have much money and are careful to not waste it. They drink carefully and/or do light recreational drugs when they go out. They like to sit around and listen to technopop music (like Thomas Dolby) and talk about the arts. They generally wear all black and a good number of them have body piercings and maybe even artfully done tattoos. While they do like to socialize, they can also be quiet and introverted much of the time.

Case study: Ride-Sharing in Russia



- Idea: a new ride-sharing service for a group of customers in Moscow who did not have such a service.
- Focus on younger tech-savvy drivers who they thought would be more likely to use the service, and they were interested in using the new infrastructure of mobile phones and social media to do this in a capital-efficient way that had not been possible before.

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013

End user profile for ride-sharing



- Initial end user profile:
 - **Gender and age**: both male and female, with an age range of 17– 40 years old.
 - **Occupation**: students, young professionals, migrants to Moscow from rural areas of Russia, and middle management.
 - **“Social level”**: “medium or high”.
 - **Technology acceptance**: owners of smartphones, technologically advanced, early adopters of new tech products, and active users of social networks.
- **Is this OK???**
 - Do all males and females ages 17–40 have the same goals, aspirations, and fears?
 - Is the beachhead market segmented enough? Try “**Why would the end user want to use my product?**” Question to further segment it.
 - **What does “social level” mean**, and how can you be more specific?
 - **Which type and brand of smartphone** or providers of service?
 - **Which social networks?**

Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013

Module 3: Disciplined Entrepreneurship

Section 2: Who is Your Customer?



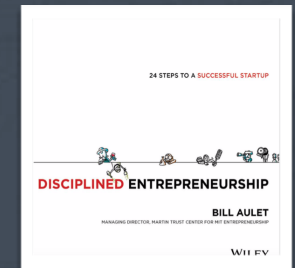
Section 2

Contents

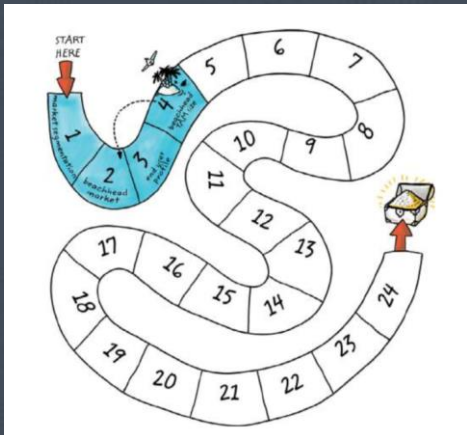


- DH Step 1: Market Segmentation
- Talking to Customers
- DH Step 2: Select Beachhead Market
- DH Step 3: Build End-User Profile
- **DH Step 4: Total Addressable Market (TAM) size of Beachhead Market**
- **DH Step 5: Persona of the Beachhead Market**
- DH Step 9 : Identify Your Next 10 Customers

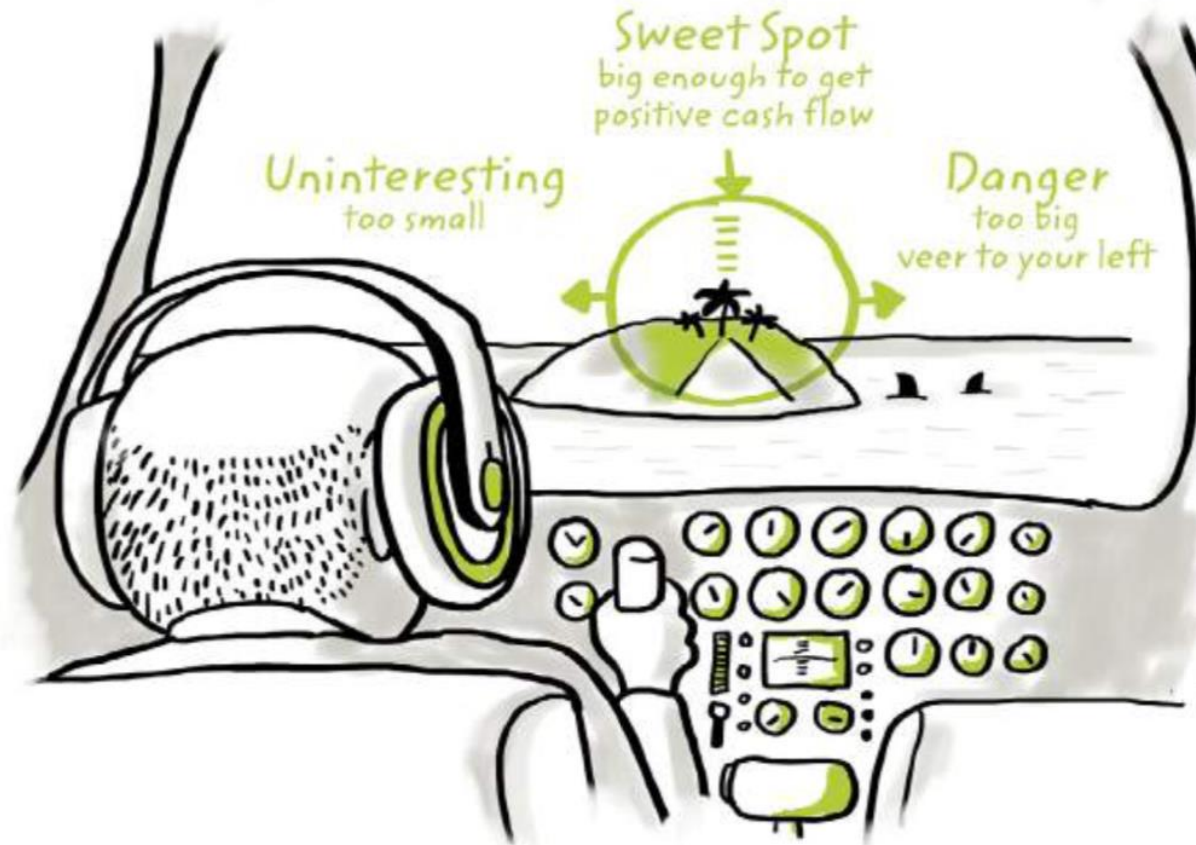
Section 2b: Who is Your Customer?



Step 4: Total Addressable Market (TAM) Size for the Beachhead Market



- It is important to start to **understand the size of the market you are targeting early.**
- You will modify this as time goes on, but it is wise to be **thinking about this point early on and develop at least a rough market size** to know you are heading in the right general direction.
- Approach:
 - Use the demographics from the End User Profile to determine quantitatively how large your beachhead market is.
 - Use this market size number to determine whether you need to further segment the market to have a more appropriately sized beachhead market.



Beachhead TAM calculation
is your sanity check
that you are headed
in the right direction

Total Addressable Market (TAM)

- The TAM for your beachhead market is the **amount of annual revenue, expressed in dollars per year, your business would earn if you achieved 100 percent market share in that market.**
- To calculate the TAM:
 1. Determine **how many end users exist** that fit your End User Profile using a bottom-up analysis based on primary market research
 2. Complement this with a top-down analysis to confirm your findings.
 3. Determine **how much revenue** each end user is worth per year.
 4. **Multiplying** the two numbers results in the TAM.

What is an expected TAM?

- You are looking for a market that is **big enough** for you to get to **critical mass**, develop **key capabilities**, and get to **cash-flow positive in the market**.
- However, **if the market is too big, you will likely not have sufficient resources to compete**, and as a result you may get overwhelmed and either not succeed or have to raise money without much of a track record for potential investors to evaluate.
- Entrepreneurs often tend to **inflate** the TAM with excessive optimism, but **a big number is not necessarily better**.

Bottom-up Analysis

- Best way to calculate the number of end users that fit your End User Profile.
- Customer lists, trade associations, and other sources of customer information can help you identify **how many customers there are**, as well as how many end users each customer has.
- Sometimes this is called “**counting noses**” because you are getting very specific and you know where each potential customer is.

Top-down Analysis

- Starts by using secondary market research, such as market analysis reports, to determine how many end users meet different characteristics.
- This data is usually expressed with an inverted pyramid that has several horizontal levels, where the bottom-most level is the smallest and contains all end users who meet your End User Profile.
- Should be complementary to bottom-up analysis for two reasons:
 - In top-down analysis, you will often **overestimate** the number of end users in the market because you are not being as specific in your analysis.
 - Too much top-down analysis will lead you to **focus on spreadsheets, not customers**.

From End Users to \$\$\$

- Determine **how much annual revenue an individual end user is worth**.
- Multiply the revenue per end user by the number of end users to calculate the **TAM as dollars per year**.
- Make some assumptions about **how much a customer is willing to pay per end user**.
 - Base the number on the budgets of the potential customers you have identified.
 - **How much are they spending today** to accomplish what your product does?
 - **How much have they paid in the past** for other **new products**?
 - **How much value does your product create** for them?

What should your TAM be?

- If the estimated value of your TAM is **less than \$5 million per year**, it is possible that your new venture has not identified a big enough beachhead market, especially because entrepreneurs often inflate the size of their market and their expected market share.
 - An initial TAM of \$5 million per year could be a successful business, if you can capture the market quickly and convincingly, especially if the gross margins on your product would be very high (e.g., 90 percent - software, mobile apps, information-based business models) and you do not need a lot of employees to do it.
 - This could create positive cash flow from the market, which would be a significant accomplishment and a good beachhead market.
- Generally, a **TAM that is between \$20 million per year to \$100 million per year is a good target**. Anything **over \$1 billion certainly raises flags**.

Why TAM calculation is important?

- Determining the TAM is [a fundamental part of creating a successful product or service](#).
- You will need to have a clear understanding of your market when presenting your idea or technology to others, such as advisors and investors, because they will expect you to present a TAM figure and explain your logic behind it.
- Do not spend an inordinate amount of time on the TAM calculation, because there will be other factors that influence your success as well, such as gross margin, speed, potential for dominant and sustainable market.
- You will likely come back and revisit the TAM calculation and modify it to make it more credible.
- You will also be very interested in the [growth rate of the TAM](#). You would measure that using something called the Compound Annual Growth Rate (CAGR).

SensAble Case Study



- A bottom-up analysis in a reasonable amount of time, helped count real customers:
 - Talking with a few toy companies
 - Determining how many other major toy companies there were, from generally available free data at the library.
 - Personal communication with staff at the Industrial Design Society of America who helped refine the list.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

How many toy companies?



- Realization that toy companies existed in three different geographic regions—the United States, Asia, and Europe, leads to further segmentation of the market.

Table 4.1 SensAble List of Customers for Toy Industry

Europe	United States	Asia
<ul style="list-style-type: none">• Synapse• Hasbro• Schleich• Playmobil• Mattel• Disneyland	<ul style="list-style-type: none">• Hasbro• Mattel• Fisher-Price• FP Brands• Creaa• Equity Marketing• Marketing Store• Gemmy• Gentle Giant• Whitestone	<ul style="list-style-type: none">• Bandai• Tomy• Unitec• Creaa• Hermon Industries• Luen Shing• Mattel• Hasbro• Equity Marketing

Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.



How many industrial designers?



Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.

- Using good relations with the user base and built up trust and confidence, helped determine with high confidence how many industrial designers were at three customers.
- This data led to:
 - Calculating the “**designer density**,” the number of designers per thousand employees and the number of designers per million dollars of revenue.
 - Making educated guesses about other companies where we did not have sufficient time or connections to “count noses.”
- The same process was followed for the footwear industry.

How many footwear companies?



FOOTWEAR INDUSTRY LIST OF CUSTOMERS

- Adidas (United States, Europe, Asia)
- Nike (United States, Asia)
- New Balance (United States)
- Reebok (United States, Europe, Asia)
- Fila (United States, Europe)
- Ecco Design (United States, Europe)
- Stride Rite (United States)
- Spalding (United States)
- Rockport (United States)
- Timberland (United States)
- Wolverine (United States)

- Doc Martens (Europe)
- Alsa (Europe)
- Gabor (Europe)
- Kurt John (Europe)
- Clark (Europe)
- Regra Design (Europe)

- Pou Chen (Asia)
- Feng Tay (Asia)
- ASICS (Asia)



Budget estimates



- Determine **how much budget per designer existed for each customer**, which required additional data as well as some assumptions and calculations.
- Started by looking at how much customers were spending today for a similar but inferior digital product, or what they were spending to simply get the job done without a digital product.
- Despite other costs the customer may incur, the focus on **how much the customer spends per designer is an easier data point to tabulate** and seemed to best represent market potential.

Budget estimates



- Each customer budgeted for a clay workbench for each designer, which when fully equipped, cost approximately \$20,000 per bench in the United States and Europe, with a five-year replacement cycle.
- Each customer also budgeted for a digital workstation and software for each designer that costs about \$15,000 in the United States and Europe and had a three-year replacement cycle. Both of these costs would be displaced by SensAble's product. (We found that these two items often cost less for companies buying for designers based in Asia)
- We also included an estimated annual growth rate, based on our primary market research. While it did not directly affect the TAM calculation, it was a useful data point for future steps that we could easily collect during this round of research. Also, a positive growth number is a good indicator of a healthy market opportunity.

Table 4.2 SensAble Technologies Beachhead Market TAM Calculation

	United States	Europe	Asia
Industrial Designers/Sculptors (Toys)	1,500	1,000	1,000
Industrial Designers/Sculptors (Footwear)	750	500	500
Estimated Annual Growth Rate	8%	8%	8%
Primary Market Research:			
Price per clay workbench	\$20,000	\$20,000	\$15,000
Price per digital workstation	\$15,000	\$15,000	\$10,000
Life of physical clay workbenches	5 years	5 years	5 years
Life of digital workstations	3 years	3 years	3 years
Annual expenditure per designer (based on assumption that each designer would otherwise have both a clay workbench and a digital workbench, and we can replace them both with our offering)	\$9,000	\$9,000	\$6,333
TAM Calculation:			
Industrial Designers/Sculptors (Toys)	\$13,500,000	\$9,000,000	\$6,333,333
Industrial Designers/Sculptors (Footwear)	\$6,750,000	\$4,500,000	\$3,166,667
Total TAM for Beachhead (\$/year)	\$20,250,000	\$13,500,000	\$9,500,000



Reading Assignment



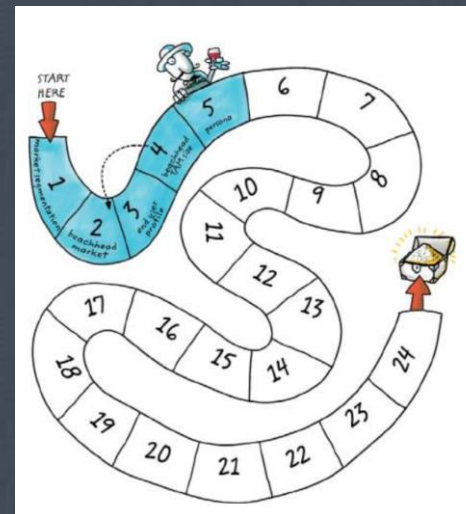
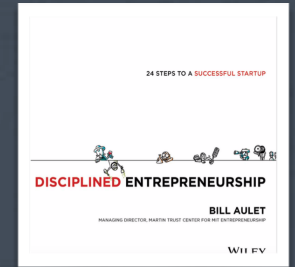
Read the article “How to calculate your total addressable market and make a great TAM slide for investors” by David Skok

- <https://www.forentrepreneurs.com/calculating-tam/>



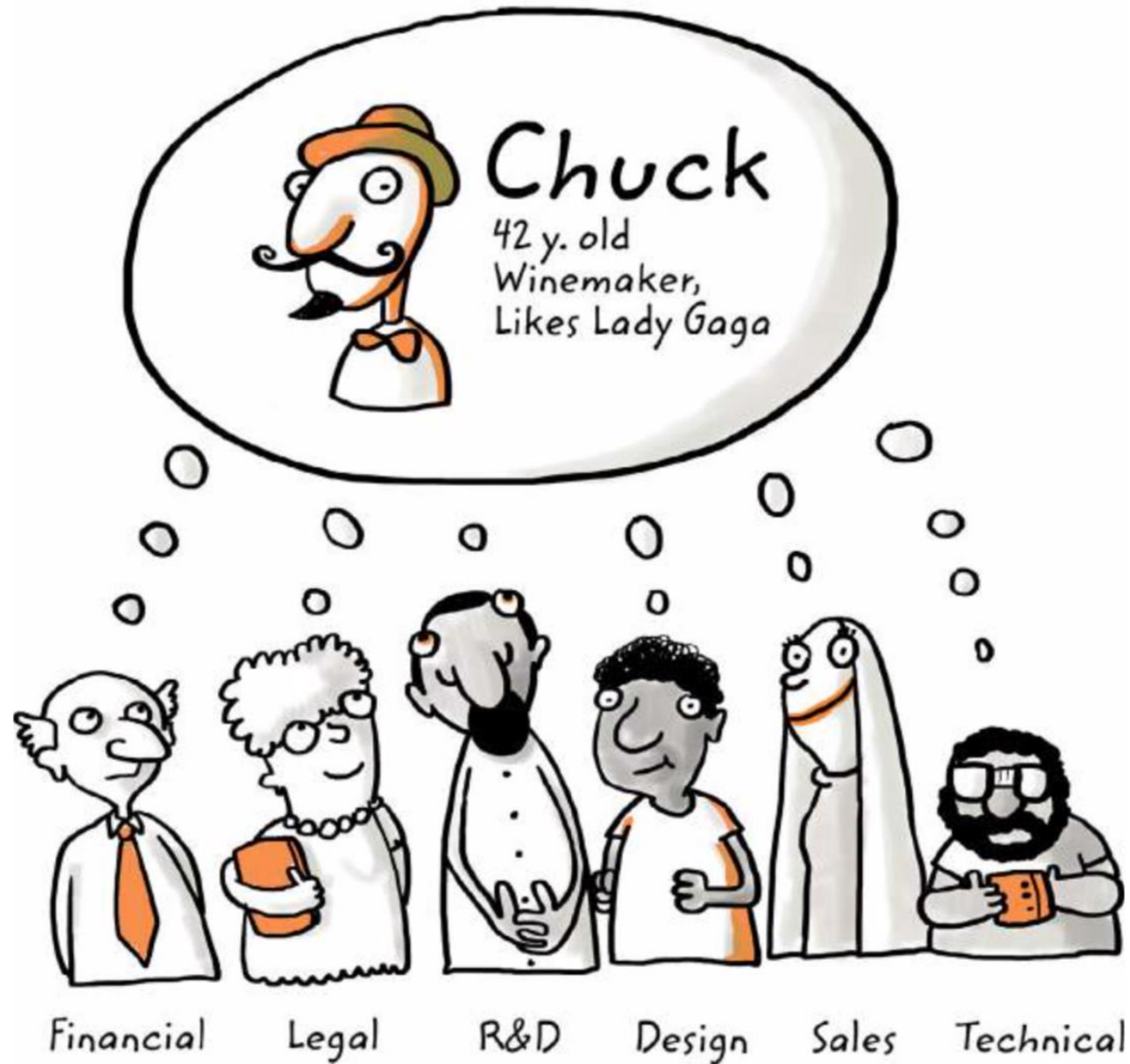
Section 2b: Who is Your Customer?

Step 5: the Persona for the Beachhead Market



Goals

- Choose **one end user** from one potential customer to be your Persona.
- Build a **detailed description** of that **real person**.
- Make the Persona visible to all in the new venture so that it gets referenced on an ongoing basis.



The Persona ensures that everyone is unambiguously focused on the same target.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Who is the Persona?

- A person who best represents the primary customer for the beachhead market.
- One end user from one potential customer who best exemplifies your End User Profile.
- Answers definitively all questions about what your potential customers might want.
- While even a generic Persona can be helpful, it is best to push the process even further.
- The Persona should be a real person, not a composite.
 - No one end user represents 100% of the characteristics of every end user in your End User Profile.
 - But as you work toward defining the Persona, you will be able to find someone who matches the profile quite well. You will then **focus your product development around this individual**.

How to choose the Persona?

If I had only one end user to represent our End User Profile, who would it be?

- The process of creating a Persona is important, so you should involve all the key members of your team, regardless of their role in the group.
- Team members who are involved in the process will end up enjoying, embracing, and getting a lot of value out of the process of creating the Persona.
- Take the primary market research you have on some of the most interested customers, as well as the End User Profile, and discuss the pros and cons of making each customer the Persona.
- After this analysis, you will choose one to be the Persona, knowing that you might change it later as you get more information.
- Don't spend too much time worrying whether you have the perfect Persona; just make your best guess and get the process started.

Mapping the Persona

- Prepare a **fact sheet** about the Persona, based on the information you already have. Include:
 - A drawing or photograph of the individual.
 - Information about the person's life (born, raised, education, family, age, etc.)
 - Information about the person's job (what company, how many years, training, managers, salary, performance metrics if a B2B case, etc.).
 - A list with the Persona's Purchasing Criteria in Prioritised Order.
- Be **specific**.
- Identify key facts specific to your business that you will want to include in order for the Persona to be useful to you.

Prioritising Purchasing criteria

- Prioritisation is very important, as these priorities will dictate what purchasing decisions the Persona makes.
- It is crucial to understand how your customer prioritises their needs and wants.
 - The top priority is the concern that keeps the Persona awake at night.
 - It is the thing that she either fears the most or gets most excited about.
 - It is what will get her fired or promoted and often the most visible thing that could go right or wrong. A list provided by the end user will get you started, but when

Interviewing the Persona

- A list provided by the end user will get you started with the purchasing criteria and their priorities.
- After you have identified what facts you have and don't have, interview the end user who is your Persona again and fill in the gaps in what you know.
- **Beware!**
 - You cannot necessarily believe everything the end user tells you in an interview;
 - You should validate what they say. Often the end user actually believes what they are saying, but will in reality take very different actions
- Allow the conversation to be open-ended, because you will likely learn additional facts that are relevant to your Persona.
- Go beyond what your Persona says and carefully notice all the details about her as well.
 - Is her desk organized?
 - Does she have pictures in her office?
 - What kind of clothes does she wear?
 - Are there particularly odd characteristics?

Persona Case Study



Table 5.1 Chuck Karroll Persona

Facilities Manager, IBM NE Data Center, in Littleton, MA

Environment	<ul style="list-style-type: none">• Now has just over 20K Blade servers today growing at 15 percent per quarter for the past two years and for the foreseeable future.
Personal Information	<ul style="list-style-type: none">• He is second-generation American (parents from Ireland).• Born in Medford, Massachusetts.• Medford High to Middlesex Community College.• Moved to Winchester.• Family with 2 kids (12, 15).• Just turned 40 this year.
Career Context	<ul style="list-style-type: none">• Mid-career, 18 years at IBM and not looking to leave.• He is technical in the technician sense, not the engineering development sense.• He is maintenance-focused and his vocational degree is relevant.• Has been in current job for five years and has had three different managers already but hopes to keep this job for next five years at least.• Promotion path forward is to manage more facilities.• Makes \$65K per year and has the potential for a 5 percent bonus at the end of the year, based on the unit's overall performance and his contribution as determined by his boss, the data center manager.• Eligible for salary increase each year, based on his appraisal (can be between 0 and 12 percent).• He has been consistently ranked a 1 or 2 (on a scale of 1–5 where 1 is the best) in his yearly performance review, with reliability and supporting the business unit's growth as two key metrics upon which he is rated.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Persona Case Study



Information Sources

- He prefers people to websites when he looks for information and answers to questions.
- Belongs to AFCOM (association for data center management professionals) and gets a lot of information from them, and especially likes to go to the Data Center World conference in early October each year in Las Vegas.
- Second-biggest influence is the Uptime Institute.
- Has started to look at Green Grid but not impressed.

Purchasing Criteria in Prioritized Order

- Also starting to get forwarded e-mail about a blog (Hamilton and Manos) that other influential facilities managers are starting to read, and he has recently bookmarked it himself
1. Reliability (highest priority)
 2. Growth (high priority)
 3. Costs (medium priority)
 4. “Greenness” (low priority—extra credit)

Other Noteworthy Items

- Drives a Ford F-150 pickup truck and always buys American
- He wears a beeper that is always on
- Listens to country music
- He used to be a volunteer fireman and is proud of it. He makes level-headed decisions when there is a crisis, calling in his training to act fast and put out fires

Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.



After the interview

- Add information from interview to the fact sheet in another team meeting to make sure everyone is on the same page and that no crucial details have been omitted or overlooked.
- Once you have finalized your fact sheet, [summarize a few key areas on a sheet of butcher paper](#) or other large sheet of paper, and post it on the wall so that your team does not forget who they are in business for.
- Some companies make a cardboard cutout of the Persona and keep it in the office.
- Other leading-edge companies pull up an electronic version of the Persona when making important decisions in order to discuss what the Persona's perspective would be on the subject.

Persona Case Study



Silviu

35 y.o.
Alternative channels
manager (small bank)
Earns 2,500 EUR/mo

STORY: Energetic and ambitious.
Has a family, but is a social person.
Likes gadgets (Apple fan), motorbikes, and snowboarding.
Likes good wine & dining w/ friends.
Prefers doing business with people he likes.

GOALS: Go up the ladder (VP/CEO in 10 y).
Do something different/stand out.
Be appreciated for results.
His bank to become more competitive.

NEEDS: To get quick measurable results (customer loyalty & satisfaction).
To lower his costs.
To move faster/smarter than competitors.
To find a good technology partner.

PAINS: Large IT projects are expensive and take long time to implement.
Low competitiveness means more pressure (small bank).
Upper management doesn't understand the leverage of
usable, user-friendly technology.

Figure 5.1 Making the Persona visual means everyone on your team will be more engaged in the process and will keep the Persona in the front of their minds.

Persona: More than an exercise

- The Persona should become a touch point as you think about decisions going forward.
 - What features should you prioritize?
 - Drop?
 - How should you allocate resources?
 - Who should you hire to sell the product?
 - What should your message be?
 - Who should you partner with?
 - Where do you go to meet your customers?
 - Who is influencing your customer's mindset on your product?
- The process of answering these questions starts to **bring alignment among the team** and resolves misunderstandings that are bound to occur from imprecise communications.
- Once the Persona is done, it is also useful to maintain this alignment going forward.
- If done effectively, it will help guide all kinds of decisions and create a consistent vision throughout the company.

What about multiple Personas?

- When your company aspires to address a two-sided market (like eBay and Google) you should actually start out with two Personas.
- This is not due to a lack of focus, but rather to the fact that their core businesses are two-sided markets; so they needed one Persona for each market.
- For example, when eBay first started its auction site, it would have had one Persona for a buyer and a completely different Persona for a seller.
- Likewise, Google, at the beginning, should have had one Persona for its target search user and another Persona for its target buyer of advertisements.
- Google and eBay are so large today that they have many personas to match the many areas of their business, and entrepreneurs sometimes like to point to the two companies as reasons why startups too can have multiple personas.
- However, large companies have the resources to cover multiple markets and use multiple personas. You do not have this luxury, so don't be led astray by what large companies do with personas. Focus on your one Persona; or, if you have a multi-sided market, one Persona for each side of the market.

What no to do

- The Persona exercise can even be extended to make personas who you explicitly decide **not to serve**.
- Such an exercise can help you to focus and not distract your precious resources.
- You can even talk about how you handle these customers and efficiently redirect them.
- It is very hard and takes practice for entrepreneurs to turn away business, but it is exactly that type of focus that will allow you to build a scalable and profitable business.
- Often in entrepreneurship, your success is determined as much by **what you do not do** as by what you do.

Persona Case Study



Table 5.2 Ed Champ Persona

Name	Ed Champ
Title	Sculpting Manager, Boys' Toys R&D, Hasbro, Pawtucket, Rhode Island
Age	40 (he is about 10 years older than the developers he hangs out with; but he fits in well with the group and is thought to be one of the guys—they are almost all guys—even though he is their supervisor)
Income	\$73.5K (he is the highest paid in the group, by a good margin, due to his seniority; he has been at Hasbro in this location for 14 years and has been a top performer and promoted through the ranks)
Schooling	Missouri State University—Bachelors of Fine Arts & Science: Sculpture and Anatomy (he secretly admires Rhode Island School of Design—RISD—graduates but that is not how he got here)
Personal	Has a girlfriend, but no talk of marriage; he seems to be married to his job. He has a child from a previous relationship, but the child does not live with him; many of his friends are gay.
Career Promotion	It is very unlikely he will get further promoted as he does not like management and it is not his forte. He hopes to make more money to keep up with inflation, but mostly he just loves his job and living in Rhode Island with creative types—and at his age, the job security is good.
Industry Associations	A very strong and active member of IDSA (Industrial Design Society of America) above all else. There are local meetings which he looks forward to. These can be epic, in part because of the relevant content, but even more so because he gets

Persona Case Study



	<p>to hang out with people from RISD, Pasadena Arts Center College of Design, and the like, and talk into the night about the latest in art and design. There are national meetings as well, and he sometimes he goes to the big SIGGRAPH conference (often held in Los Angeles) where there are some great parties.</p>
Music	<p>His group listens to technopop artists like Thomas Dolby; while he is not wild about it, he likes it.</p>
Socializing	<p>His social life often revolves around his work. He likes to hang out with designers; but they don't have much money so when they go to bars, they drink wine (but not beer) and sip whatever drink they get so that it lasts. They have little disposable income so they have to be very careful to not blow money. Interestingly, they are more likely to do designer drugs (e.g., ecstasy) than to lose control by getting drunk. At the bars they go to in Providence, he and his friends often wear all black. It is also common for them to have body piercings, wear jewelry, and have discreet tattoos. But always, their life revolves around art and talking about art.</p>
Heroes	<p>Milton Glaser, John Lasseter (Disney & Pixar), Steve Jobs</p>
What Gets Him Motivated	<p>Making great products and seeing them get to market with his design intent.</p>
What He Fears Most	<ol style="list-style-type: none">1. Having to leave Hasbro because it is bought or something worse. This is not true for the other designers, but unique to him.2. Putting out a product that he feels is crap because he ran out of time to get it done right.3. Having his design intent ruined by the engineers after he sends it on to them.
Priorities	<ol style="list-style-type: none">1. Time to market.2. Being able to express his design intent.3. Being assured his design intent is not lost when engineers get ahold of it.

Video Assignments



- How to Run a User Interview? by Emmett Shear, Y Combinator (2014)
 - <https://youtu.be/qAws7eXItMk>
- How to talk to users? by Eric Migikowski, Y Combinator (2019)
 - <https://www.startupschool.org/videos/63>
- How to do a user interview? by Konstantinos Kazakos, Google Ventures (2016)
 - <https://www.youtube.com/watch?v=Qq3OiHQ-HCU>

Module 3: Disciplined Entrepreneurship

Section 3: What can you do for your customer?



Section 3

Contents



- **DH Step 6: Full Life Cycle Use Case**
- **In search of use cases for the “AI Company”**
- DH Step 7: High-Level Product Specification
- The “Lean AI” Playbook
- DH Step 8: Quantify the Value Proposition
- DH Step 10: Define your Core
- DH Step 11: Chart your Competitive Position

Learning Objectives

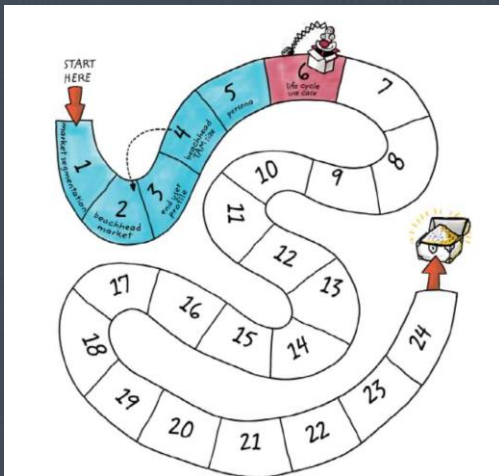
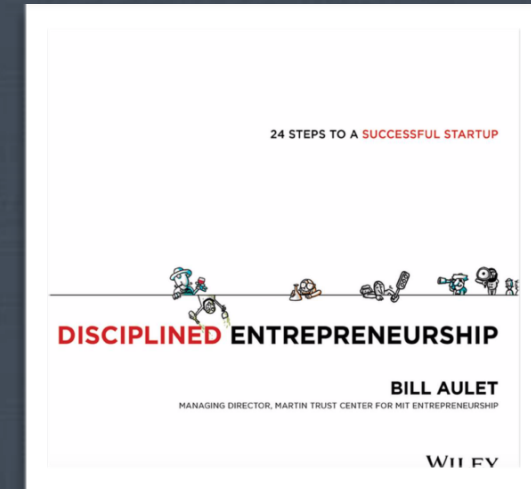


After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Be able to develop a full life cycle use case for your product.
- Produce a high-level product specification.
- Quantify your value proposition.
- Apply the process to find your next 10 customers and understand what you get out of this.
- Define the Core of your value proposition.
- Chart your competitive position.
- Understand and apply methodologies for exploring customer needs.
- Understand and apply Lean methodologies for defining your value proposition.
- Re-work on your idea applying the Lean Startup principles explored earlier.
- One-to-one mentoring about your idea.

Section 3: What can you do for your Customer?

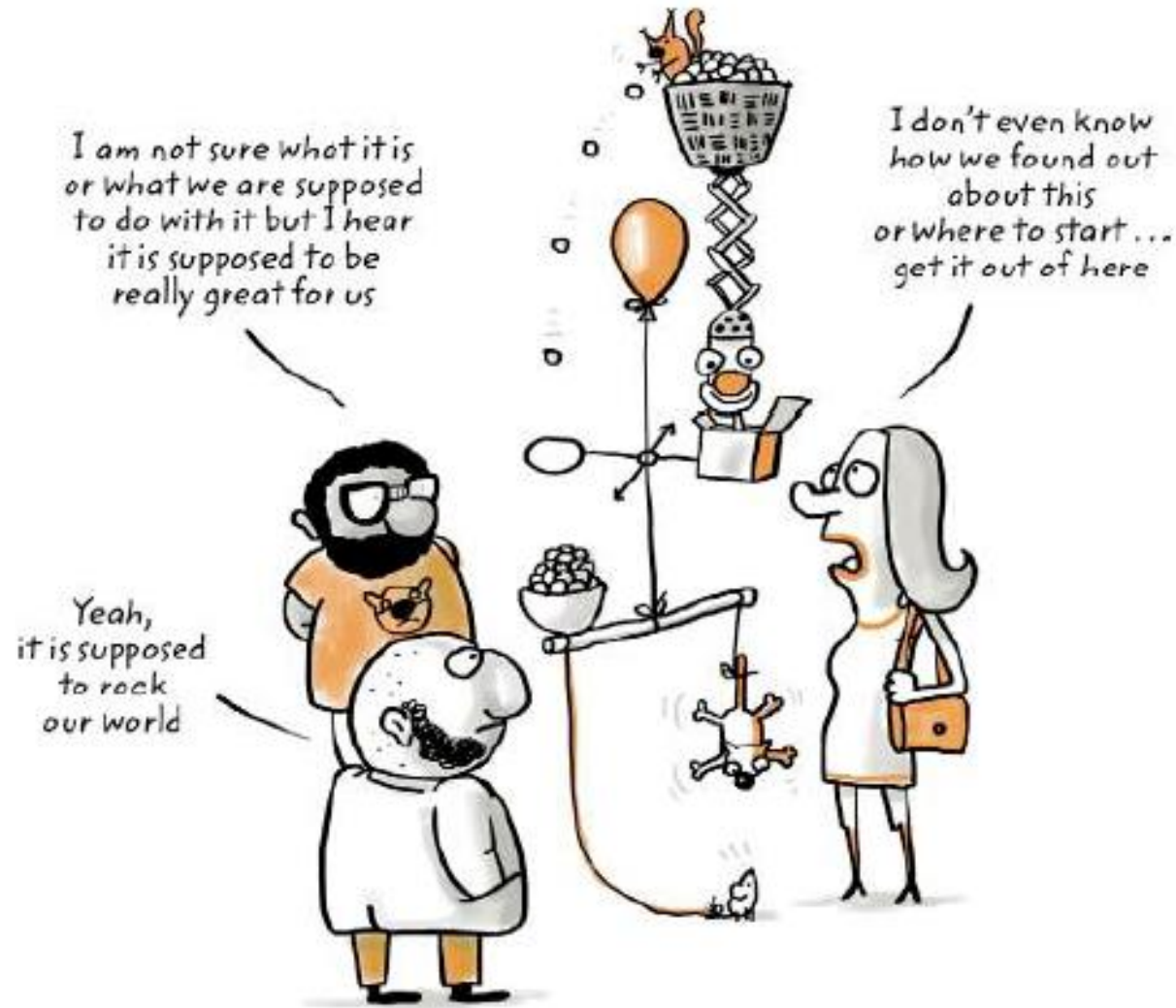
Step 6: Full Life Cycle Use Case



Step 6: Goals



- Describe in detail how your Persona **finds out about your product, acquires it, uses it, gets value from it, pays for it, and buys more and/or tells others** about it.
- Understand why this expanded use case is important to identify and resolve problems in the most timely and cost-effective manner.
- Gain additional clarity and alignment throughout your team by detailing the various aspects of the Full Life Cycle Use Case.



Building a Full Life Cycle Use Case further focuses the discussion on what specifically your product will do for your customer . . . and what your customer will do with it.

Using the Persona

- The **Full Life Cycle use-case** determines how your product fits into your Persona's value chain.
- The Full Life Cycle Use Case should include:
 - how the customer would use the product,
 - the acquisition (including the payment for the product)
 - post-installation support processes.

How to?

- Start by mapping out the **process from beginning to end** for your Persona.
- Check to see if it is consistent with other potential customers as well.
- Advice:
 - The easiest way to **start** is by mapping out **how your Persona uses the product** once it is acquired.
 - From there, map out the **acquisition** and **post-acquisition support cases**.

Key factors of Use Case

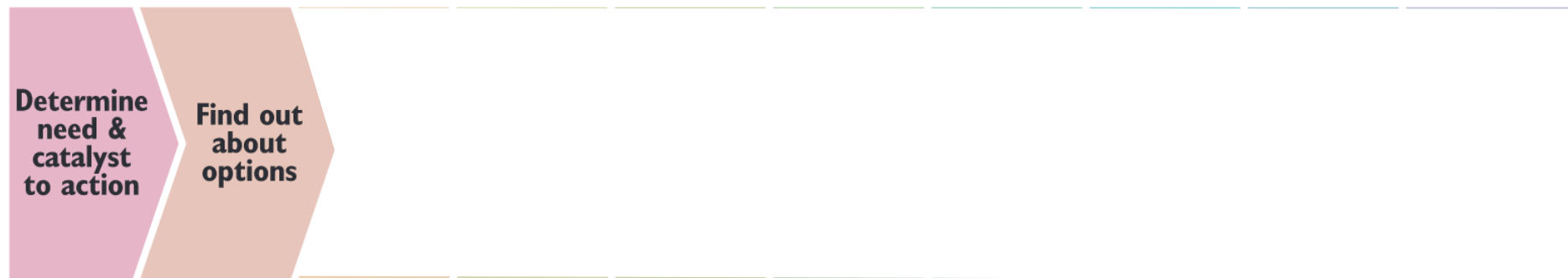
- 1.How end users will determine they have a need and/or opportunity have a need for your product
- 2.How they will find out about your product.
- 3.How they will analyze your product.
- 4.How they will acquire your product.
- 5.How they will install your product.
- 6.How they will use your product (in detail; see the Satisfier example further on).
- 7.How they will determine the value gained from your product.
- 8.How they will pay for your product.
- 9.How they will receive support for your product.
- 10.If and when the user would purchase your product again.
- 11.If and how they will spread awareness (hopefully positive) about your product.

Use primary market research and see your product through the eyes of the customer!

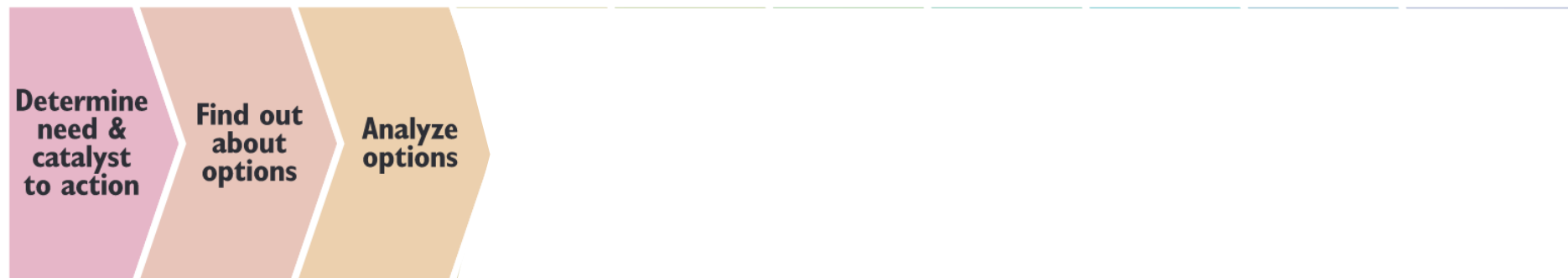
10 Stages of Full Life Cycle Use Case

Determine
need &
catalyst
to action

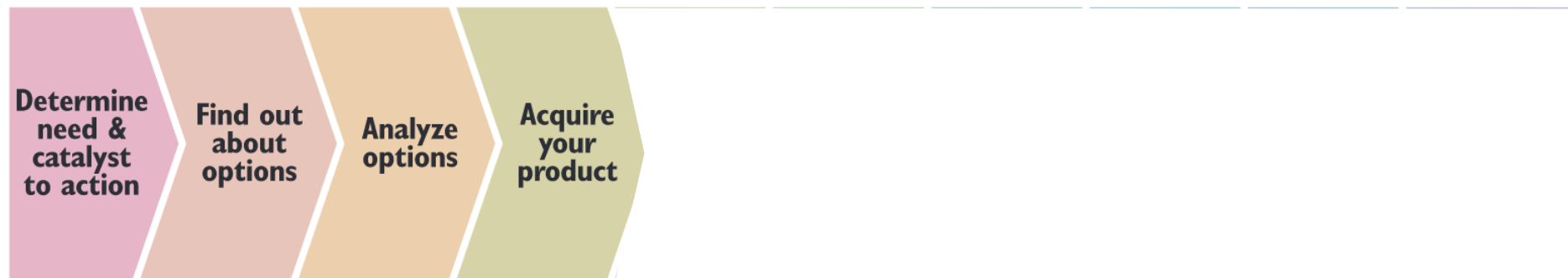
10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



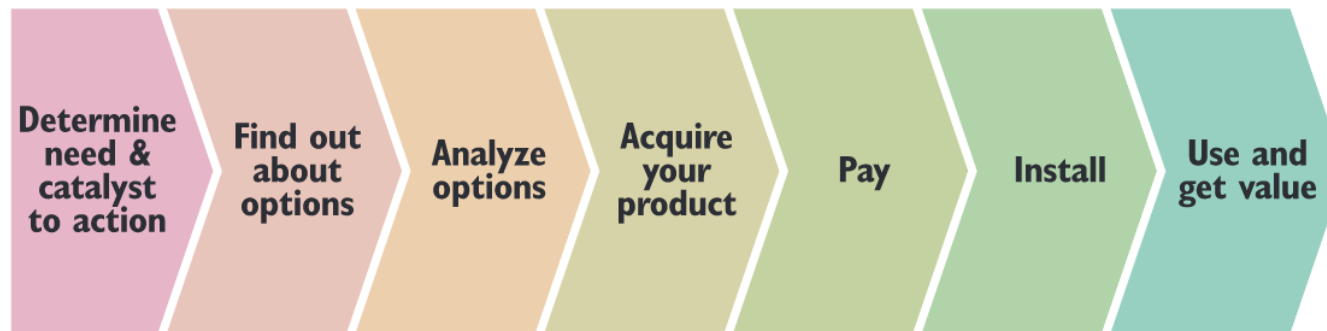
10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



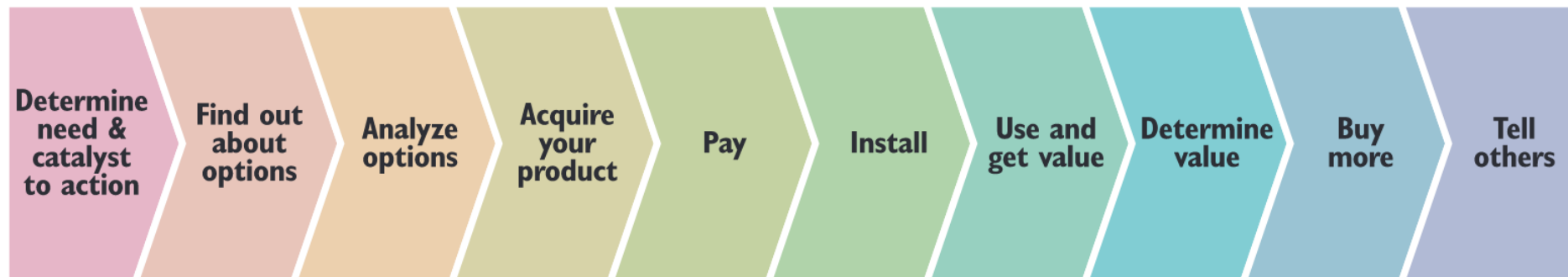
10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



10 Stages of Full Life Cycle Use Case



What to include?

- Outline the customer's **current** workflow:
 - Be visual
 - Use diagrams, flowcharts, or other methods that show sequence (UML).

Case study: Satisfier



- The hospitality industry (hotels, restaurants, entertainment venues, etc) lives and dies by the quality of their customer service.
- Regional managers with many locations to oversee:
 - Need to guarantee the satisfaction of a large number of customers.
 - Look constantly for tools to more accurately and rapidly measure customer satisfaction for their specific environments.

Case study: Satisfier - the idea



Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.

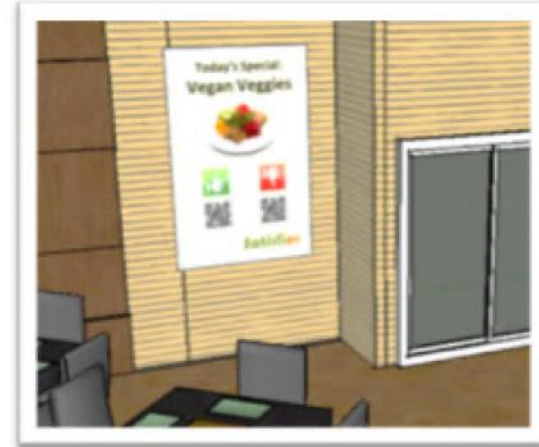
- Take advantage of smartphones to provide **real-time survey feedback for businesses**.
- Primary market research determined that:
 - the quickest and most capital-efficient way to get their company off the ground would be targeting **a specific group of food service companies that served universities**.
- Team's idea:
 - Create posters with a picture of the food offerings available on each day and put it at the exit of the eating establishment
 - Under each picture put two **QR (Quick Response) codes** that allow the consumer to easily register either their approval or disapproval of a food option.
 - In such a scenario, the food service companies could get instant feedback on their menu.

Mini Use case

“How Will They Use Your Product?”



1) Management creates one or more surveys on Satisfier's website



2) Banner/flyer is placed on a key location



3) Customers rate their experience using smartphones



4) Results are immediately available on Satisfier's website

Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.



Benefits of mini use case

- It is an **easily understood** segment of the Full Life Cycle Use Case
- Can be presented to potential end customers for **feedback**.
- Team needs to **think through how its product would be used** by the customer to **create value**.
- The example **forced the team to be specific** about many things:
 - **What their product was** (from Step 7 of the methodology)
 - **Who the Persona was** (from Step 5)
 - **Key people and roles they needed to consider**
 - **How everything interacted and how the entire story would play out?**
- Generates **common understanding** and **alignment** regarding the problem being solved and how their product solved it.

Way forward

- Build out the front and back ends.
- Explore how does the customer:
 - Find out about your product and then decides to bring it in for a test;
 - pay for your product;
 - get service for it, and
 - ultimately help generate a following for your business by buying more products and/or generating word of mouth for your company?

A More Robust Case Study: FillBee



- Aspiration: Revolutionise the furniture shopping experience by **making it possible to see what any combination of furniture in your home would look like** before you buy it.
- Idea: Through a **sophisticated 3D rendering** platform that takes in the dimensions of your house or apartment, a 3D world is created where the user can use a computer to try out different pieces of furniture before purchase.
- What often works conceptually **does not work in reality**.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

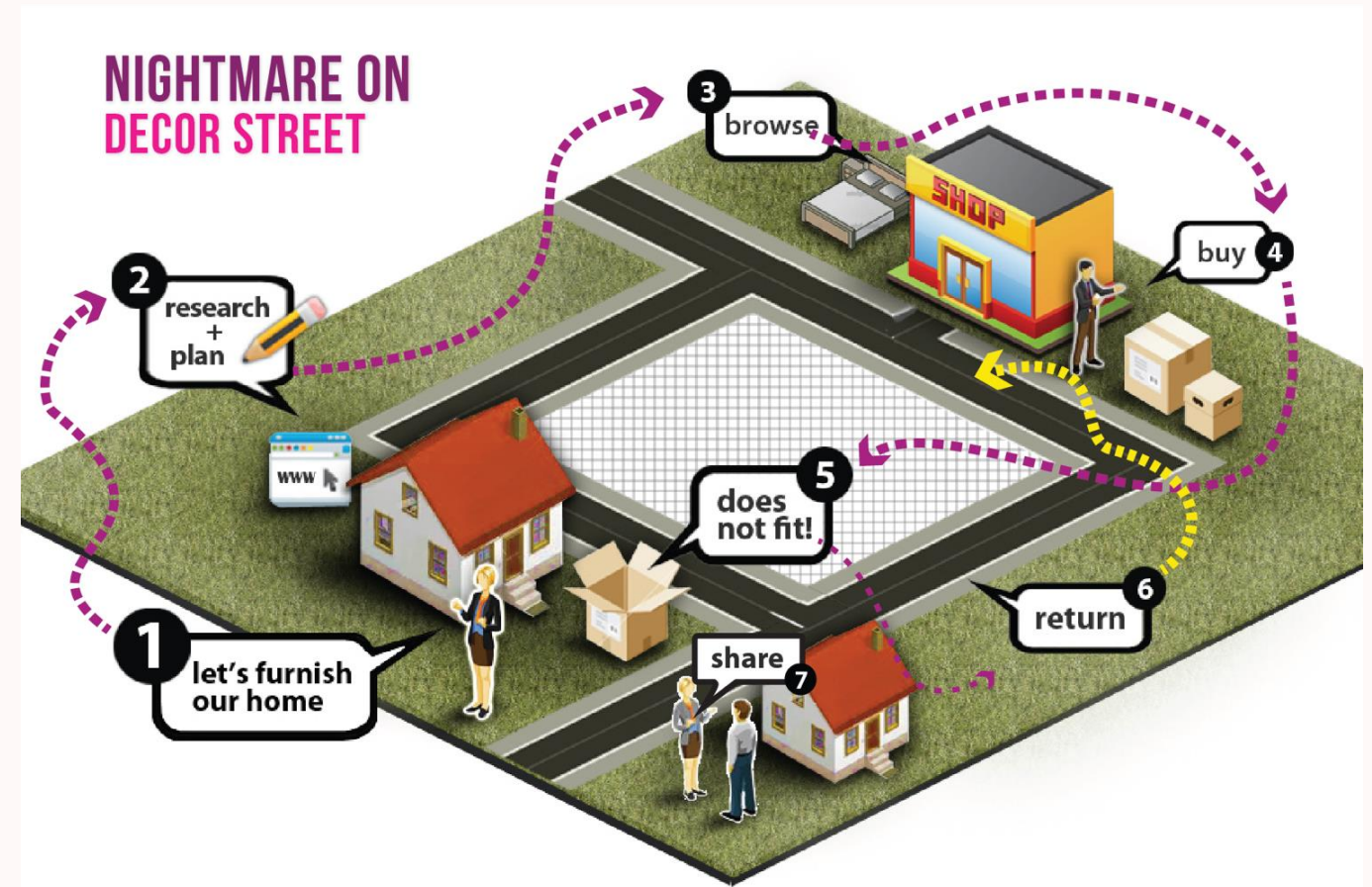


FillBee

Case Study



- Developed by mapping the Persona's perspective on how they currently shop for furniture



FillBee: Full Life Cycle Case Study



- FillBee worked through many visual iterations with a multidisciplinary team to arrive at the conclusion that:
 - A primary pain point in the furniture acquisition process is that **the furniture sometimes does not fit in the user's home** and has to be **returned**.
 - Working backward, they identified “**research + plan**” as the step where improvements can be made regarding **measuring rooms** and **furniture**.
- FillBee's product also condenses certain steps, such as “research + plan,” “browse,” and “buy” into **one online process** rather than a **combination in-person/online process**.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



FillBee: Full Life Cycle Use Case



- In the “how they will use your product” step, the FillBee team demonstrates using lots of details how their buyer Persona would use the product in **each step of the process**.
- The more detail provided, the easier it will be to **find weaknesses** or **flaws** in the plan, based on knowledge of the Persona.
 - The deeper your knowledge of the Persona, the better it will be for your analysis.
- This analysis should increase your confidence level and will be much more cost-effective than trying to fix the problems later on.
- Note: FillBee customers are both **furniture buyers** and **furniture sellers**:
 - A Full Life Cycle Use Case is required **for each side of the market**.

Multiple Initial Set-Up Options Aimed at Ease of Use

To get started, Consumers can:

- 1.) Start with standardized room shape templates
- 2.) Enter the dimensions of their room
- 3.) Start with a pre-loaded room layout
- 4.) Upload 2 pictures of their room
- 5.) Upload a 360° video of their room

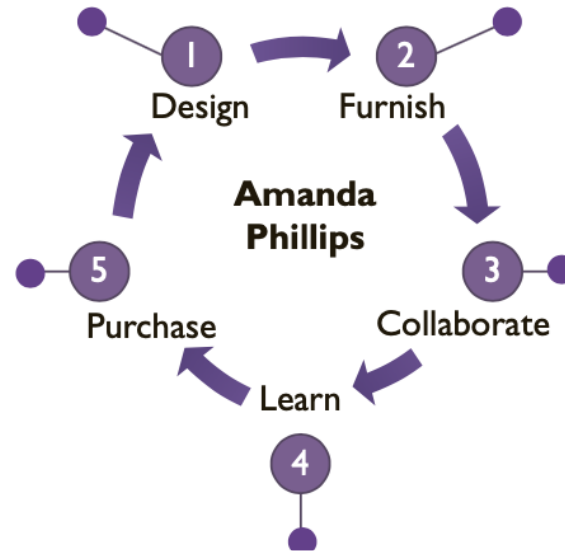


Figure 6.3 *FillBee's Amanda Phillips Use Case; good but still missing some upfront and backend elements.*

Multiple Initial Set-Up Options Aimed at Ease of Use

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- 4.) Upload 2 pictures of their room
- 5.) Upload a 360° video of their room

Furniture from Multiple Retailers

Consumers shouldn't be confined to one or two local retailers. With FillBee Marketplace, Consumers can:

- Select furniture by type
- Drag and drop the chosen item
- Repeat the previous steps until they've built the perfect room

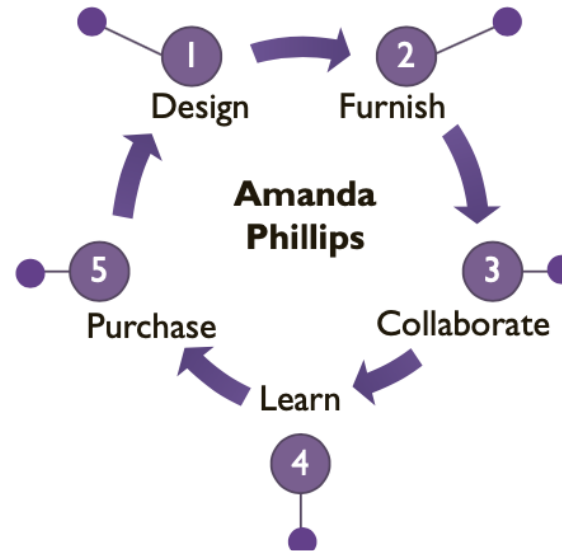


Figure 6.3 FillBee's Amanda Phillips Use Case; good but still missing some upfront and backend elements.

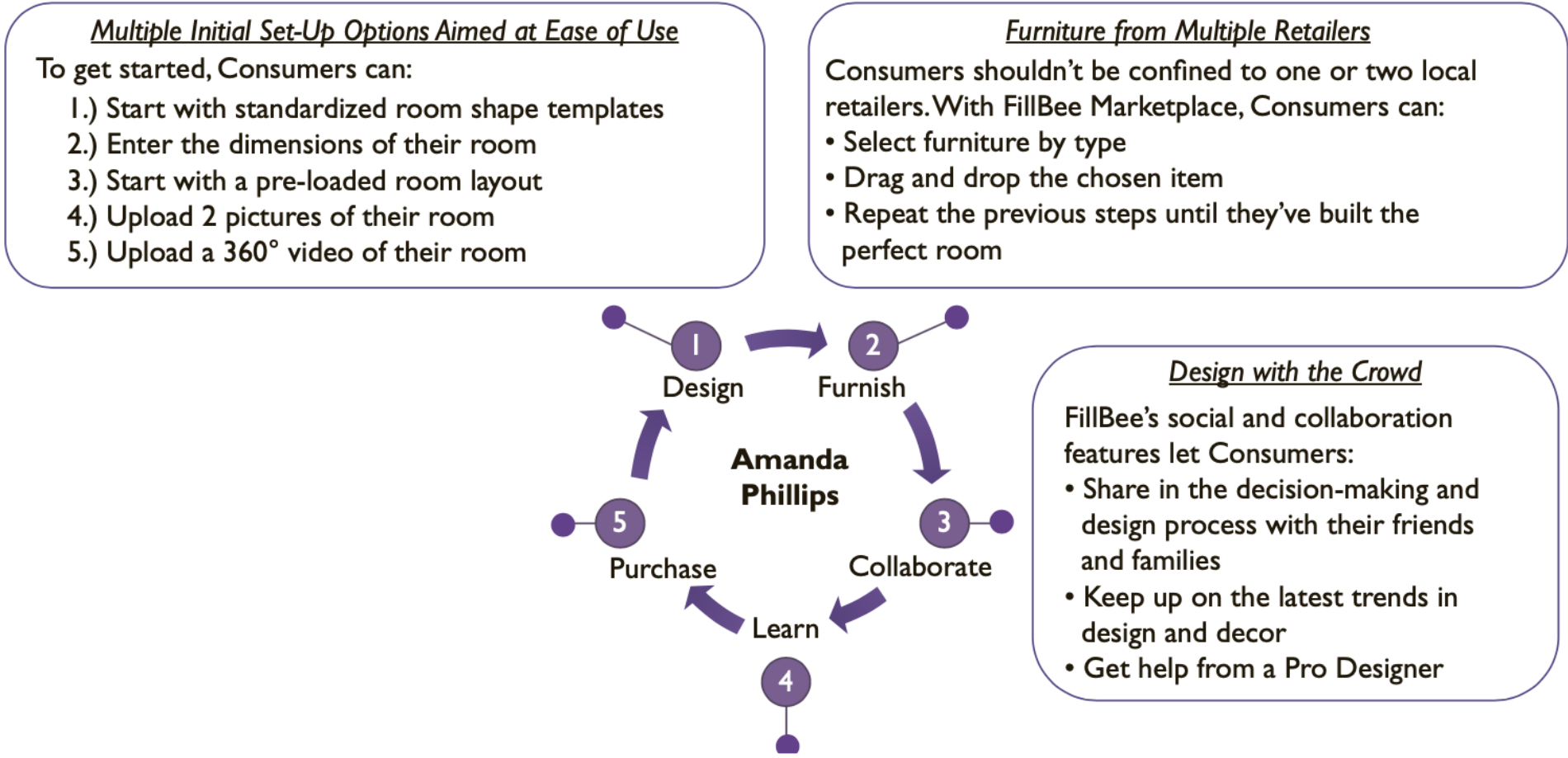


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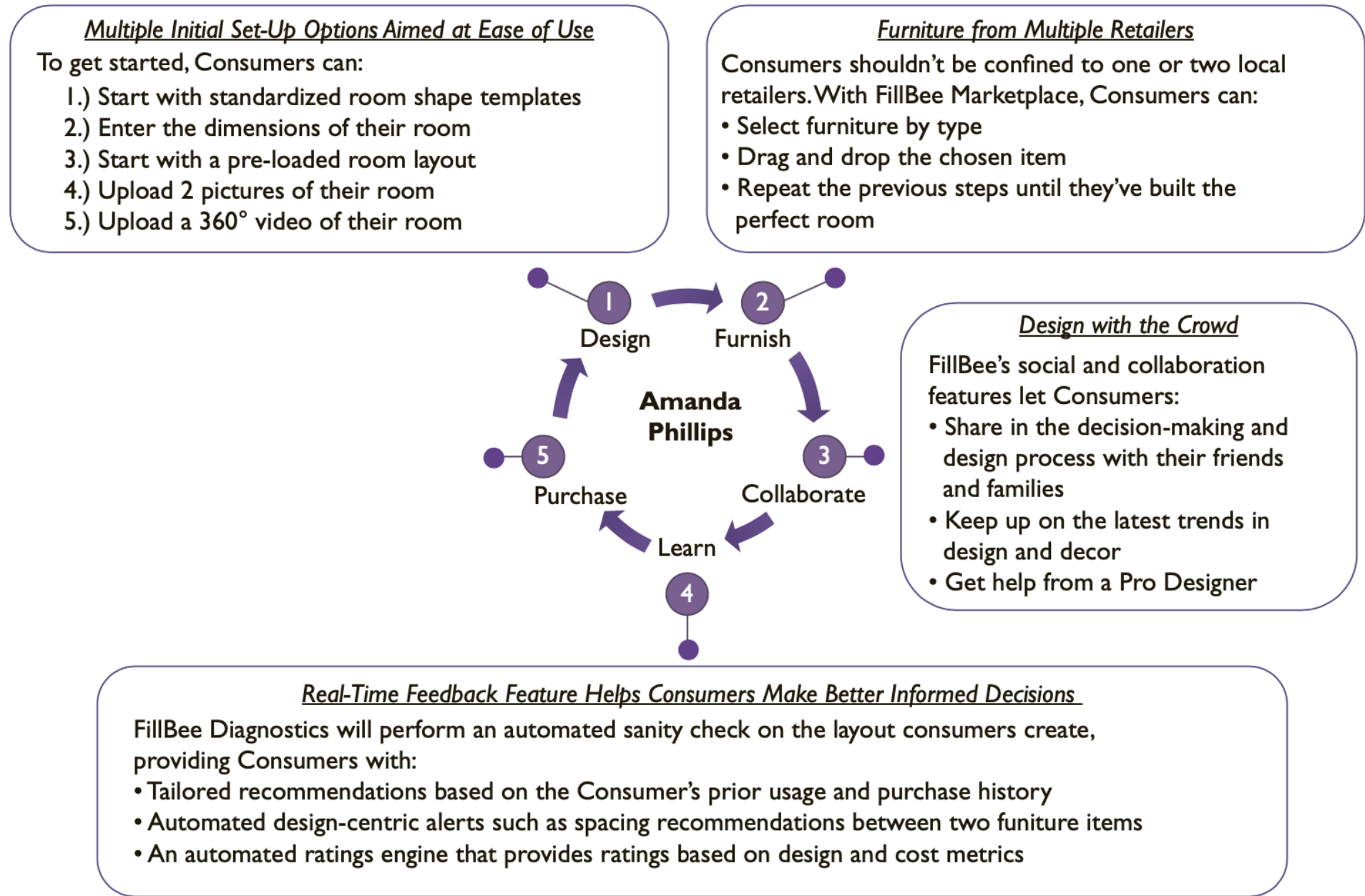


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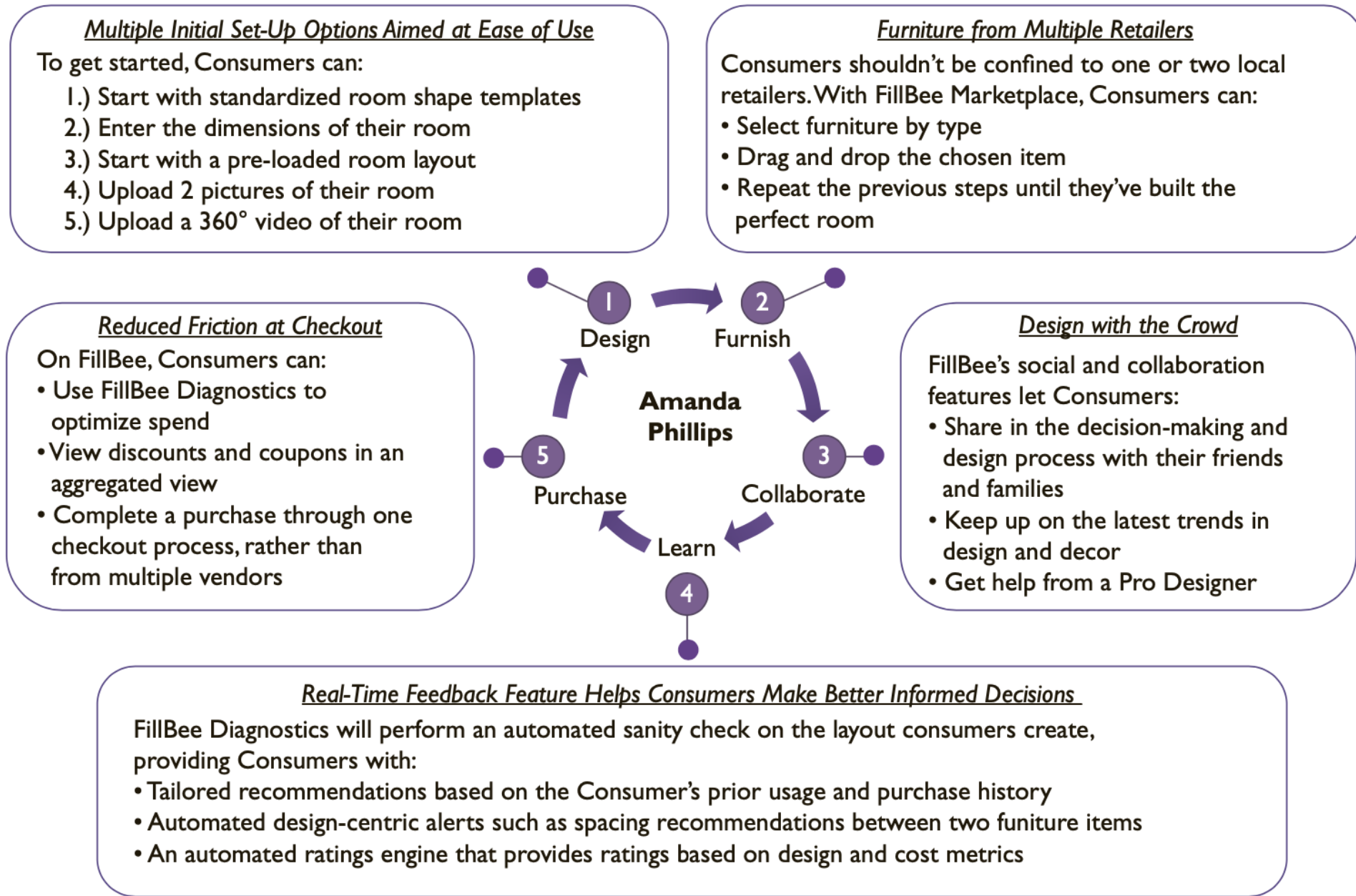


Figure 6.3 *FillBee's Amanda Phillips Use Case; good but still missing some upfront and backend elements.*

Summary



- Creating a visual representation of the full life cycle of your product enables you to see how the product will fit into the customer's value chain and what barriers to adoption might arise.
- Just showing how the customer uses the product (the typical definition of “use case”) will not provide an accurate enough picture to fully understand what obstacles will come up when trying to sell your product to your target customer.

WORKSHEETS

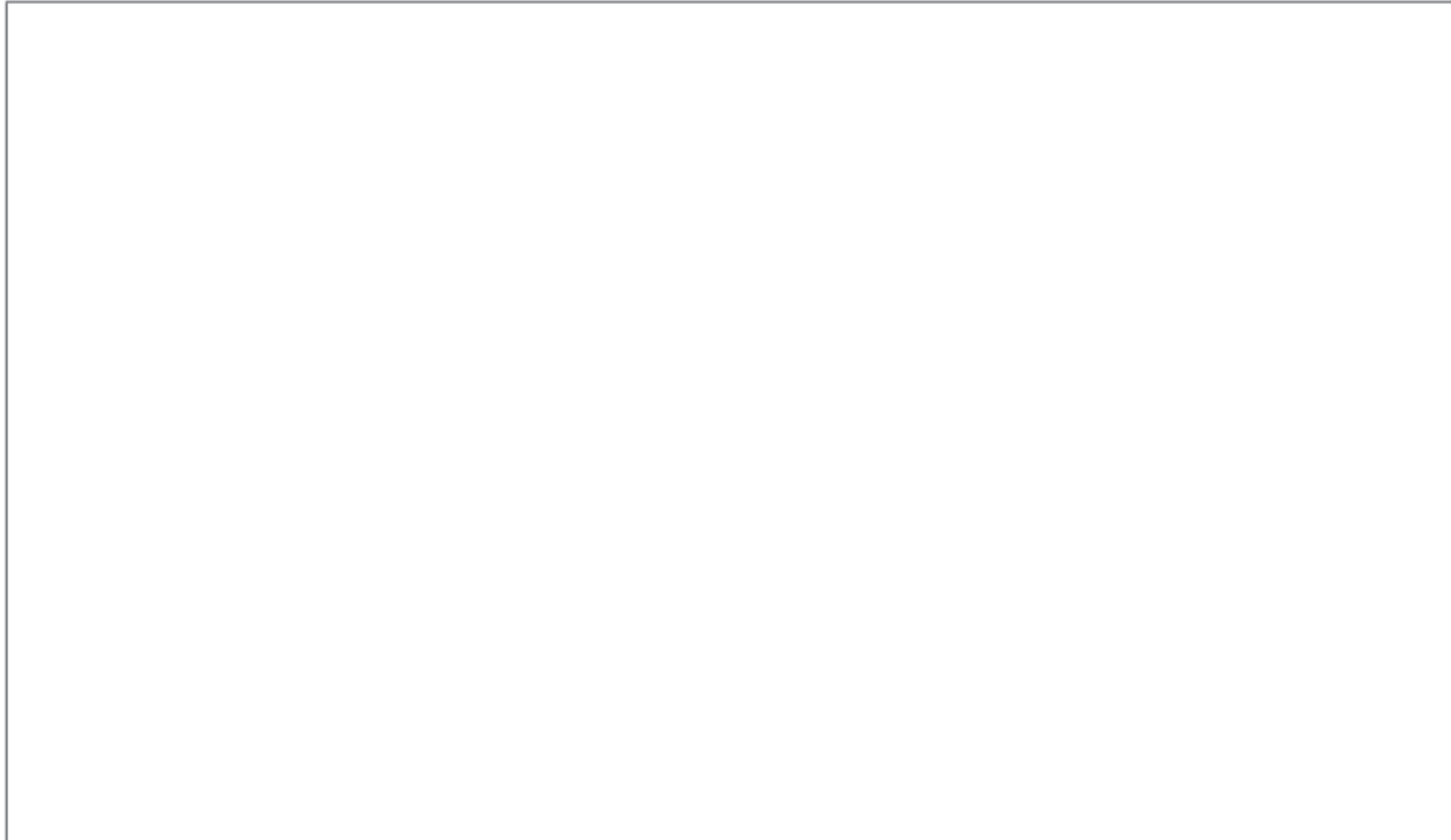
Sketch of How the End User Currently Solves The Problem (or Doesn't)

A large empty rectangular box with a thin black border, intended for sketching the current solution process of an end user.

Stage #	1	2	3	4	5	6	7	8	9	10
Action	<i>How do they determine need, and what is their catalyst to take action?</i>	<i>How do they find out about their options?</i>	<i>How do they analyze their options?</i>	<i>How do they acquire your product?</i>	<i>How do they pay for your product?</i>	<i>How do they install or set up your product?</i>	<i>How do they use and get value out of your product?</i>	<i>How do they determine the value they gain from your product?</i>	<i>How do they buy more of your product?</i>	<i>How do they tell others about your product?</i>
Who is involved										
When										
Where										
How										
Misc.										



Sketch of How the End User Will Use Your Product



Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.

Reflection on Full Life Cycle Use Case

1. Looking at these worksheets now, where do you see the gaps in your understanding?

2. How do you intend to fill those knowledge gaps?

3. Which stages of the Full Life Cycle Use Case are you most concerned about as posing risks to the adoption of your new solution?

You have completed your first draft of the Full Life Cycle Use Case! You are probably at least a bit uncomfortable with some aspects of it, and that's understandable; plan to circle back to it as you complete additional steps and gain more understanding. But let's keep moving forward and start to define what your product would be within this overall context.



How much AI customers need?



The AI Company



**THE AI-FIRST
COMPANY**
HOW TO
COMPETE AND
WIN WITH
ARTIFICIAL
INTELLIGENCE
ASH FONTANA

AI helps make better,
faster decisions



University of Cyprus
Department of Computer Science

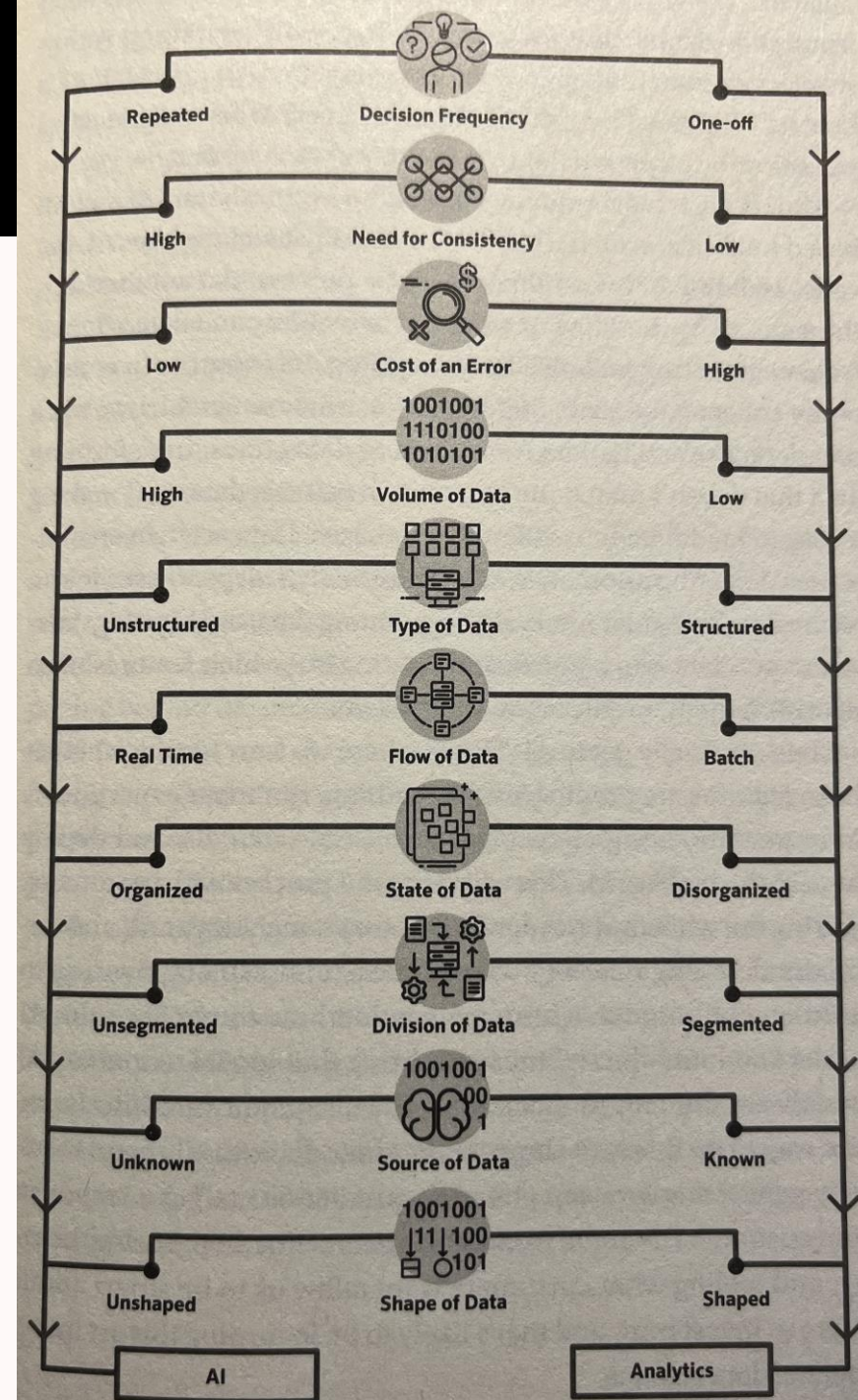


How much AI customers need depends on the types of decisions customers are making and the data on which they're basing those decisions.

Source: AI-First Company, Ash Fontana, Penguin 2021

Lean-AI Decision Tree

- To decide what customers need consider this decision-tree and estimate the weight of the two buckets: AI or Analytics
- Analytics is heavier: customers probably need features on data such as logging, cleaning, and operating--in other words, mathematical operations like averaging-but no AI.
- AI is heavier: customers need features such as classification, segmentation, and manipulation of data.
- Customers probably need both non-AI and AI-based methods.

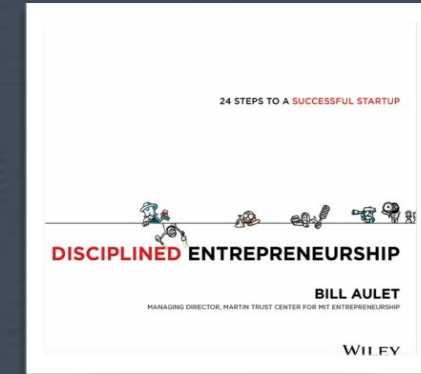


Analytics vs AI

- Building AI is a gradual, stepwise process:
- **Data engineering**: instrumenting data sources to consistently collect good data, building infrastructure in which to store that data, extracting data from existing data stores, transforming data that doesn't match the structure of existing data, and making it easy to load data into different databases.
- **Data science**: detecting anomalies, setting up analytical processes to run on the data at regular intervals, segmenting data, aggregating data-sets to put data into context, and figuring out which features of an algorithm might predict something useful.
- **ML Engineering**: Testing whether features are predictive of something, run experiments on more data, design new algorithms, train models, and deploy and test them in the real world, jointly with the customers.

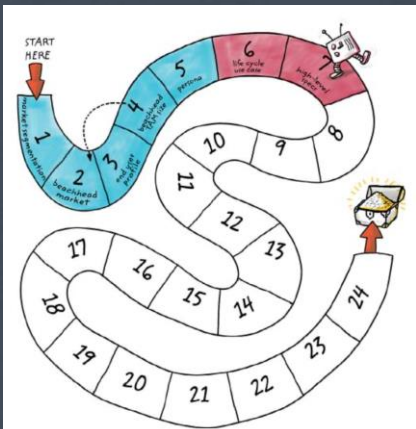
Source: AI-First Company, Ash Fontana, Penguin 2021





Section 3: What can you do for your Customer?

Step 7: High-Level Product Specification



Section 3

Contents

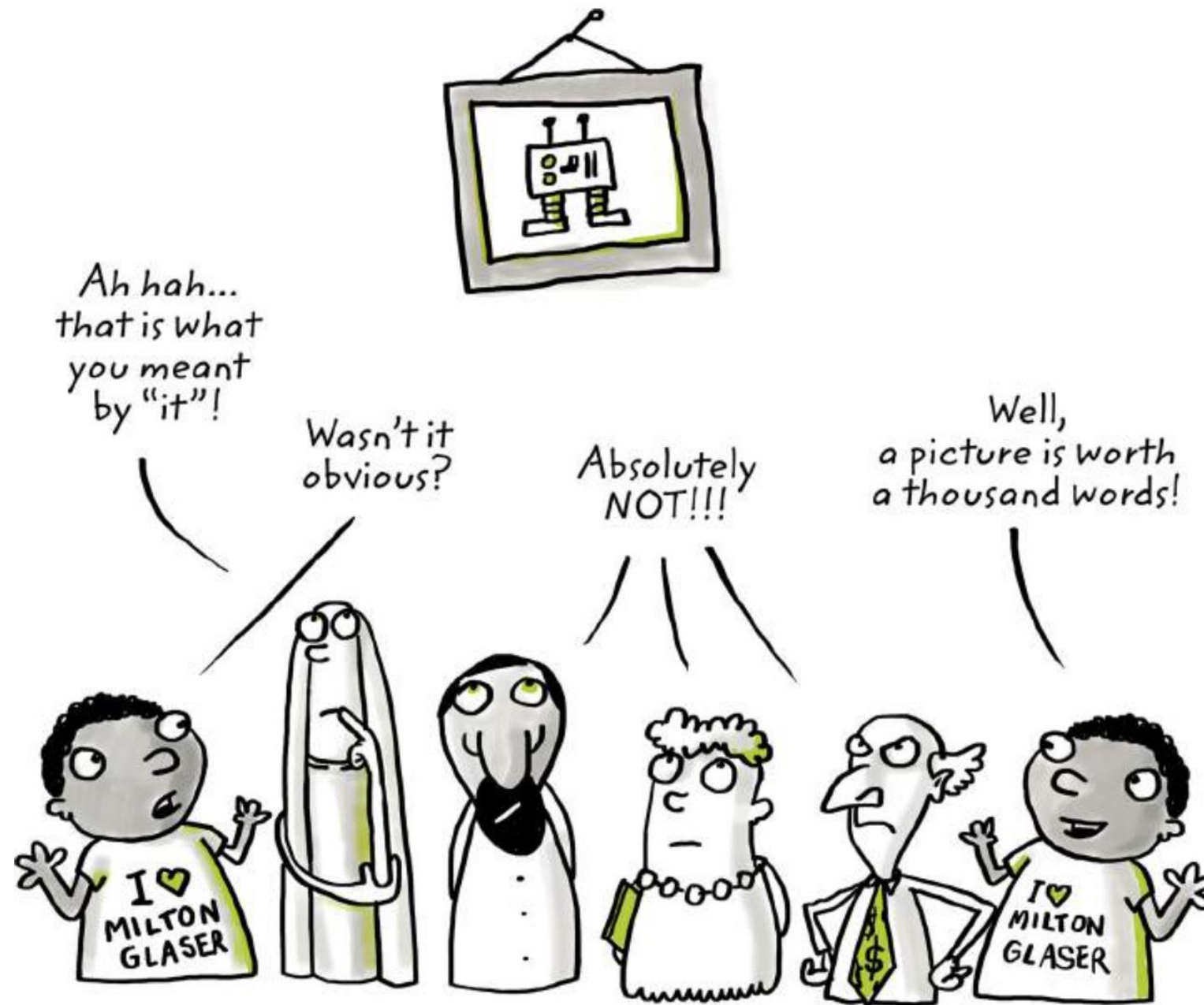


- DH Step 6: Full Life Cycle Use Case
- In search of use cases for the “AI Company”
- **DH Step 7: High-Level Product Specification**
- **The “Lean AI” Playbook**
- DH Step 8: Quantify the Value Proposition
- DH Step 10: Define your Core
- DH Step 11: Chart your Competitive Position

Goals



- Create a **visual representation** of your product.
- Focus on the **benefits of your product created by the features** and not just the features.



Defining the High-Level Product Specification at this time ensures that it is more focused on your target customer and also that everyone agrees on what "it" is.

Why not earlier?

- So far, you have defined your customer, what they need, and how they will use what you want to sell them.
- However, **the actual details of the product are still rather fuzzy**. You are already at Step 7 and only now beginning to outline what your product will look like.
- Isn't this too late in the process?
 - If you start by defining the product rather than learning about your customer, your product **will likely not connect with customer needs**.
 - Even if you believe you know what the product should be, **always start with the customer needs and work your way back**.
 - This way, you are tailoring your product to the specific beachhead market, rather than trying to force a product on a market.

High-level Product Specification

- A High-Level Product Specification is, at its core, **a drawing**.
 - A visual representation of what your product will be when it is finally developed, based on what you know at this point of the process.
 - It is something you draw **without understanding all the underlying details**.
 - The exercise of drawing a picture of what your product will be, forces **convergence** on a team and **removes misunderstandings**.
 - This simple visual representation of your product can now also be **shared with potential customers**, immediately generating an unambiguous understanding of your product.

You are not selling the product, but are merely iterating with customers so that you more thoroughly understand the strengths and weaknesses of your product spec.

Do not build now

- At this stage, the product does not have to be built
 - To avoid unnecessary costs and something that your team is too attached to.
- Keep it high level and don't get distracted.
- Product specification will change over time and be refined.

Extending the specification

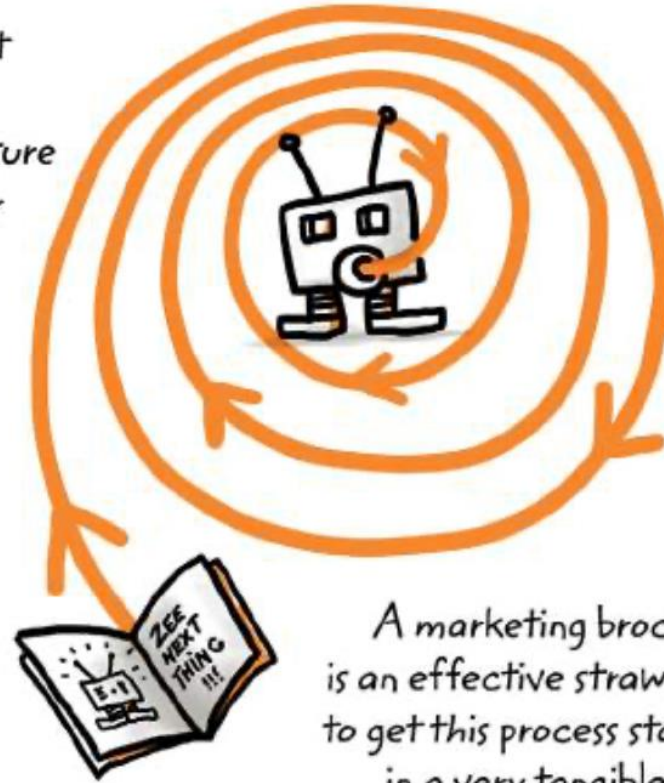
- The process of identifying and outlining your High-Level Product Specification is strengthened by:
 - Describing the various **features** of your product
 - Explaining how these features translate into **function**
 - Describing the **benefits your customer gains from each** feature
- Always be **specific** about what you are offering, and **how each component** of the offering **benefits** the customer.
 - Why does your target customer need your product?

Make a brochure

- At this point, you can make a brochure for your product, to:
 - Help you see your product [from the customer's point of view](#)
 - Provide you with a concrete [“straw man” to test with your customer.](#)
 - Force you to see your new venture [from your customer's vantage point, in their words.](#)
 - To [validate your ideas](#) and learn if you are on the right track.
- Target the brochure at your Persona, and draw on the work you have done in the *Persona* and *Full Life Cycle Use Case* steps (Steps 5 and 6) as well as the *visual representation of the product* that you have already created.
- Note: Often, when entrepreneurs begin to write down features, they become too inwardly focused. Creating a brochure helps to avoid that pitfall.

Spiraling Innovation

The ultimate best product solution for your new venture is arrived at after many iterations with customers and your team.



A marketing brochure is an effective straw man to get this process started in a very tangible way.

Figure 7.1 The spiraling process of innovation with a product can be significantly accelerated by making a brochure—but not getting too attached to it. It is a tool to focus the knowledge capture process.

Case study: SensAble Tech



- The “digital clay” solution, called FreeForm, included both hardware (the physical PHANToM) and software.
- In the new digital clay molding bench, the hardware was not the critical item as it could get smaller, more stylish, and be contracted for production.
- The hard part was going to be designing the software, so that is what they focused on.
- The goal was to produce a product that:
 - would have the ease of use of clay, and
 - the benefits of having digital files so that designs could be saved, modified, and sent electronically around the world, and upgrades and enhancements could be provided to users as well.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Case study: SensAble Tech



- The High-Level Product Specification was developed as a set of **PowerPoint slides** showing:
 - the tools that designers used at the time
 - how that tool set would not only be replicated, but expanded with the new digital clay molding bench
 - drop-down menus that would allow the user to digitally select the materials, the tool, the end effector, and whether a template was to be used
- This made it much easier to focus and test the viability of some concrete ideas with the team and potential customers.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

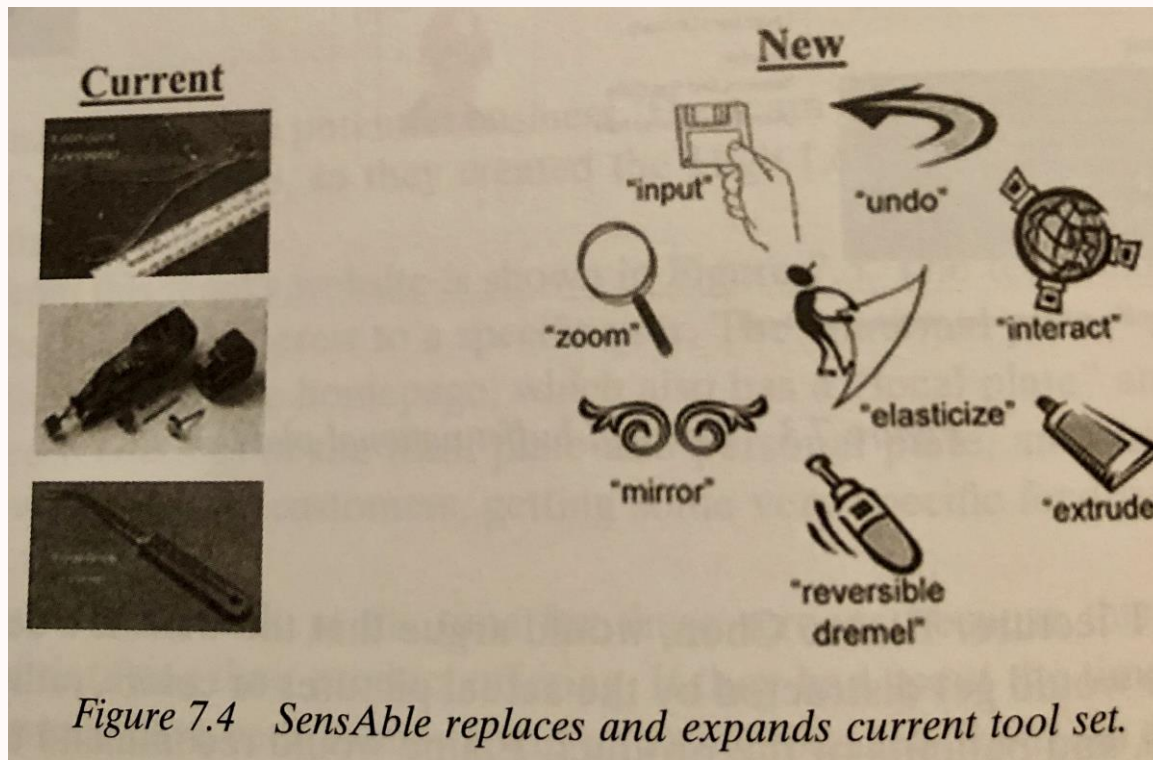


Figure 7.4 SensAble replaces and expands current tool set.

High-Level Product Specification

User Selections

Materials:

- Soft Clay
- Medium Clay
- Hard Clay
- Blue Foam
- Ren
- Metal
- Other

Tools:

- Sculpt
- Hot Sword
- Push/Pull
- Extrusion
- Dremel
- Scribe
- Other

End Effector:

- Point
- Ball
- Triangle
- Square
- Half Elipse
- Hook
- Other

Template:

- Yes
- No

Figure 7.5 SensAble user selections.

Case study:

Altaeros

Energies



- Idea: building a wind turbine in the sky, high enough to get consistent wind, and anchored to a platform in the ocean.
- Problems:
 - Lots of questions regarding what exactly this meant in terms of implementation.
 - Building an image of what the product would be, uncovered disagreement within the team of what the product would look like.
- By the end of the product spec. Design process, the team had a common understanding of the product, and could easily use the product spec as a basis for more in-depth customer research.

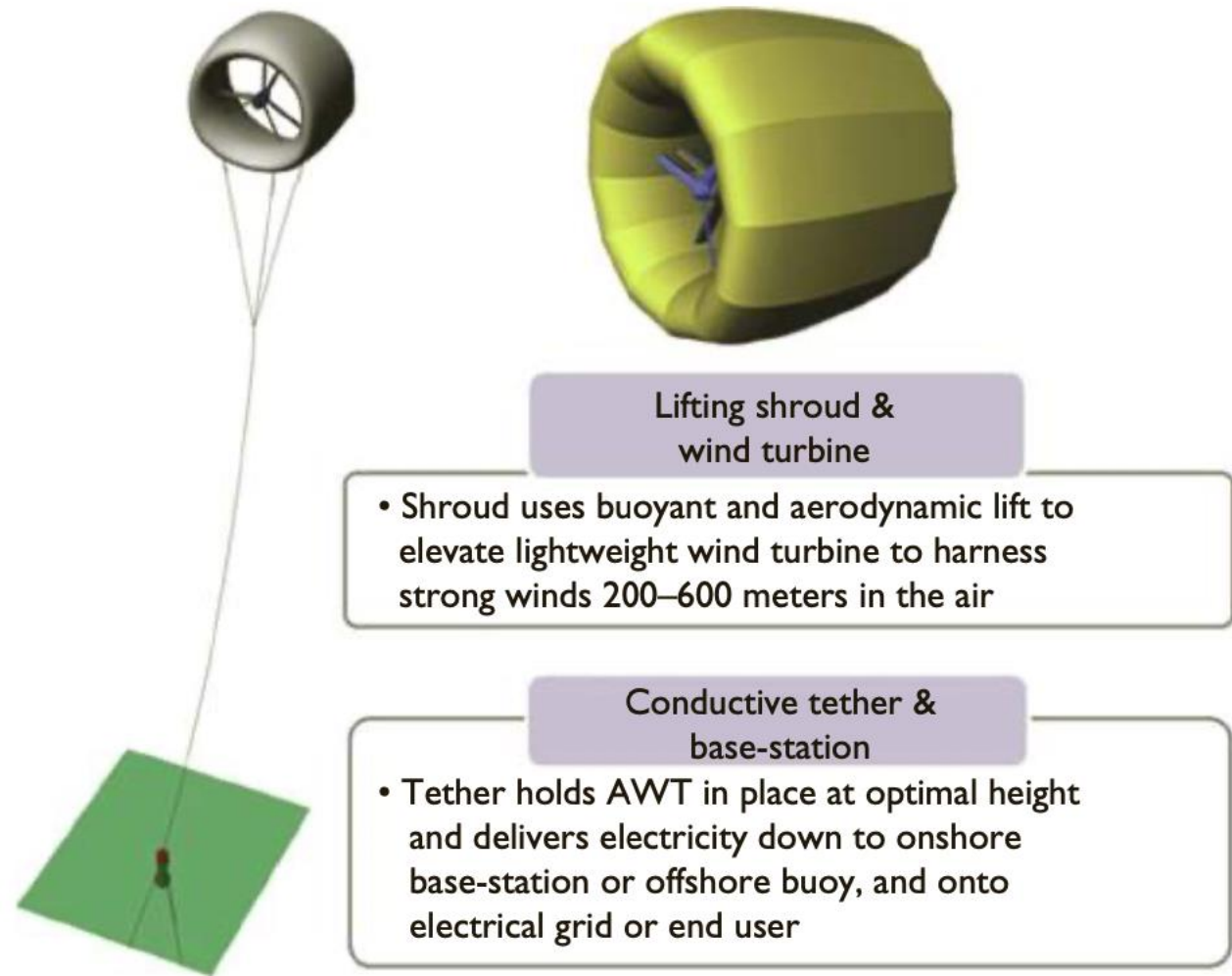


Figure 7.2 High-level product spec: Altaeros.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Case study: Lifetime Supply



- Idea: provide customers with lifetime supply of any of the products that they offer.
- Persona: A well-to-do young male, Ivan the Investment Banker, would not want to go shopping but knew he would need white athletic socks for the rest of his life and this product would not change. As such, the new venture would take a payment and provide Ivan this service in perpetuity.
- Primary market research results:
 - Making this a subscription business, where both sides had the option to renew annually and where the pricing could be adjusted.
 - Convenience was a major attraction of this service: make it accessible from the mobile phone, with customers being able to reorder with one touch on their mobile phone.
- Hard part: decide what **exactly to build** and **getting people to buy into their service**.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Lifetime Supply: Beachhead



- After some analysis and talking to many potential customers, they chose parents of college students as their beachhead market as they had:
 - The financial means to buy the subscription
 - A strong interest in supporting their children
 - A strong wish to staying in touch with their children, especially when it came to areas like personal hygiene.
- Describe product to these key constituencies in as easy and efficient a manner with a **brochure**.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Brochure design



- Building the brochure forced the team to clarify many questions:
 - What are the benefits to the student?
 - What are the benefits to the parents?
 - What are the products that Lifetime Supply will offer?
 - How should we start to think about the pricing?
- **However:** By choosing to include pricing, the team created a detail with the **potential to distract** both itself and potential customers.
 - If customers disagree with the prices presented, they may be less likely to give feedback on the venture's main idea, which is providing supplies to college students on an all-you-can-use basis.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

How it Works



Subscribe

Pick what you need and pay once for the semester



Ship & Re-ship

Request more at any time for no additional cost



Free Shipping

We ship your products to your doorstep for free!

Why buy?

It's super convenient

- Stop wasting time going to the store
- Focus on studying hard and having fun

Stay supplied

- Never worry about running out of the things you need again
- Unlimited access to any product in your Supply

Great products

- We offer a wide variety of top brands
- New products added to Supply's monthly

Five more reasons for parents

1. Your kid will love you.
2. We send phone call reminders
3. Dirty underwear is gross
4. It costs less than tuition
5. Someday you'll need to be taken care of



Lifetime Supply

Shower Supply

"Squeaky Clean"

Shower - \$100/semester

- Select from body wash, bar soap, shampoo, and conditioner

Shaving Supply

"Now with unlimited blades"

Shaving - \$150/semester

Deodorant Supply

"You're gonna like the way you smell"

Deodorant - \$40/semester

Oral Hygiene Supply

"Fresh breath"

Deluxe Bundle - save \$55

~~\$130~~ \$75/semester

- Toothpaste Supply
- Toothbrush Supply
- Floss Supply
- Mouthwash Supply

Essential Bundle - save \$20

~~\$70~~ \$50/semester

- Toothpaste Supply
- Toothbrush Supply

Toothpaste - \$40/semester

Toothbrush - \$30/semester

Floss - \$30/semester

Mouthwash - \$30/semester

Snack Supply

"Cure the munchies"

Snacks - \$200/semester

- New snacks rotated in regularly

Undergarments Supply

"Dress Comfortable - Dress Clean"

\$150/semester

- Socks, underwear, and tees

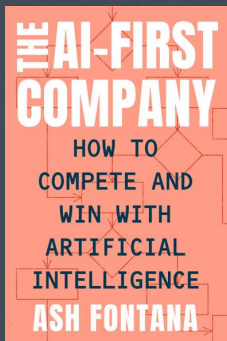
Breath Supply

"Fresh Breath Forever"

Breath - \$75/semester

- Select from gum and mints

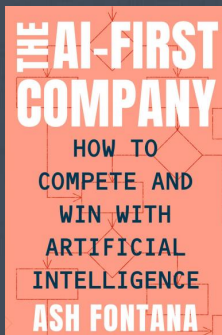
Case Study: The Lean AI Playbook



- Do the data engineering, data science and ML engineering required to build a small model.
- Run tests with the model to guide how to package it and build the right team to bring that model to market.



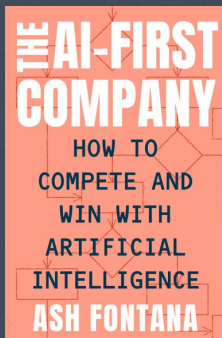
Case Study: The Lean AI Playbook



- AI models are difficult to mock-up!
- One way to deal with this is to simulate an AI model with a human manually generating, or even guessing, predictions to get a response from customers.
- Seeing, hearing, and feeling what customers want allow us to be smart about, where to invest next.



Case Study: The Lean AI Playbook



1. The first thing to build may not be AI. Customers may need both non-AI and AI-based methods.
2. Start with statistics. Get one answer, with one statistical method, then use that to discover the next answer using another statistical method. Many AIs are built on features discovered in experimental data science.
3. Start with a single question. Starting with one question zeroes in on one dataset, reducing the need to wrestle with poor data from multiple databases.



Case Study: The Lean AI Playbook



**THE AI-FIRST
COMPANY**
HOW TO
COMPETE AND
WIN WITH
ARTIFICIAL
INTELLIGENCE
ASH FONTANA

4. **Start with a single question.** Starting with one question zeroes in on one dataset, reducing the need to wrestle with poor data from multiple databases.
5. **Start with a single algorithm.** This reduces the chance of the solution breaking.
6. **Proof-of-concept (POCS) prove accuracy.** AI-First products tend to require a POC phase because the value proposition of the product is the prediction. Potential customers need to know whether that prediction is accurate when made for them-on their data and in their environment.



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Case Study: The Lean AI Playbook



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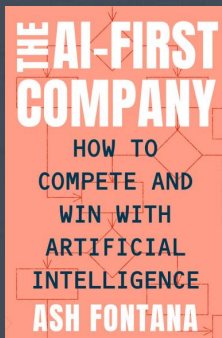
7. Lean AI is a process to build an AI-First product. The process is about solving a specific problem with AI and building a small but complete AI that can grow into other domains or remain focused on one.
8. Lean AI is not the same process as the learn start-up process. The goals of building a lean start-up are also different when building an AI the lean way. Instead of building an MVP, get to the prediction usability threshold (**PUT**). Instead of product features as milestones, model features are milestones. The output is a prediction, not a calculation. The performance and function of the prediction in the customer's workflow are less important than the accuracy and reliability.



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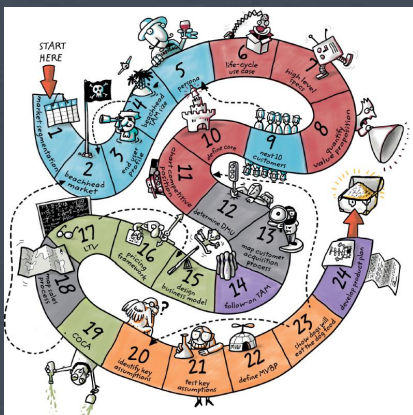
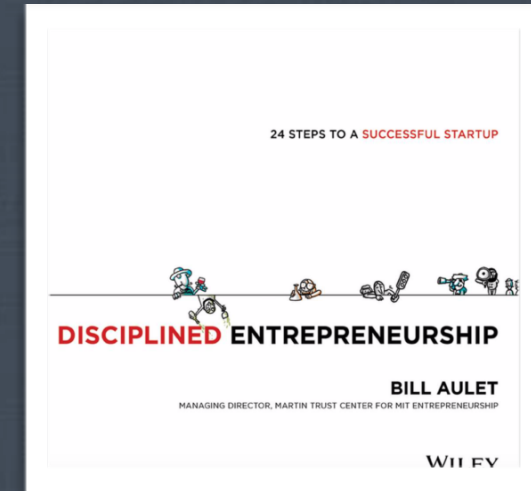


9. Different types of customers demand different levels of accuracy. Each customer has a threshold at which a prediction is usable in their business: the prediction usability threshold.
10. **Reframe features.** Features in the discipline of product development are software functions that help a user execute a task: to output a calculation. Features in the discipline of ML are a set of mathematical functions that are fed data to output a prediction. Product features are said to be performant (to calculate fast) in the way that model features are said to be predictive (to predict accurately). Product features determine what a customer can do with a product, whereas model features determine what a customer can predict with a model.



Section 3: What can you do for your Customer?

Step 8: Quantify the Value Proposition



Section 3

Contents



- DH Step 6: Full Life Cycle Use Case
- In search of use cases for the “AI Company”
- DH Step 7: High-Level Product Specification
- The “Lean AI” Playbook
- **DH Step 8: Quantify the Value Proposition**
- DH Step 10: Define your Core
- DH Step 11: Chart your Competitive Position

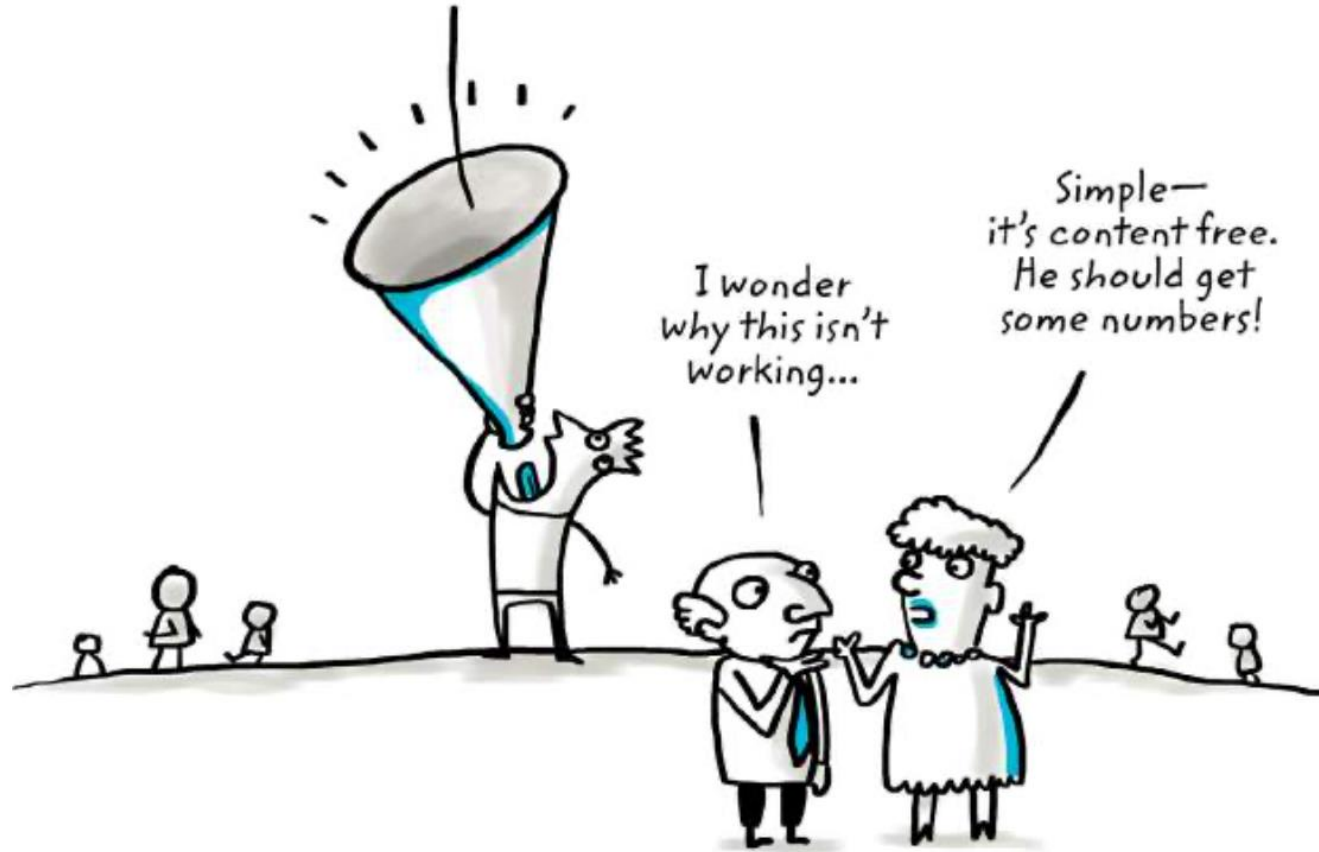


Goals



- Determine how the benefits of your product turn into value that the customer gets out of your product.
- Calculate quantitative metrics (in most cases) to show this value to the customer.

Superfantastic!!!
Awesome!!!
Soooo much better
than anyone else's!!!



The relentless march for specificity continues. The Quantified Value Proposition gives you a concrete understanding of the measureable benefits your product will bring to your target customers.

Value for customer

- When a customer purchases a product, they are asking themselves

“What value do I get out of this product?”

- Customers **must justify the investment required** to acquire your product by offsetting this against **how much money your product will make for them**, or **how you will improve their life** in a way that really matters to them.

Quantified Value Proposition

- Converts the benefits your Persona gets from your product into a **tangible metric** that aligns with the Persona's top priority, or in some cases priorities.
- Focus on what potential customers want to gain rather than going into detail on technology, features, and functions.

Types of benefits

- Products often have a large number of benefits:
 - May help a customer simplify a process or reduce their environmental impact.
 - Help a business gain additional sales for their own products.
- In a simple view of the world, benefits fall into three categories: “better,” “faster,” and “cheaper.”

- Create a value proposition **focused on the criteria you identified as your Persona's top priority**.
- If their top priority is time to market for producing goods, and your product's value is that it will lower the cost of production, your value proposition—"Our product saves \$XX per month"—will not persuade your target customer to buy your product.
 - Your value proposition is not aligned with their highest priority, so purchasing your product will not be a high priority for the target customer, and will get lost in their pile of less-than-urgent things to do.
- If your product also lowers the time to market, you should focus your Quantified Value Proposition on that.

Value proposition: Keep-it Simple

- Once you know the priority of your Persona, simply focus all your efforts on this factor.
- Set up a simple **comparison** of the “**as-is**” state with the “**possible**” state that you are confident will exist when the customer is using your solution.
- In both cases, you make it as quantifiable as possible.
- The **difference in value** between them is your **Quantified Value Proposition**.
- **It is that simple!** Don't make it too complicated.

Case study: SensAble tech



- Persona selected: industrial designer in the toy industry.
 - The Persona could be applied to the footwear industry as well because the two industries are similar.
- Persona's top priority: **time to market for new toys**.
 - For new toys based on **currently hot movie** or **video game** characters, **less time to market** means **less turnaround time before being able to sell toys** around that **temporary window of opportunity**.
 - For new toys based on a movie, less time to market means the **company can gather more information about how successful a movie might** be before manufacturing toys for it.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Case study: SensAble tech



- Determine the average time to market for a new toy using the current software available.
 1. Examined the development process the way the customer does, using the customer's own words to describe the process.
 2. Iterated with toy manufacturer until they felt the process was understood properly.
 3. Then went to another toy manufacturer to check if their process was similar.
- After enough iterations, a very good “as-is” state for the process was captured, without getting into insignificant details.
- The process was validated with footwear companies and found to be identical.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



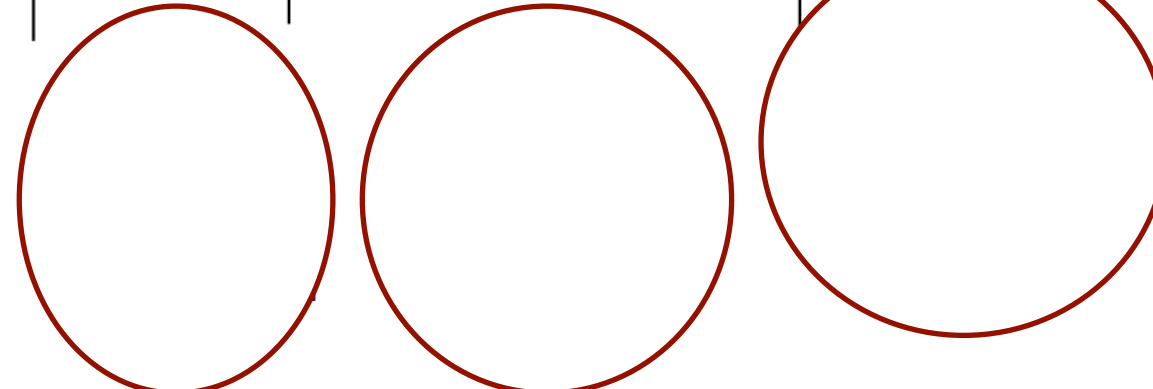
Case study: SensAble tech



4 Weeks	4-14 Days Model Types: 2D Drawings 3D CAD Models 3D Hand Models	2 Weeks Engineering Manufacturing Rework	2 - 3 Months Tool cavity development - analog CNC Software CNC Milling	16 Weeks Total Development Time
Ideation Phase	Tech Package Design	Looks like Works like	Commercialization	
4 Weeks** Could be lower with FreeForm	4 Days Model Types: FreeForm Native File	3 Days Engineering Manufacturing Rework	3 Weeks Digital tool cavity via STL CNC FreeForm Files CNC Milling	8 Weeks** Total Development Time
FreeForm Process				

US Design Firms

Asian Tool Suppliers



Case study: Meater

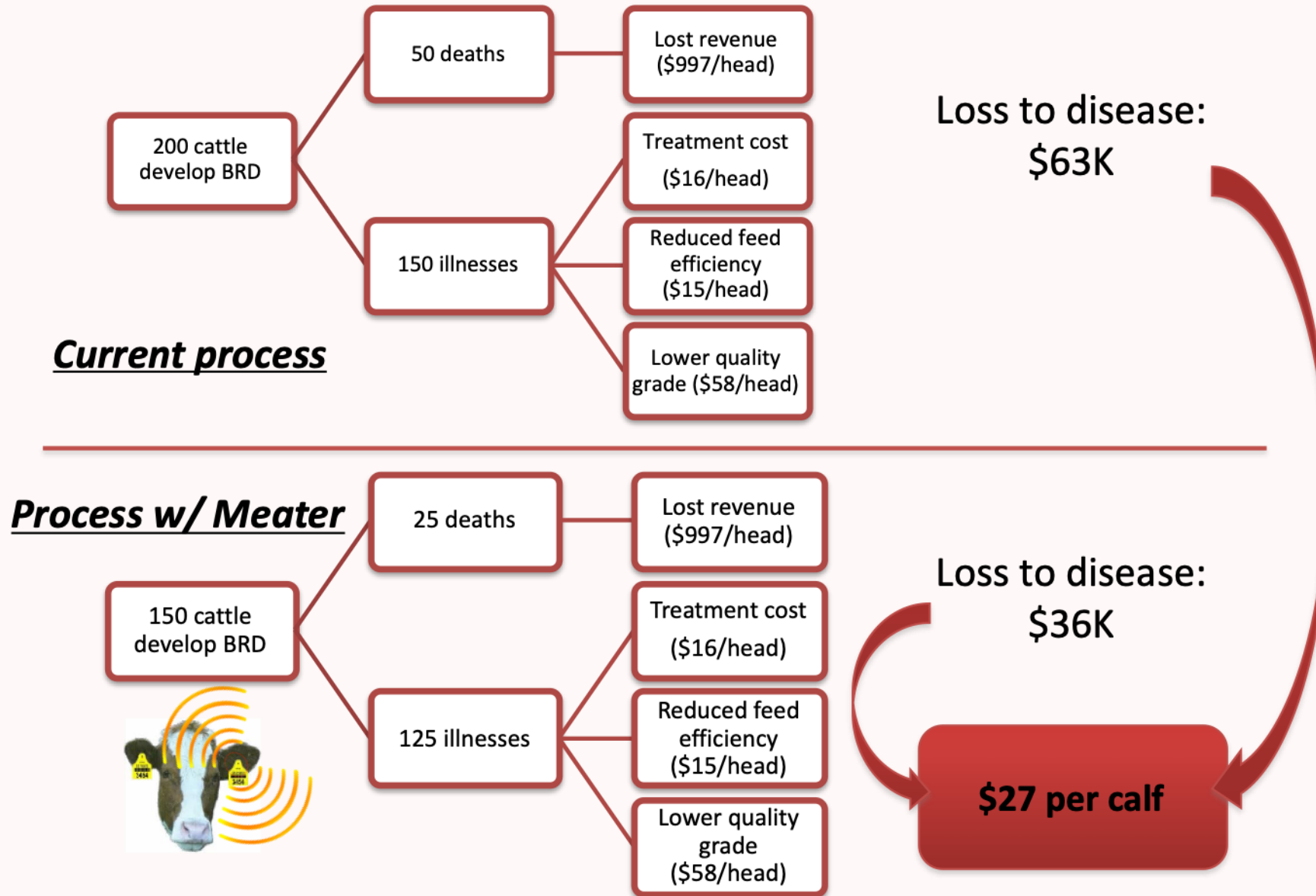


- This team started with biosensor technology that was significantly better than what was currently available in the market at the time in terms of size, efficiency, and pricing.
- Appropriate beachhead market: cattle ranching industry.
- The proposed solution was a biosensor that could be affixed to a cow's ear, much like how cows are currently tagged, to detect disease earlier.
- Sick cows identified earlier can be separated from the herd, **reducing infection rates**, and **allowing more effective treatment** of diseases due to **earlier detection** than current methods.
- Persona's (a rancher) top priority: making as much money as possible.

Quantified Value Proposition study



- Determine the current economics for a typical herd of cattle (the “as-is” state), verifying it with numerous ranchers and refining it until it was clearly valid and credible.
- Determined the “possible” state from using their product, making some conservative assumptions they could support with compelling validity evidence.
- Showing how much money a rancher would save by using their product - the Quantified Value Proposition.
 - A compelling and highly specific Quantified Value Proposition that made it much easier to engage and quickly close their target customer on acquiring the product.
 - Also provides great help in later steps when the team looks to determine its Business Model and Pricing Framework.



Exercise

High level



What are the positive things?

1. _____
2. _____
3. _____
4. _____
5. _____

What worries you?

1. _____
2. _____
3. _____
4. _____
5. _____

More Comprehensive Structure



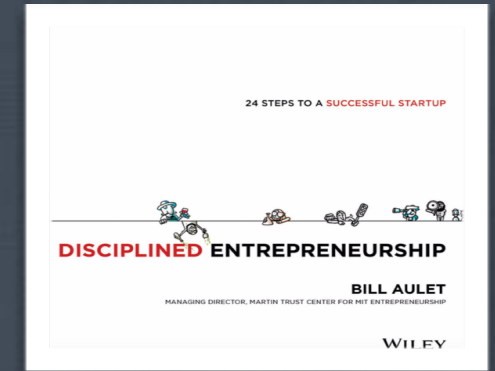
- Fill out the DE Canvas
- Green light – strong
- Yellow light – Not strong but not fatal either
- Red light – Biggest problems
- Explain as many as possible but start with reds, then greens, then yellows
- Only have 10 minutes so focus on biggest items

<p><u>Raison d'Être</u> ① <i>Why are you in business?</i></p> <p>Mission: Passions: Values: Initial Assets: Initial Idea:</p>	<p><u>Competitive Advantage</u> ④ <i>Why you?</i></p> <p>Moats: Core: Competitive Positioning:</p>	<p><u>Customer Acquisition</u> ⑤ <i>How does your customer acquire your product?</i></p> <p>DMU: Process to Acquire Customer: Windows of Opportunity: Possible Triggers:</p>	<p><u>Overall Economics</u> ⑧ <i>Does your product make money at a company level?</i></p> <p>Est. R&D Exp.: Est. G&A Exp.: LTV/COCA Ratio High Enough:</p>	<p><u>Design & Build</u> ⑨ <i>How do you produce the product?</i></p> <p>ID Key Assumptions: Test Key Assumptions: MVBPs: Tracking Metrics:</p>
<p><u>Initial Market</u> ② <i>Who is your customer?</i></p> <p>Beachhead: End User Profile: TAM: Persona: 1st 10 Customers:</p>	<p><u>Value Creation</u> ③ <i>What can you do for you customer?</i></p> <p>Use Case: Prod Description: Problem Being Solved: Quant. Value Prop.:</p>	<p><u>Product Unit Economics</u> ⑥ <i>Can you make money at the product level?</i></p> <p>Biz Model: Est. Pricing: Short Term - LTV: Short Term - COCA: Medium Term - LTV: Medium Term - COCA: Long Term - LTV: Long Term - COCA:</p>	<p><u>Sales</u> ⑦ <i>How do you sell your product?</i></p> <p>Preferred Sales Channel: Sales Funnel: Short Term Mix: Medium Term Mix: Long Term Mix:</p>	<p><u>Scaling</u> ⑩ <i>How do you scale your business?</i></p> <p>Prod. Plan for Beachhead: Next Market: Prod. Plan beyond Beachhead: Follow-on TAM:</p>



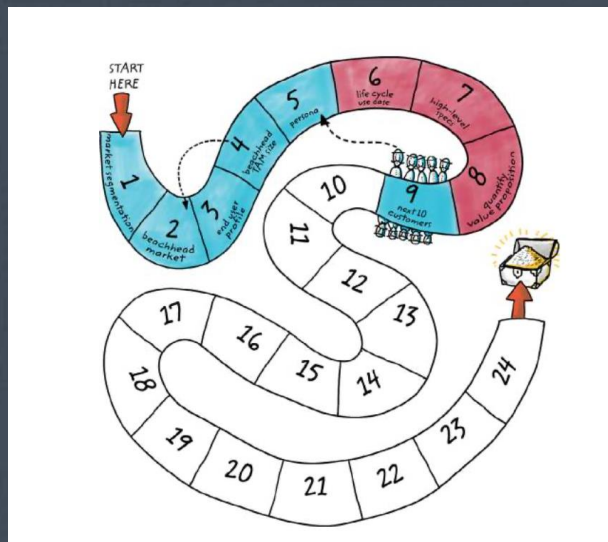
Section 2: Who is Your Customer?

Step 9 : Identify Your Next 10 Customers



WHO IS YOUR CUSTOMER?

- 1 Market segmentation
- 2 Select a beachhead market
- 3 Build an end-user profile
- 4 Calculate the TAM size for the beachhead market
- 5 Profile the persona for the beachhead market
- 9 Identify your next customers



Section 2

Contents

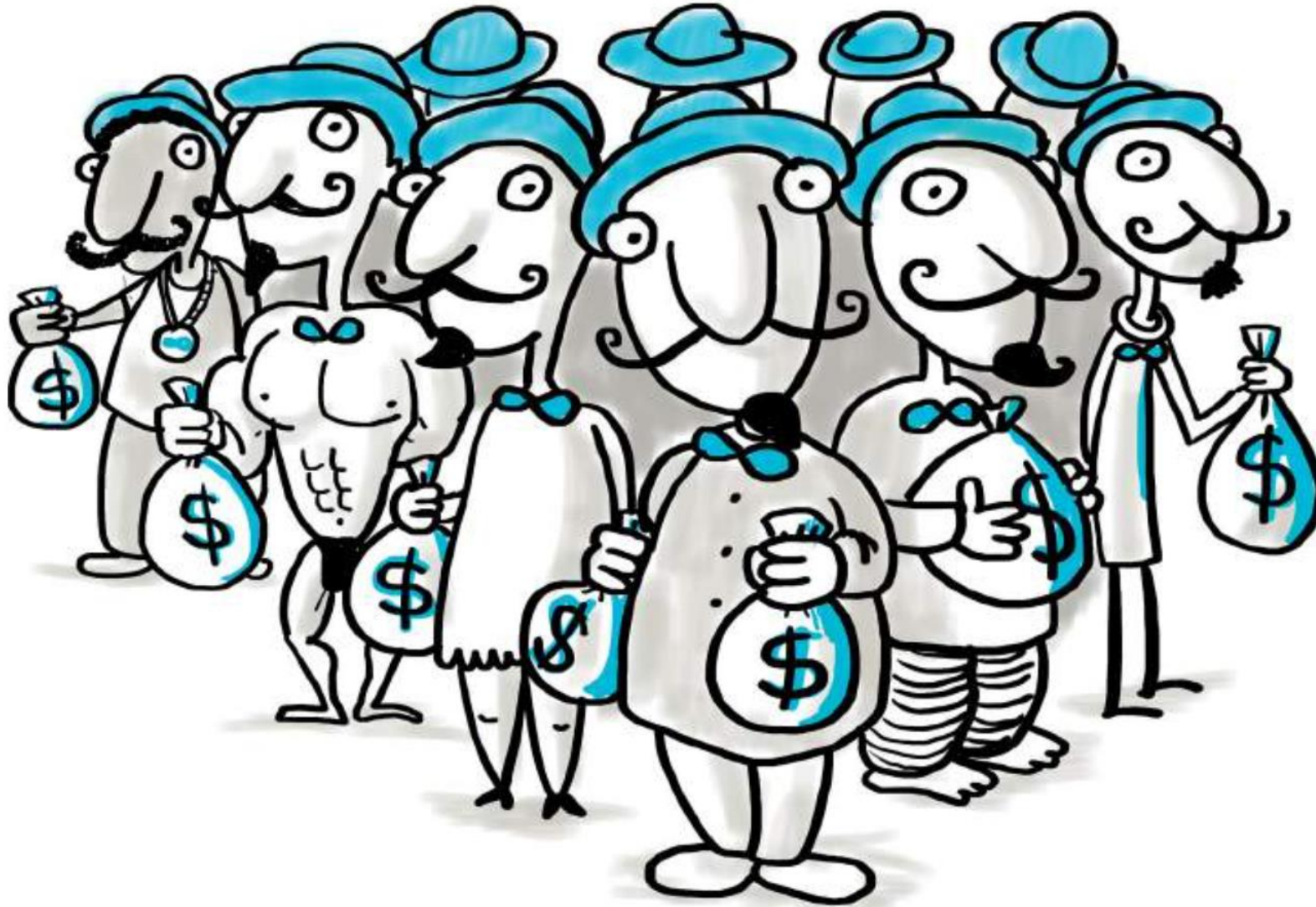


- DH Step 1: Market Segmentation
- Talking to Customers
- DH Step 2: Select Beachhead Market
- DH Step 3: Build End-User Profile
- DH Step 4: Total Addressable Market (TAM) size of Beachhead Market
- DH Step 5: Persona of the Beachhead Market
- **DH Step 9 : Identify Your Next 10 Customers**

Goals



- Identify at least 10 potential customers, besides your Persona, who fit the End User Profile.
- Contact them to validate their similarity to your Persona, and their willingness to buy your product.



Explicitly identifying the next 10 customers after the Persona increases your level of confidence that you are on the right path and may also help you refine earlier steps.



Why Step 9?

- Focusing **solely on one Persona** could lead you to build a very specific business without the ability to sell to other customers.
 - If the **Persona** is done **correctly**, this will **not** happen.
- Having **a list of 10 potential customers** beyond your Persona, will be highly beneficial to you, as you proceed:
 - If you are successful in this step, you can be significantly more confident that your business has **a high probability of success**—and you will be able to convince others, such as future partners, employees, customers, advisors, and investors.
 - If you run into issues in this step, you will be able to **go back and determine the flaws** in your plan and **improve** them before going further.
- By listing and interviewing 10 potential customers, you are **directly testing every hypothesis** you have built over the past eight steps.
 - You may encounter some negative feedback if your plan is not quite right. That is not only okay, **but probably good**.

How to complete Step 9?

1. List more than 10 potential customers (aside from your Persona), and include any pertinent information you have about them from your existing research.

- Each of these customers should be similar to each other and the Persona; if not, revisit the list, and potentially revisit your selection of Persona. It is important to have homogeneity in your list. They should all be powerful purchasing references for each other.

2. Contact each of the potential customers on your list and present your Full Life Cycle Use Case, High-Level Product Specification, and Quantified Value Proposition (Steps 6–8).

- Be sure while having these conversations that you are operating in “inquiry” mode, not “advocacy/sales” mode. Determine whether the customer’s needs and ideas are in line with what you’ve established thus far from your Persona, Full Life Cycle Use Case, Quantified Value Proposition, TAM assumptions, and so on. Especially validate with these customers the hypothesis you have regarding the Persona's top purchasing priorities.

How to complete Step 9?

3.If a customer validates your hypotheses from the previous steps, now is a good time to ask the customer if they would consider providing a letter of intent to buy your solution, once it is available.

- You are still in “inquiry” mode, so you are asking, “If a company were to offer this product, would you be interested in purchasing it?” rather than “Will you buy this product?” If they are extremely enthusiastic, you can even ask them to prepay for the product, which is a fantastic level of commitment.

4.If a customer's feedback is not aligned exactly with your assumptions, take good notes and think how this affects your analysis.

- Do not overreact to each new interview, even if there is a major disconnect, unless you see a pattern. You will know intuitively if there is a major dis- connect after a few interviews.

5.After you have contacted each customer, you may have new data. Go back and modify your earlier assumptions and determine whether to contact additional customers. Your end goal is a homogenous list of 10 customers who are truly interested and aligned with your Persona and other assumptions.

How to complete Step 9?

6. If you find that you **cannot create a list of 10 customers** who are excited about your High-Level Product Specification, then you may need to **reconsider your beachhead market**.
7. While this step is conceptually simple, contacting customers and getting information from them will require a good amount of work, but will be invaluable as you move forward.
 - **Do not share this list** of customers or the information you gather with others outside your company.

Dealing with negative feedback

- Getting negative results will happen and how the entrepreneurial team responds to them will be a fundamental factor to the team's success.
- Therefore, if any step returns negative feedback, meaning feedback that does not support your hypotheses, you have received valuable information that there may be an error in the research and data you have been using up to this point.
- Negative results at one step is not the end of the venture in most cases, but moving forward with a faulty plan that was based on hope and not facts is a recipe for failure.

Worksheet



Summary of Next 10 Customers												
#	General Info				Fit					Engagement		
	Customer Name	Relevant Info	Title	Email/Phone	Demo-graphic	Psycho-graphic	Use Case	Value Prop	Overall	Contacted	Level of Interest – Letter of Intent?	Source
<u>1</u>												
<u>2</u>												
<u>3</u>												
<u>4</u>												
<u>5</u>												
<u>6</u>												
<u>7</u>												
<u>8</u>												
<u>9</u>												
<u>10</u>												

Note -1: Like with other worksheets, this is meant to give some structure but it can and should be customized as appropriate for your situation

Note – 2: Relevant Info is other relevant info that is not captured elsewhere, such as “Total Megawatts Installed” for the Methane Capture example from Disciplined Entrepreneurship.

Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.

Team # 1

#	Fit					Engagement		
	Demo-graphic	Psycho-graphic	Use Case	Value Prop	Overall	Contacted	Level of Interest – LOI?	Source
<u>1</u>	A	A	A	A	A	YES	A	From Persona
<u>2</u>	B	B	C	B	B	YES	A	School Friend
<u>3</u>	C	B	B	B	B	YES	A	Neighbor
<u>4</u>	C	A	B	A	B	YES	A	From Persona
<u>5</u>	B	B	B	A	B	YES	A	Family friend
<u>6</u>	B	B	B	B	B	YES	A	Alumni Database
<u>7</u>	B	B	B	B	B	YES	A	Classmate
<u>8</u>	C	A	B	B	B	YES	A	Classmate
<u>9</u>	C	B	B	B	B	YES	A/B	Friend of a Friend
<u>10</u>	C	C	C	B	B/C	YES	A/B	From Persona

Legend:

Fit: A = Excellent, B = Medium, C = Poor

Level of Interest: A = Signed a letter of intent, B = unwilling to sign letter of intent, C = refuses to buy the product

“Use Case” means that the Full Life Cycle Use Case resonated with how the end user operates. “Value Prop” means the benefit your product delivers is in line with that end user’s top priority.

Team #2

#	Fit					Engagement		
	Demo-graphic	Psycho-graphic	Use Case	Value Prop	Overall	Contacted	Level of Interest – LOI?	Source
1	A	A	A	A	A	YES	A+ (NEEDS IT NOW)	From Industry Group
2	A	A	A	A	A	YES	A	From Persona
3	B	A	A	A	A	YES	A	Cold Call /Email
4	A	A	A	A	A	YES	A	From Industry Group
5	B	A	A	A	A	YES	Needs to Know More but Interested	Cold Call /Email
6	A	A	A	A	A	Early Stages	Needs to Know More but Interested	From Industry Group
7	A	A	A	A	A	Early Stages	Needs to Know More but Interested	From Persona
8	B	A	A	A	A	Early Stages	Needs to Know More but Interested	From Industry Group
9	A	A	A	A	A	Not Yet	Needs to Know More but Interested	From Industry Group
10	A	A	A	A	A	Not Yet	?	From Industry Group

Legend:

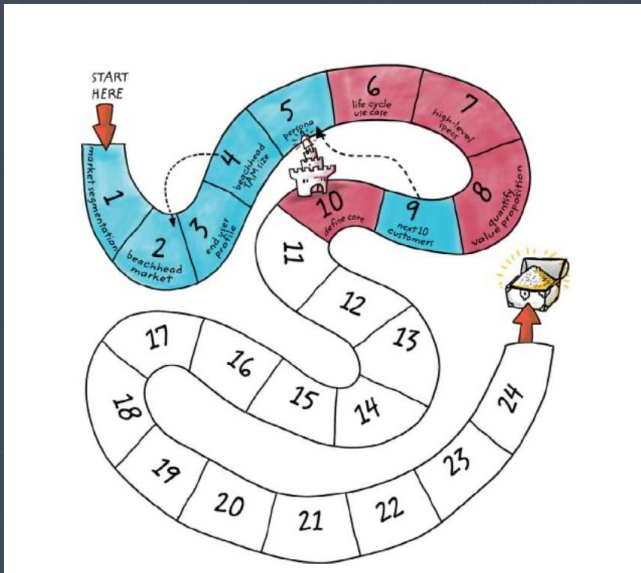
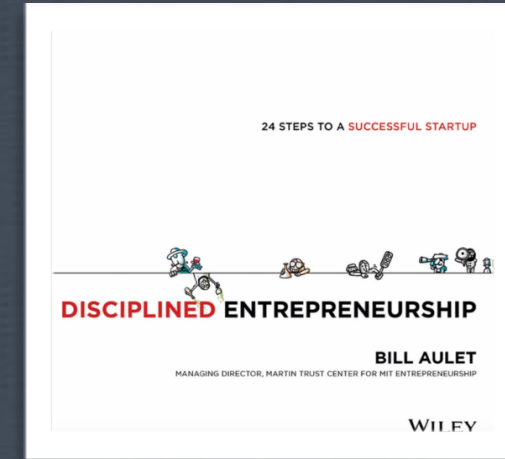
Fit: A = Excellent, B = Medium, C = Poor

Level of Interest: A = Signed a letter of intent, B = unwilling to sign letter of intent, C = refuses to buy the product

“Use Case” means that the Full Life Cycle Use Case resonated with how the end user operates. “Value Prop” means the benefit your product delivers is in line with that end user’s top priority.

Section 3: What can you do for your customer?

Step 10: Define Your Core



Section 2

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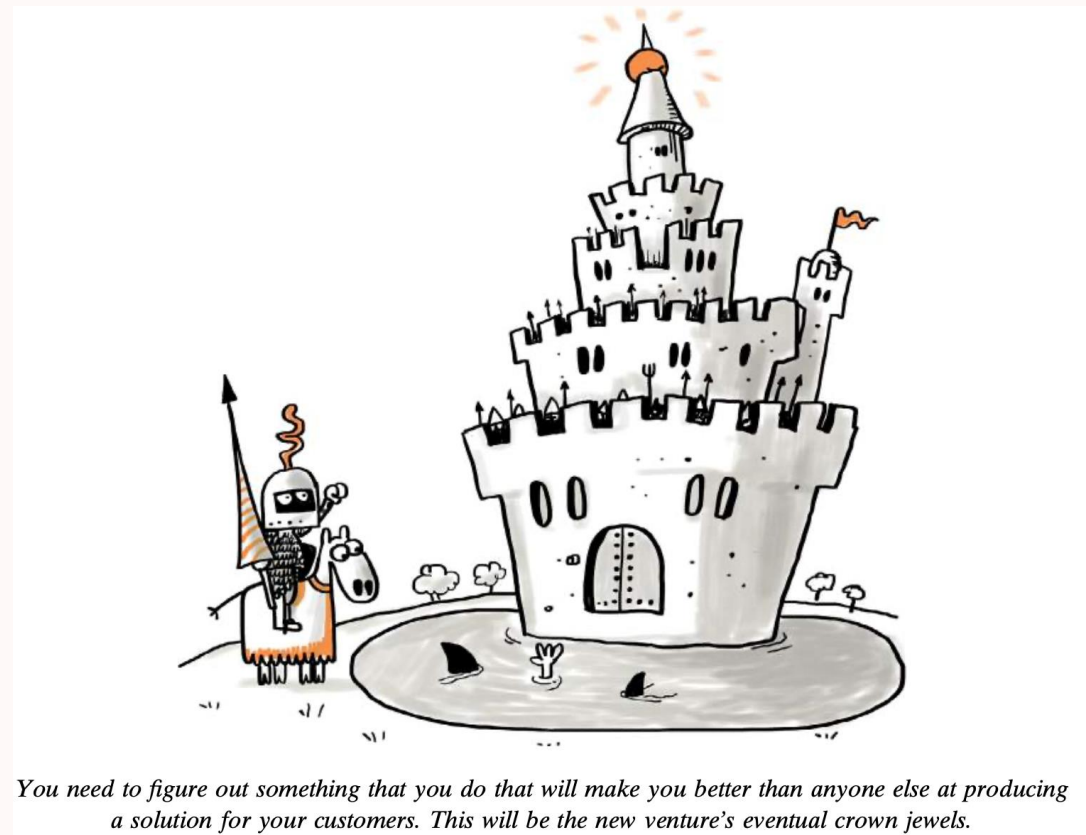
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- **DH Step 10: Define Your Core**
- **DH Step 11: Chart Your Competitive Position**



Goal



Explain why your business can provide customers with a solution that other businesses cannot nearly as well.



You need to figure out something that you do that will make you better than anyone else at producing a solution for your customers. This will be the new venture's eventual crown jewels.

Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.



University of Cyprus
Department of Computer Science



What is the “Core”?

What is it that your product does that your competitors cannot duplicate, or cannot duplicate easily?

- The Core is something that allows you to deliver the benefits your customers value with **much greater effectiveness** than any other competitor.
- It is that **single thing** that will make it very difficult for the next company that tries to do what you do.
 - It could be a very small part of the overall solution, but **without it, you don't have nearly as valuable a solution**. What is it that you do better than anyone else?
- The Core provides **a certain level of protection**, ensuring that you don't go through the hard work to create a new market or product category only to see **someone else come in and reap the rewards** with a similar business of their own. That is your Core.
- It is your business's **last defence against the competition**.

How to determine your Core?

- Determining your core is a very situation-specific exercise.
- It requires great thought and there may be multiple options for a Core.
- Let's look at some examples from categories that could inspire (or become) your Core.

- If **Network Effect** is your Core, you become the standard by achieving **so much critical mass in the marketplace** that it **does not make sense** for potential customers to use another product.
- The value to the user of this product falls under **Metcalfe's Law**, which essentially says that **the value of the network to any individual on that network is related to the square of the number of users on the network**.
 - The company with the most users is the most valuable; hence it is logical for new users to choose that network.
 - As a result, the network becomes even more powerful; it is a positive feedback loop.
- Examples of businesses that achieved this are eBay (for both buyers and sellers), LinkedIn, Facebook, and Google for Advertisers.

- By establishing processes and culture that focus on excelling at customer service, this potential core allows you to:
 - Retain customers at a very high rate as compared to competitors, and thereby avoid costly churn.
 - Attract and obtain customers in a much more efficient way than others in the market, as your customers are thrilled with their experience with you and become salespeople for you by creating positive word of mouth.
- This core requires:
 - An incredibly strong commitment from the entire organization and a fanatical focus to execute a high level of customer satisfaction in a consistent fashion.
 - Extraordinary measures that are hard for others to follow, such as “no questions asked refunds” or other costly policies.
- This strategy is difficult to execute such that a competitor is unable to copy and negate your core, but when it works, it can be very effective.

Lower Cost

- Develop the skills, relationships, processes, volumes, financial overhead, and culture to outcompete anyone else in the market on **cost** and **become the long-term low-cost player**.
- This has been a successful Core for Walmart and it is also part of the strategy behind many Asian companies, especially with Chinese companies that have recently entered the clean energy sector.
- It may be facilitated by achieving **economies of scale**.
- Often it is not a Core, but rather an **entry strategy** for companies who then choose to compete on something else.
 - For example, Honda entered the U.S. market as a low-cost provider of weed whackers, scooters, motorcycles, lawnmowers, and cars; but, eventually they no longer were the low-cost option. In fact, their Core was the capability to build great motors, and the low cost was just a way to get into a new market.

- There are a multitude of new strategies that have evolved into potential Core strengths and a common one now is **user experience (UX)**.
 - This seems to have been embraced by the market in places where a lot of design and fashion talent is available to address this challenge.
- The strategy here would be to become the **best at developing and continually improving the UX through the company's emphasis on it.**
- Clearly this has been Apple's Core as it produces products that leverage the company's capabilities and commitment to an insanely great user experience.

How to define your Core?

- This step is more **inward-looking** and **less research-based** than the others.
- You will rely on internal **introspection**, combined with **external data gathering** and **analysis**.
- While the process may seem broad and general at first, your end definition of your Core should be **concrete and specific**.

Core definition process

- It must integrate many different considerations:
 - What the customer wants?
 - What assets you have?
 - What you really like to do?
 - What others outside your company can do?
 - What the personal and financial goals of the owners are?
- It must be done efficiently and very specifically such that you arrive at an answer you are highly confident is accurate.
- You **cannot be changing your Core** like other elements in this process; it has to remain fixed over time, once you lock in on it.

IP and your Core

- One common starting point when determining your Core is to conclude it is your **intellectual property**.
- However, the effectiveness of IP as a Core depends heavily on **your industry**:
 - In the medical industry, especially the biotech industry, **patents are incredibly important** in ensuring success of a product or a new company.
 - In other industries, there may be some value, but often patents are insufficient for ensuring business success. They tend to be **static** and markets are **dynamic**.
- **Capability is generally better than a patent**—but it is best to have both for sure.
 - For instance, teams with high levels of capability in an area will **continually produce innovative goods**, over time **overwhelming a company that is built around one or a small number of patents** (except in such specific cases as biotech).

Innovation Capacity as a Core

- Some companies find an advantage in the marketplace by **creating a process and culture that innovates incredibly fast:**
 - They stay close to the customer and use strong product management and agile development to translate their initial head start into a sustained and growing advantage as time goes on.
- However, this strategy is difficult to sustain as a unique Core as the organization scales
 - Smaller companies enter the market and begin competing, they will have advantages that allow them to be nimble as well, perhaps surpassing your pace of innovation, once your business is large.
- Most companies wisely do not rely solely on their speed of innovation as their Core, but rather use it as a motivator and a moat around the castle before they finally settle on a Core.
- To put it simply, all businesses should aim to innovate quickly, regardless of their definition of Core; but, few businesses will find lasting success in rapid innovation without something else as a Core.

Core vs Competitive position

- Your customers very likely will not see your Core as the reason they buy from you.
- They will instead look at your Competitive Position (Step 11).
- Your Core will drive your ability to deliver certain benefits to the customer, which has to translate into value for the customer (based on the customer's top priorities), which then leads to a better Competitive Position.
- The Core is **how you are building a capability to differentiate yourself from your competitors**, and it cannot be easily replicated by others.
- It is the most concentrated way to gain differentiation from your current and potential competitors so you can really focus your small amount of resources to gain maximum value for your new venture.

First-move advantage vs Core

- The term refers to a company being successful solely by being the first in the market.
- However, most companies that are first to market end up losing the market to a later entrant who outperforms the first company, so:

First-mover advantage by itself cannot translate into a sustainable Core and could be seen as a disadvantage.

- First-mover advantage can help a company with a well-defined Core, but it cannot win the market by simply by being first. This must be translated into something else:
 - locking in key customers
 - achieving positive networking effects for your company
 - recruiting the best talent in a certain area, etc.

Locking up suppliers & Core

- One way to gain a competitive advantage is to anticipate the key elements of your solution and **lock in vendors on an exclusive or a functionally exclusive** arrangement.
- Locking up key suppliers is a good “outside the core moat” strategy to slow down your potential competitors and should be aggressively used when appropriate, but it is not your ultimate Core, just a **trap** along the way for those who might follow.
- It is a **very valuable strategy to have multiple traps along the way** to make it hard on your competitors; but, **you should have only one Core**.
- The Core is the Crown Jewel that is the final barrier through which the competitors should not be able to break through.



You need to figure out something that you do that will make you better than anyone else at producing a solution for your customers. This will be the new venture's eventual crown jewels.



Case study: SensAble tech



- A unique hardware robotic device called the PHANToM, a device that was renowned for its clever design.
- An extremely fundamental patent for “force reflecting haptic interface” (U.S. patent #5,625,576) which was one of the most referenced patents of its time.
- Thomas Massie, the driving intellect behind the technology, and a rising engineering star at MIT, fully invested in the company.
- What was their core?



SensAble constraints



- Aspiring to achieve a high level of success in a relatively short period of time.
- 2 Co-founders wanted to return to Kentucky in four to five years,
- Wanted to do something big that could scale quickly and be of interest to venture capitalists, which would be a five-year timetable.



SensAble Core:

The IP?



- Become dependent on others
- Unpredictable time frames
- Need to become legal experts to ensure others did not ignore or circumvent our patents
 - not interesting and not aligned to personal goals and passions
- Aggressively pursued building **intellectual property portfolio** with their IP lawyer and MIT
 - one of the outside moats of our castle

SensAble Core: The hardware?



- Needs lot of time and money to achieve success
- Hardware companies not as attractive to investors as software companies
- Robotics was extremely out of favor during the mid-1990s.
- We should not be a robotics company at all. After all, our beachhead market was not about robotics, but about design.
- Aggressively protected and developed PHANToM hardware, even though it was an outside wall, not the Core.

SensAble Core: The ~~supplier~~?



- We had been able to lock up the supply of a key component (the high-fidelity motors) that made our hardware far superior to what other companies were offering, presenting a substantial barrier to entry.
- But if market conditions had been right, our competitors would have found a way to produce the key component themselves.

SensAble Core: The software



- The software behind PHANToM was very complicated:
 - Not just the interface software but also
 - how it represented weight, shapes, texture, deformations, and many other physical properties of the objects rendered for touching in the computer and
 - then how the user interacted with them.
- Ended up defining the Core as **“the physics of three-dimensional touch.”**
 - This Core was to be embodied in *a software engine that rendered 3D objects on the computer, not for visual representations, but for touching them.*

Taking advantage of the Core

- Translate the Core into a **sustainable advantage** that would **grow over time**
- Identified **key people on our team** who had the **skills** to support the Core.
- Identified the **people outside** the company who were **leaders** in this field and moved quickly to build **strong relationships** with them and **lock** them in with SensAble.
- Identified the **organizations and institutions** where these people would be found (specific departments at MIT, Brown University, and Stanford University) and developed **visibility, reputation, and relationships** there to recruit the best and the brightest future stars.
- This became **a top priority** of Thomas Massie as the CTO and he reviewed this at least quarterly in his technical strategy discussions.
 - Made sure to have a **strong skills development plan** in this area and our incentive system reflected this as a priority with strong compensation and large stock option grants.

Summary



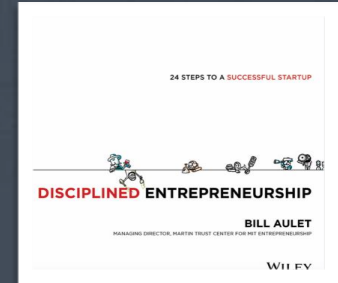
- The Core is **what you have that your competitors do not**, that you will **protect over time above all else**, and that you **continually work over time to develop and enhance**.
- Once you agree on a Core, it should not change without a great deal of thought; instead, you should continually make your Core stronger.
 - However, it can change as you discover what your customers value most and what you do best.
- Defining your Core is not easy and may seem abstract, but it is an essential step to maximize the value of your new business.

Section 2

Contents

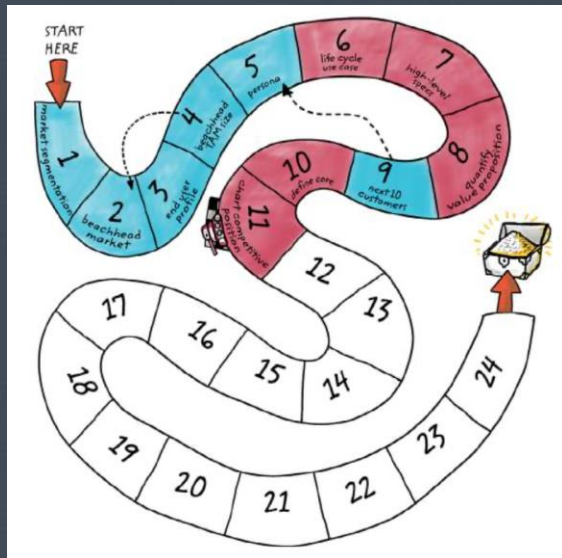


- DH Step 1: Market Segmentation
- Talking to Customers
- DH Step 2: Select Beachhead Market
- DH Step 3: Build End-User Profile
- DH Step 4: Total Addressable Market (TAM) size of Beachhead Market
- DH Step 5: Persona of the Beachhead Market
- DH Step 10: Define Your Core
- **DH Step 11: Chart Your Competitive Position**



Section 2: Who is Your Customer?

Step 11: Chart Your Competitive Position



Step 11: Goals



- Show how well your product meets the Persona's **top two priorities**.
- Show how well the Persona's priorities are met by **existing products** in comparison to your product.
- Analyze whether the market opportunity you have chosen fits well with both your Core and your Persona's priorities.



How does your core
map to what your customer
really wants?

The Competitive Position is where you take your Core and translate it into something that produces real value for the customer, something that they will care deeply about.



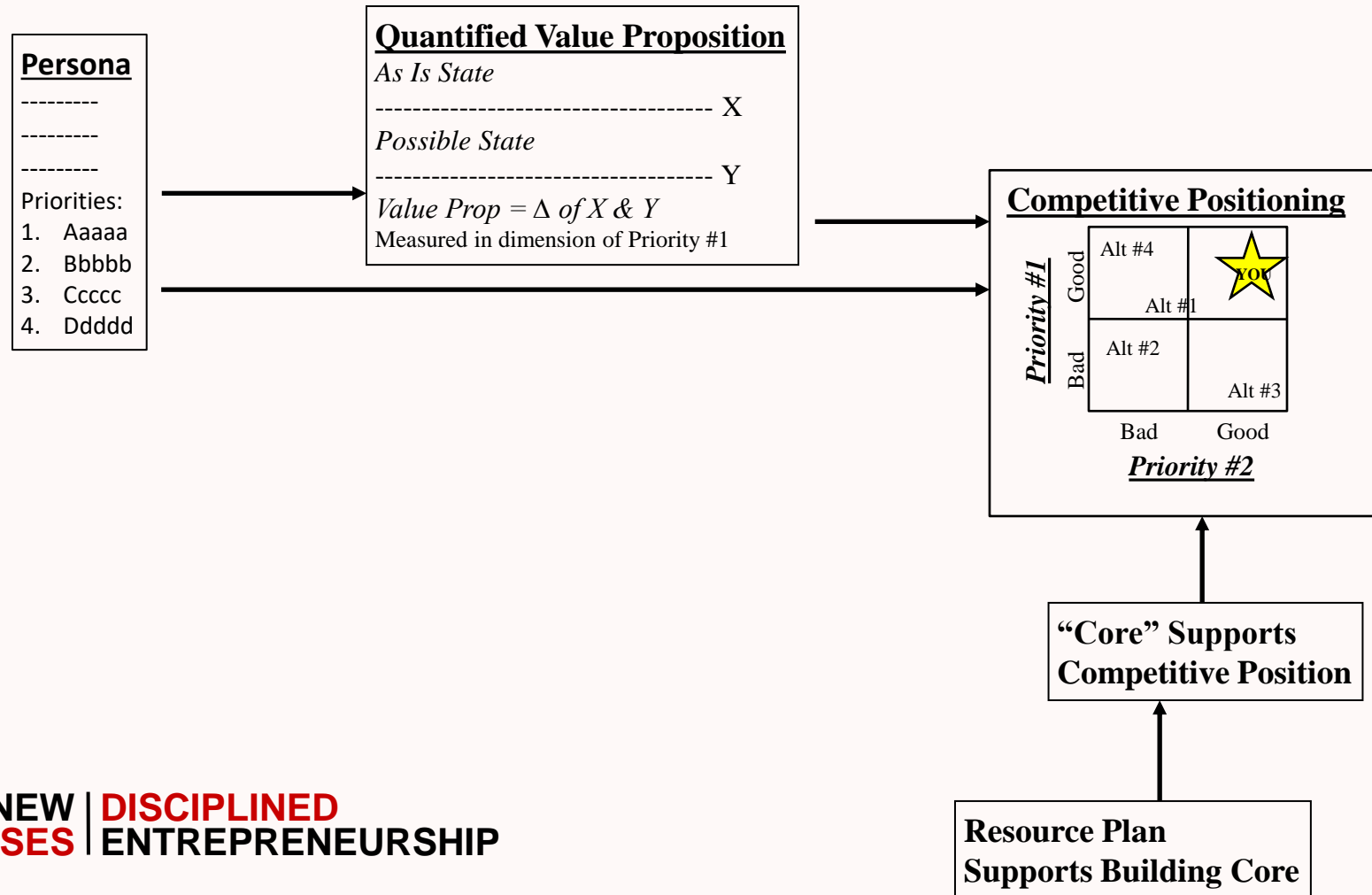
Customer decision making

- Customers usually make purchasing decisions on a **comparative basis**, considering all options and determining which solution best fits their priorities.
- The **Competitive Positioning Chart** helps you:
 - analyze how much better you are vis-à-vis your competition;
 - highlight areas of weakness.
- Taken together with the Quantified Value Proposition, it shows that **your product is needed** and **you are the right organization to provide it**.
- The Competitive Position is the **link** between your Core and your Persona's priorities, and shows that they logically make sense for the target market you have chosen.

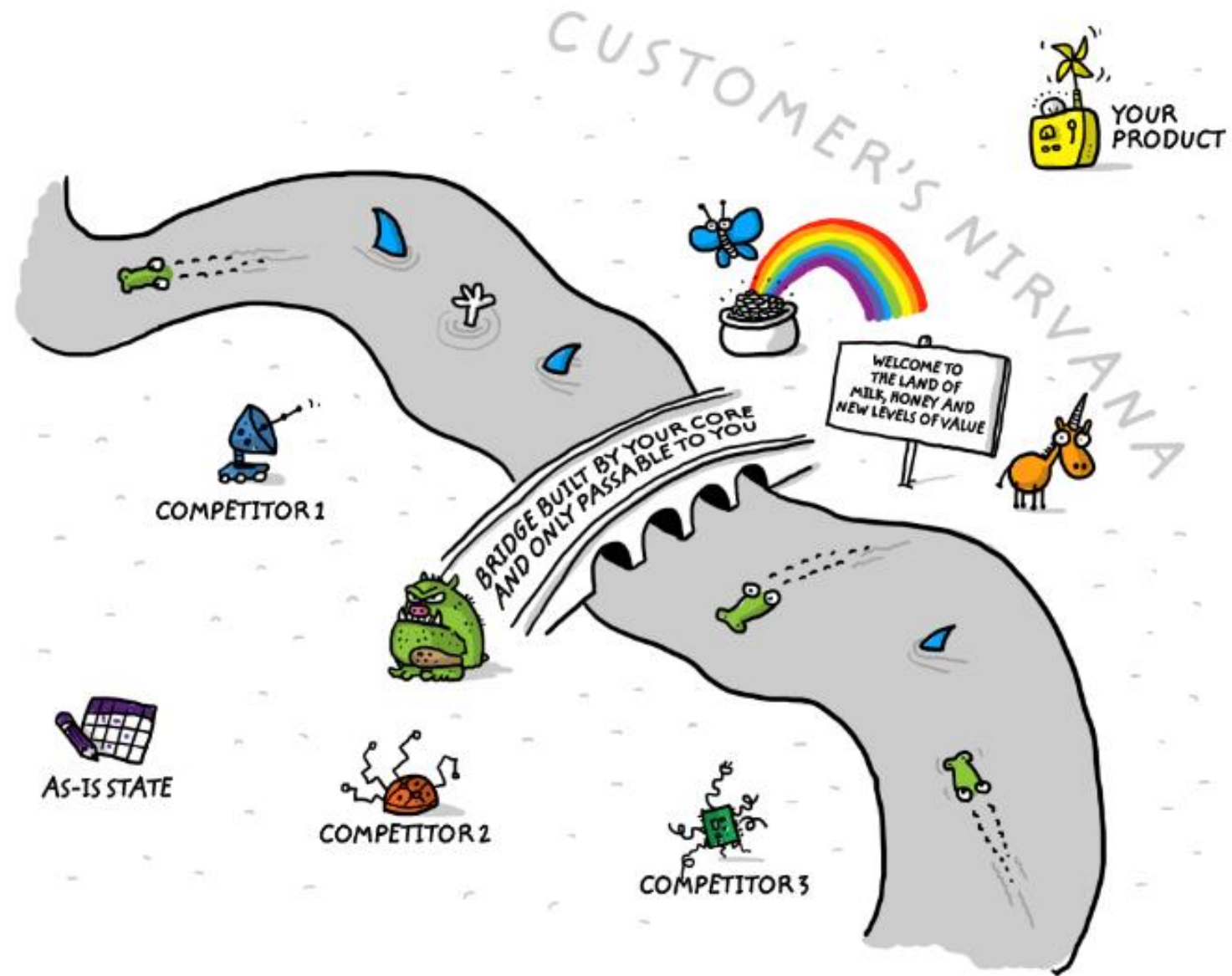
Competitive Positioning Chart

- Shows visually how well you fulfil your Persona's top two priorities versus how well your competition does so.
- The goal is to show that your Competitive Position both **leverages your Core** and that your **product satisfies your Persona's priorities far better** than existing or logical future products.
- If **both of these are not true**, you may need to **revisit** your market selection or your Core.
 - While there is some flexibility with your Core, it is usually limited.
 - Inability to translate your Core into benefits for your customer does not necessarily mean your Core is wrong, because **the Core is a reflection of your team's assets and capabilities**; instead, **there may be a better market opportunity** where your Core is more suited.

Linkage of Various Steps Is Critical and Underlies the Integration



Source: 15.390 NEW **DISCIPLINED** ENTERPRISES | **ENTREPRENEURSHIP**



The toughest competitor of all

- The customer's **STATUS QUO**
- Often, your largest obstacle will be convincing customers to make a change from their status quo.
- Comparing your product to the status quo ensures that you have a valid real market and not a conceptual, fictitious one.
- The **much bigger share of the TAM comes from getting people to change what they are doing today**, overcoming natural human and organizational inertia.
 - It is far better to address the untapped market of “customer doing nothing” than focusing on some other brand-new startup.

The toughest competitor of all

- If you have a good Core and people convert from the status quo to a new solution, the market will take off and both you and the other small competitor will win big.
- In such an outcome, it is likely that the two of you will merge, both get bought by bigger firms, or both go public.
- Once you have your Core and Competitive Position, **don't focus too much precious time on competitors**; rather, spend most of it working with customers, developing your Core, and getting products out the door.

Charting your competitive position

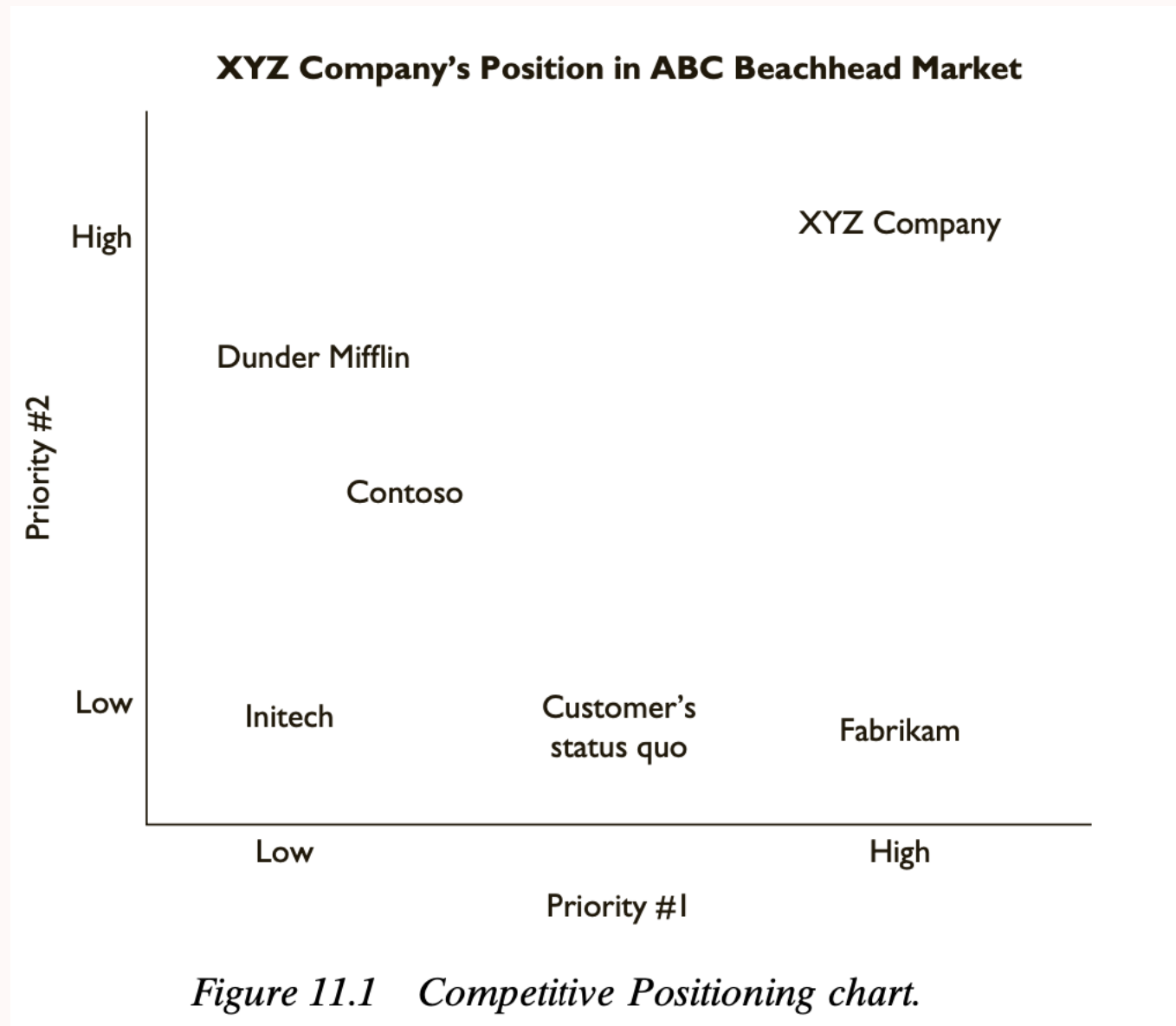
Step 1

- Key: get the right information from your primary customer research
- Identifying the top two priorities of your Persona and assume that these two priorities are all that matter.
 - Your core is probably inspirational and thoughtful, and your product's features are great, but **they do not dictate the customer's priorities.**

Charting your competitive position

Step2

- Create a simple matrix/graph as follows:
- Divide both the x-axis and y-axis into two halves.
- On the x-axis, write the **number-one priority** of your Persona.
- On the half of the x-axis closer to the origin, write the “bad state” of this priority (e.g., if the priority is “reliability” then write “low” here).
- On the other half of the x-axis, write the “good” state of this priority (e.g., “high” for “reliability”).
- On the y-axis, place the **number-two priority** of your Persona. Write the “bad state” on the half of the y-axis closer to the origin, and the “good state” on the other half of the y-axis.
- Plot your business on the graph, along with those of your competitors (current and future). Also include the customer’s “do nothing” or “status quo” option.



Competitive position chart

- If you have done good primary market research, your business should be **positioned in the top-right quadrant of this graph**, at the high end of the “good” states of each priority.
- The **bottom-left quadrant is where you absolutely do not want to be**.
- Other locations on the chart are not necessarily bad. But if you find yourself somewhere other than the top-right of the chart, you should reevaluate your product compared to your competition.

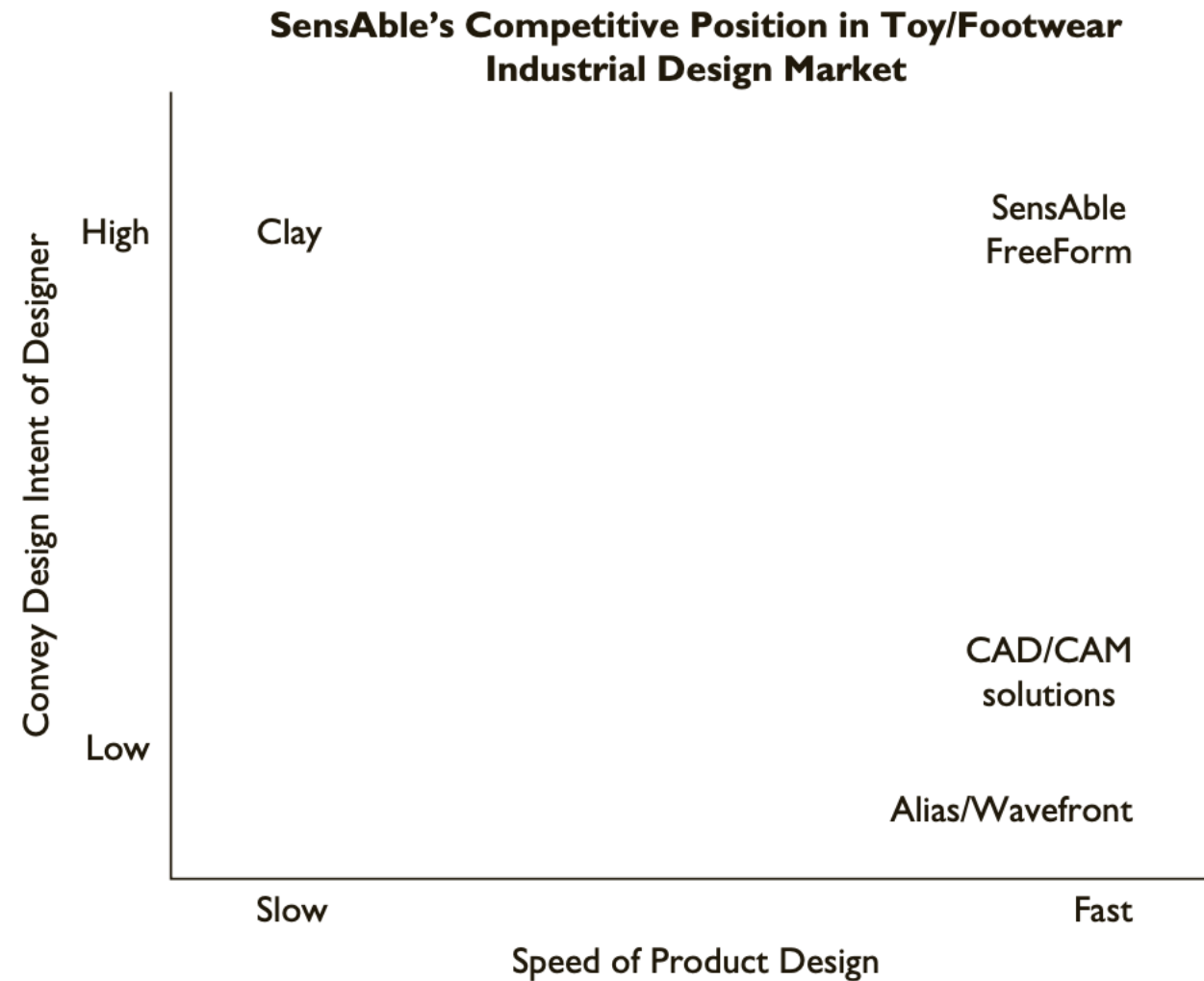


Figure 11.2 SensAble's Competitive Position.

SunSpring Case Study



- Solution to use solar energy to filter water.
- Beachhead market of filtering drinking water for military teams stationed in places that were off the grid or lacked access to reliable electricity.
- Cost was not a top priority for the military.
- Rather, the key elements were reliability and efficiency

SunSpring Case Study



- SunSpring's value proposition is increased efficiency, flexibility, mobility, reliability, and operation simplicity vis-à-vis its competitors

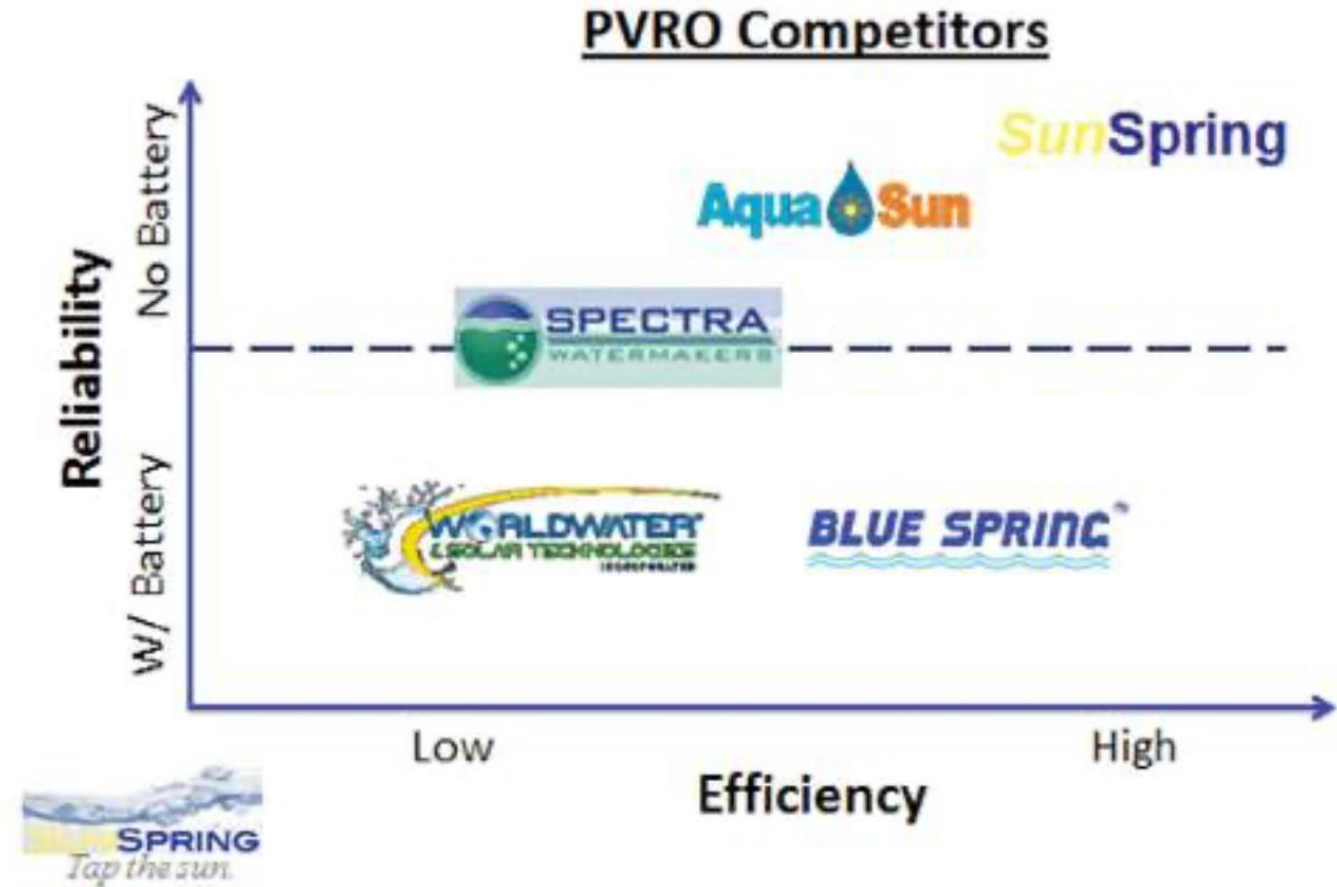


Figure 11.3 SunSpring's Competitive Position.



Summary



- Defining your Competitive Position is a quick way to validate your product against your competition, including the customer's status quo, based on the top two priorities of the Persona.
- If you are not in the top right of the resulting chart, you should **reevaluate your product**, or at least the **way you are presenting it**.
- This will also be a very effective vehicle to communicate your qualitative (not quantitative) value proposition to the target customer audience in a way that should resonate with them.

Reading Assignment and Practice



Review and apply the following tools:

- “Create a Customer Empathy Map” in 6 Easy Steps! by Conceptboard:
 - <https://conceptboard.com/blog/create-a-customer-empathy-map-in-6-easy-steps/>
- Value Proposition Canvas by Strategyzer.
 - <https://www.strategyzer.com/canvas/value-proposition-canvas>
- Competitive Mindshare Maps: a visualization of how products are positioned in a competitive landscape.
 - <https://blog.cauvin.org/2013/11/competitive-mindshare-maps.html>
- Read Chapter 5 (Define your Value Proposition). *The Lean Product Playbook* by Dan Olsen. Wiley 2015.



Module 3: Disciplined Entrepreneurship

Section 4: How does your customer acquire your product?

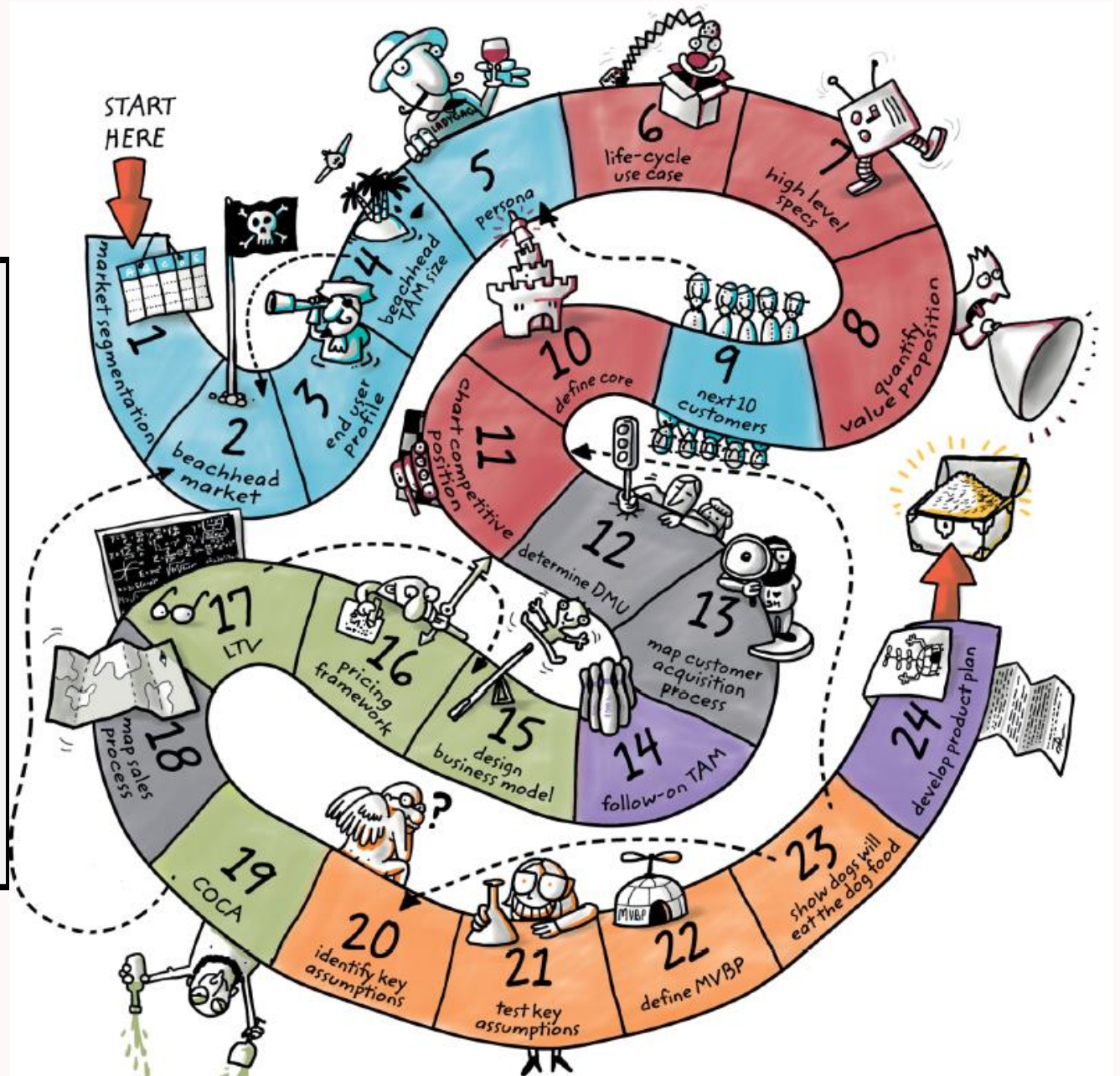


Recap



WHO IS YOUR CUSTOMER?

- 1 Market segmentation
- 2 Select a beachhead market
- 3 Build an end-user profile
- 4 Calculate the TAM size for the beachhead market
- 5 Profile the persona for the beachhead market
- 9 Identify your next customers



Who is your customer?

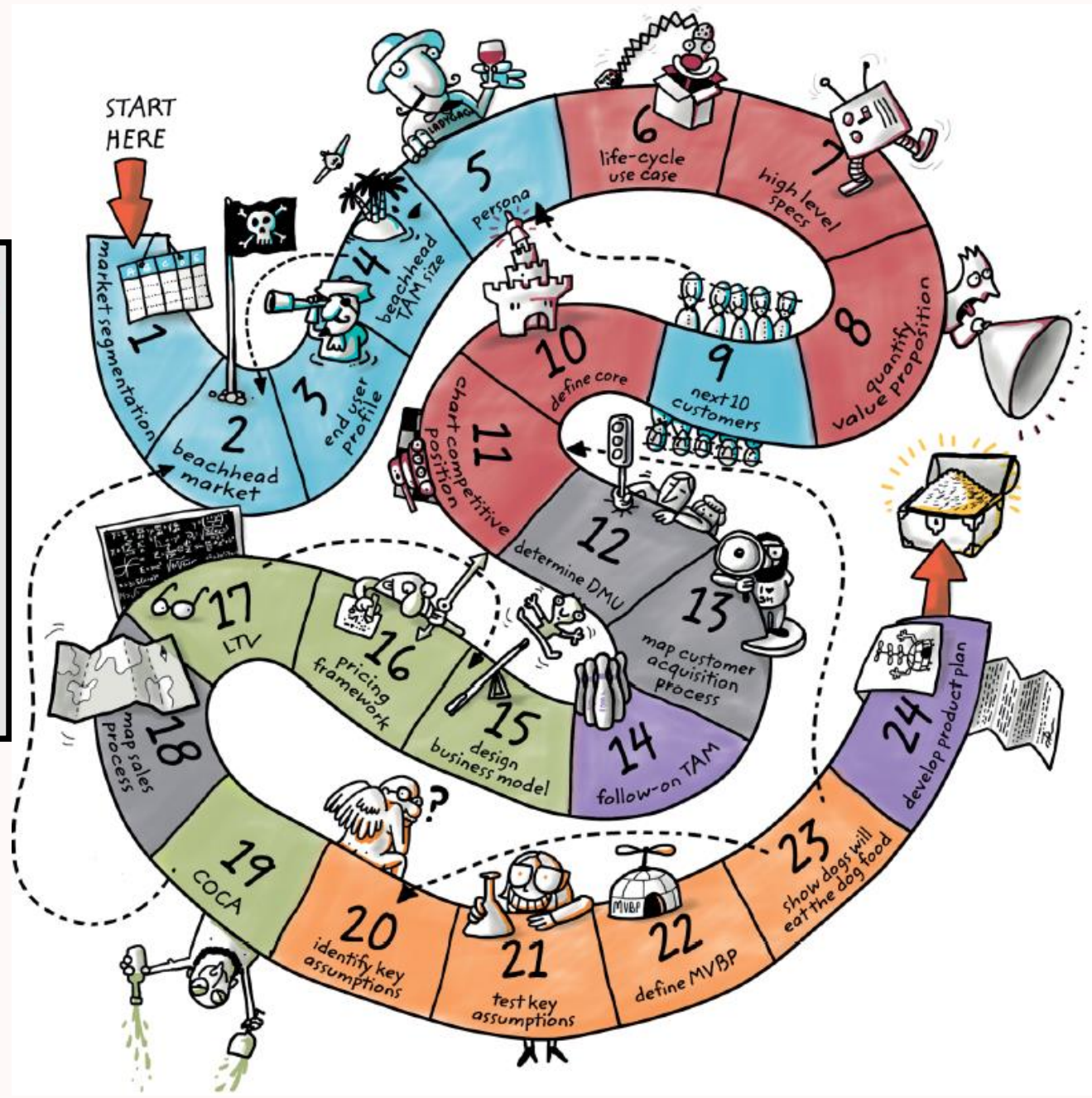


- **Market Segmentation:** Brainstorm how your idea or technology can serve a variety of potential end users. Narrow that list of potential end users to several promising categories, then conduct primary market research to gain more information about each potential end user.
- **Beachhead Market:** Select one market segment from the Market Segmentation analysis, Step 1, to be the first market your business will focus on to achieve initial business success.
- **End-user Profile:** Using primary market research techniques, build out a description, including demographic and psychographic information, with specific facts about the end users of your product. You will include their needs and wants as well as invaluable information about their behavior.
- **TAM Estimation:** Estimate the total revenue you could achieve (in units of dollars per year) in your Beachhead Market if you achieved 100 percent market share.
- **Persona:** Identify one actual real end user in your Beachhead Market who best represents your End User Profile and do a detailed profile on that specific individual.
- **Identify next customers:** Create a list of the next 10 end users after the Persona who closely fit the End User Profile. Engage them in a dialogue on your plans and validate or invalidate what you have done so far.

Recap



- WHAT CAN YOU DO FOR YOUR CUSTOMER?**
- 6 Full life cycle use case
 - 7 High level product specification
 - 8 Quantify the value proposition
 - 10 Define your core
 - 11 Chart your competitive position



What can you do for your customer?



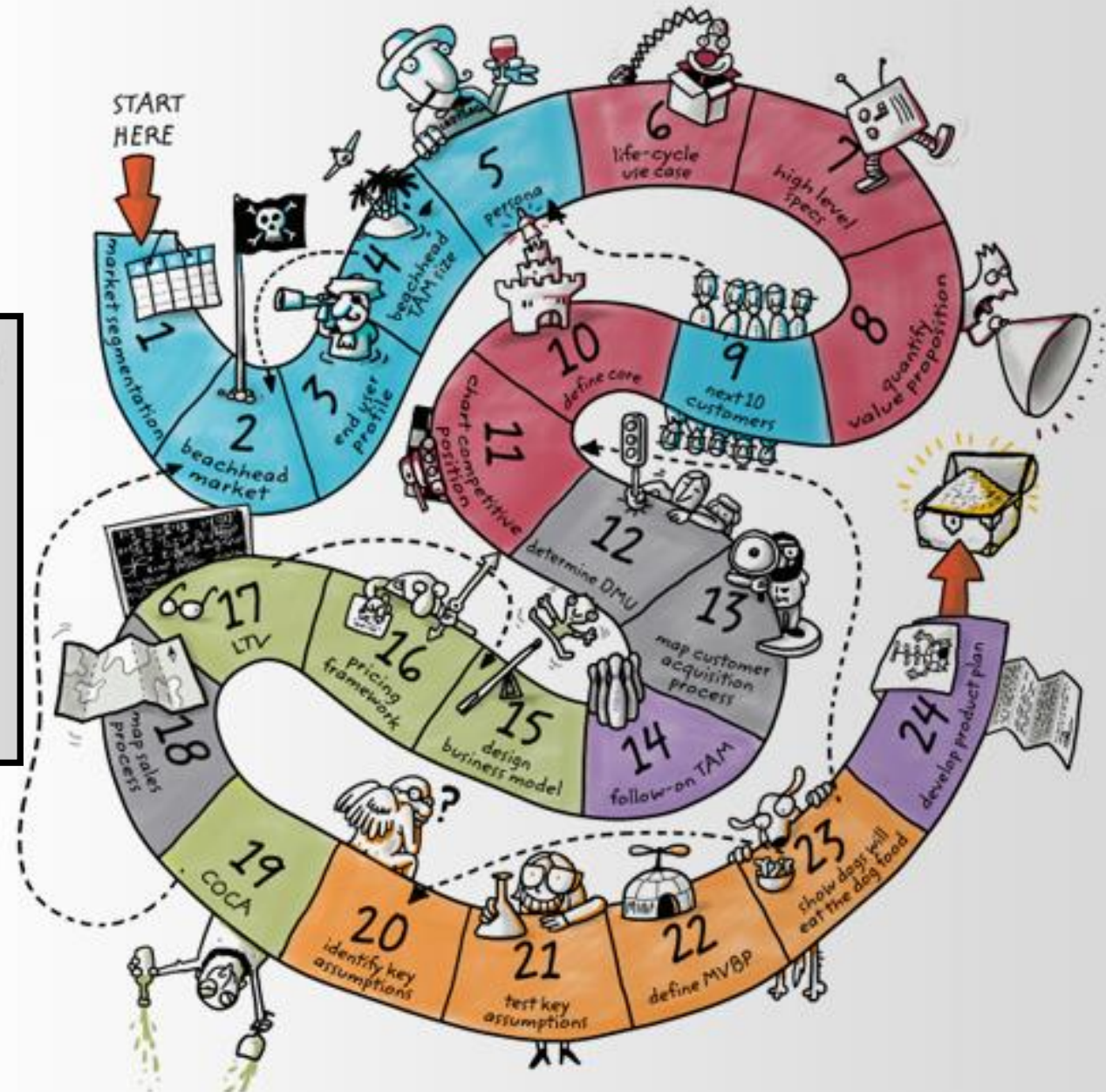
- **Full Life Cycle Use Case:** Understand and describe the full context of how your product will fit into your Persona's workflow. This is the customer's perspective.
- **High-Level Product Specification:** Create a visual description of the product and make a simple draft of a brochure..
- **Quantify the Value Proposition:** In as concrete and concise a way as possible, summarize the value your product will create for the targeted end user.
- **Define your Core:** Determine the single thing that you will do better than anyone else that will be very difficult for others to copy.
- **Chart Your Competitive Position:** Look at your product, versus your Persona's alternative options, through the lens of the Persona's top two priorities.

What's Next?



HOW DOES YOUR CUSTOMER ACQUIRE YOUR PRODUCT?

- 12 Determine the Customer's Decision Making Unit (DMU)
- 13 Map the process to acquire a paying customer
- 18 Map the sales process to acquire a customer



Section 4

Contents



- **DH Step 12: Determine the Customer's DMU**
- DH Step 13: Map the Process to Acquire a Paying Customer
- DH Step 18: Map the Sales Process to Acquire a Paying Customer

Learning Objectives

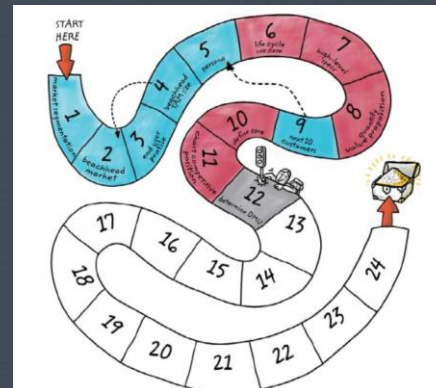
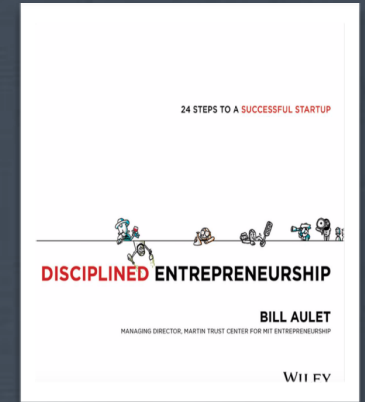


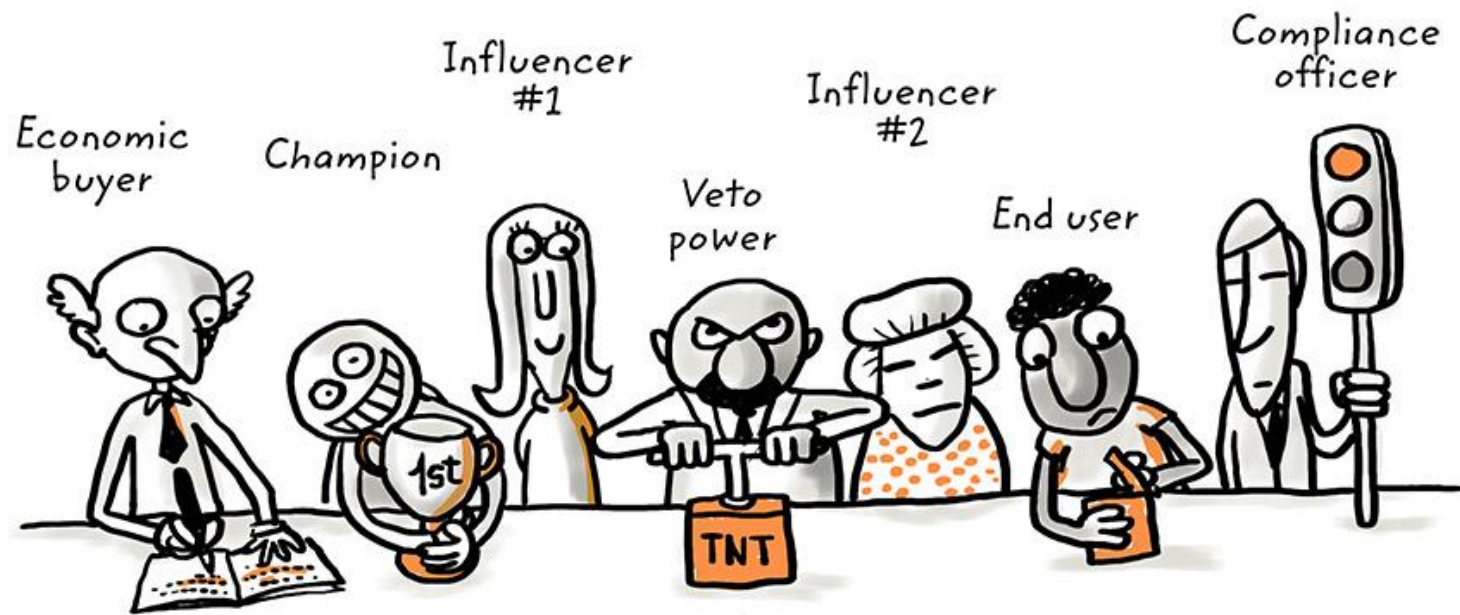
After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Describe and apply steps that need to be taken to determine the Customer's Decision-Making Unit (DMU) (Step 12).
- Be able to design and perform the process to acquire a paying customer (Step 13).
- Explain and undertake the sales process (Step 18).
- Understand how to reach customers and build your brand and apply it in practice.
- Review experiences regarding sales and marketing for startups.
- Understand the concept of up-selling and analyze how to expand from the beachhead to adjacent markets.

Section 4: How does your customer acquire your product?

Step 12: Determine the Customer's Decision-Making Unit (DMU)





The Decision Making Unit

Your target customer almost surely has a decision-making group of more than one person. Understanding this group and explicitly mapping out each person's role and interest is of critical importance not just for the sale, but also much earlier in the process when you are developing the product and all of its attributes.

Step 12: What is this step?

- Define the **DMU (Decision Making Unit)** for the target customer:
 - Makes the ultimate decision to purchase your product, and will be advocating for purchasing it
 - Will be involved when your product or service is acquired
- Carefully define each party and the nature of power in the acquisition process.
- Meet the influencers who have sway over the purchasing decision.

Step 12: Why do we do it?

- To sell your product successfully, you need to identify all the people who will be involved in the decision to acquire the product for the end user.
- Some people will actively **approve** or **block** acquisition, while others will present opinions that **can sway** the acquisition process.
- This process, or some variant of it, has been presented in many different ways in **sales training programs** and put to practice for decades.
- This process works for both B2B cases and B2C cases, though B2C cases may involve fewer people, each of whom may have multiple roles.

Step 12: Why do we do it now?

- At this step, you should be confident that your Persona will get substantial value from your product and that your offering is unique.
- Now, you need to become equally confident that your Persona and Next 10 Customers **can buy your product**.
- Rarely is the purchasing process simple.
 - When almost any product of significance is acquired or adopted for use, whether in a B2B or consumer market, **multiple people will have to be convinced that your product is worth purchasing**.

Primary Roles in DMU

- **Champion:** The **champion** is the person who **wants the customer to purchase** the product, typically but not necessarily your end user. Multiple people can play this role. The champion can also be referred to as the **“advocate.”**
- **End User:** This is the person who will **actually use the product to create the value** described in the Quantified Value Proposition (step 8). Hopefully this person is your champion as well; the end user typically plays a significant role in the purchase of a product.
- **Primary Economic Buyer:** This is the **primary decision maker**; everyone else looks to this person to **sign off on spending money to purchase your product**. Most often, this person **controls the budget**. Sometimes, the primary economic buyer is also the champion and/or the end user, which makes your job easier, but does not completely neutralize influencers or individuals who object to the purchase.

Additional Roles in DMU

- **Primary and Secondary Influencers:** often have a depth of experience in the subject matter, and can influence the rest of the DMU.
 - Primary: play a major role in the decision-making process
 - Secondary: play some part in the decision-making process.
 - Sometimes, influencers may have **formal Veto Power**, or may be **trusted** enough to have **de facto veto**.
 - Other influencers may include media publications, individual journalists, outside contractors, friends and family, industry groups, websites, blogs, etc.
- **Person with Veto Power:** These individuals have the ability to reject a purchase for any reason. Often, in a B2B environment, this individual outranks the advocate or end user in a corporate hierarchy.
 - In a consumer market, an individual rarely has Veto Power; rather, the primary influencer(s) may have the authority or be well-respected enough to exert a de facto veto..
 - Unions and collective bargaining agreements may also block purchase of your product because of certain provisions that have become essentially regulations in the business in question.
- **Purchasing Department:** handles the logistics of the purchase. Can be another obstacle, as this department often looks to drive prices down, even after the decision to purchase has been made by the Primary Economic Buyer. They can try to disqualify you based on certain purchasing rules that the company has set.

How to Determine the DMU?

- Operate in “inquiry” mode rather than “advocacy/sales” mode:
 - If the customer believes that your product provides a strong value proposition, the conversation will flow naturally.
- This is an excellent time to ask the customer:
 - “Assuming we could produce the product we have described, what would need to be done to bring a product in to test out?”
 - “Who besides you (make sure you make them feel good!) would be involved in the decision to bring our product in?”
 - “Who will have the most influence? Who could stop this from happening?”
 - “Assuming the product does what we believe it will do, whose budget will the money come from to pay for it? Does this person need anyone else to sign off on this budget? Who will feel threatened by this and how will they react?”

How to Determine the DMU?

- Refer back to your prior research:
 - Your Persona fact sheet should document who or what influences the Persona.
- If the Advocate or Primary Economic Buyer are not your Persona:
 - Build a [fact sheet](#) for the individual in each role.
 - Think about how you will appeal to them, so you get a “yes” or at least a “neutral” response.
- Once you have gathered this information:
 - Plot it out visually so the information is unambiguous.
 - Show this map to your Persona and Next 10 Customers to get feedback quickly.
 - Communicate the map within your team. The DMU for each customer should be similar, and you should see patterns emerging.

Determine the Decision-Making Unit (DMU)									
	<u>End User Persona (Step 5)</u>			<u>Economic Buyer Persona</u>			<u>Champion Persona</u>		
Name									
Title									
Demographic Summary									
Psychographic Summary									
Proxy Products									
Watering Holes									
Day In the Life									
Priorities (Top 4 in order)	1.			1.			1.		
	2.			2.			2.		
	3.			3.			3.		
	4.			4.			4.		
Key Selling Points to this Person	1.			1.			1.		
	2.			2.			2.		
	3.			3.			3.		
	<u>Primary Influencers</u>	<u>Secondary Influencers</u>	<u>Veto Power</u>	<u>Primary Influencers</u>	<u>Secondary Influencers</u>	<u>Veto Power</u>	<u>Primary Influencers</u>	<u>Secondary Influencers</u>	<u>Veto Power</u>
People									
Organizations									
Info Sources									
Others									

Case study: Mechanical Water Filtration



- New water filtration/purification system
- **Beachhead market:** [cooling data centers](#), specifically those at large companies or real estate entities that manage large data centers shared by multiple clients.
 - Initially planning to sell system to [new data center constructions](#) because that would not involve having to replace an existing system or sell against a solution that already worked for the data center.
 - Inquiries same primarily from new data center constructions as opposed to retrofit situations.
- **TAM** was calculated to be [\\$50 million per year](#), with a compound annual growth rate of 20 percent: attractive, properly sized market, would rapidly attract competitors as well.

MWF - End user profiling



- The team initially thought the end user would be the **data center manager**.
- Primary market research finding: actual end user is the **facilities manager**:
 - Reports to data center manager.
 - Controls budget that would purchase a water filtration system.
- After a **half-dozen interviews** with facilities managers at data centers a clear picture of the end user emerges.

Persona's profiling



- Career information
- Performance incentives—promotions, wages, and recognition
- How established he/she is at the company?
- Information sources used (he will be vetting everything that the team tells him against these sources)

Persona's priorities



- **First priority:** preventing data center downtime.
- **Second priority:** meeting the business unit's growth objectives.
- **Third priority:** not exceed budget.
- **Fourth priority:** environmental issues.

Case study: Mechanical Water Filtration



- Persona: Chuck Karol
 - Primary Economic Buyer
 - Advocate
 - End user

MWF Case Study



Table 5.1 Chuck Karroll Persona

Facilities Manager, IBM NE Data Center, in Littleton, MA

Environment	<ul style="list-style-type: none">• Now has just over 20K Blade servers today growing at 15 percent per quarter for the past two years and for the foreseeable future.
Personal Information	<ul style="list-style-type: none">• He is second-generation American (parents from Ireland).• Born in Medford, Massachusetts.• Medford High to Middlesex Community College.• Moved to Winchester.• Family with 2 kids (12, 15).• Just turned 40 this year.
Career Context	<ul style="list-style-type: none">• Mid-career, 18 years at IBM and not looking to leave.• He is technical in the technician sense, not the engineering development sense.• He is maintenance-focused and his vocational degree is relevant.• Has been in current job for five years and has had three different managers already but hopes to keep this job for next five years at least.• Promotion path forward is to manage more facilities.• Makes \$65K per year and has the potential for a 5 percent bonus at the end of the year, based on the unit's overall performance and his contribution as determined by his boss, the data center manager.• Eligible for salary increase each year, based on his appraisal (can be between 0 and 12 percent).• He has been consistently ranked a 1 or 2 (on a scale of 1–5 where 1 is the best) in his yearly performance review, with reliability and supporting the business unit's growth as two key metrics upon which he is rated.



MWF Case Study



Information Sources

- He prefers people to websites when he looks for information and answers to questions.
- Belongs to AFCOM (association for data center management professionals) and gets a lot of information from them, and especially likes to go to the Data Center World conference in early October each year in Las Vegas.
- Second-biggest influence is the Uptime Institute.
- Has started to look at Green Grid but not impressed.

Purchasing Criteria in Prioritized Order

- Also starting to get forwarded e-mail about a blog (Hamilton and Manos) that other influential facilities managers are starting to read, and he has recently bookmarked it himself
1. Reliability (highest priority)
 2. Growth (high priority)
 3. Costs (medium priority)
 4. “Greenness” (low priority—extra credit)

Other Noteworthy Items

- Drives a Ford F-150 pickup truck and always buys American
- He wears a beeper that is always on
- Listens to country music
- He used to be a volunteer fireman and is proud of it. He makes level-headed decisions when there is a crisis, calling in his training to act fast and put out fires

DMU analysis



- DMU definition and validation shows:
 - A number of other key players to consider **besides Chuck**
 - The DMU within the company is rather complex.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Secondary influencers



- The Hamilton and Manos blog
- The AFCOM meetings Chuck attended.
- Occasional Uptime Institute events that he was involved with (including their newsletter).

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Data Center Manager



- Typical **data center manager** is generally more involved in the purchasing process than Chuck's data center manager was.
- Data center managers typically view themselves as secondary buyers, since the facilities manager's budget is contained within the data center manager's budget, providing the data center manager with veto power.
- However, if the facilities manager made a strong and convincing case for purchasing something, it would be unlikely the data center manager would veto the decision.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Chief Information Officer



- The **CIO** of the organization is involved in a tangential way:
 - The CIO would never drive the decision, but if a purchase ran counter to his goals or he saw the purchase as risky, he would **veto** it.
 - He would ask questions to test the proposal but had little influence.
 - He was also very **unlikely to block** a decision jointly supported by the facilities manager and the data center manager.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

Chief Green Officer



- The team initially thought the company's **Chief Green Officer** (CGO) would be an advocate for the product.
- However, the research showed that the **CGO was not taken seriously** by the facilities manager.
- The CGO could advocate to the CEO of the company to secure some one-time funds in support of the purchase, but the CGO was a secondary player who was more helpful as a source of information to the company on how they could adjust their sales strategy, rather than a driver of the process.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



External contractors



- The team, **underestimated** the influence **external contractors had** on the decision-making process.
- External contractors had a heavy influence on the facilities manager because they built and retrofitted data centers on a regular basis, while the facilities manager did not.
- Therefore, the facilities manager looked to them as **a major source of information on water cooling solutions**.
- The team realized that they needed to build a Persona-like fact sheet on the contractors and come up with a value proposition as to why their solution was a positive event for them too.
- The team also needed to understand the internal group within the company who recommended and handled outside consultants on a regular basis.

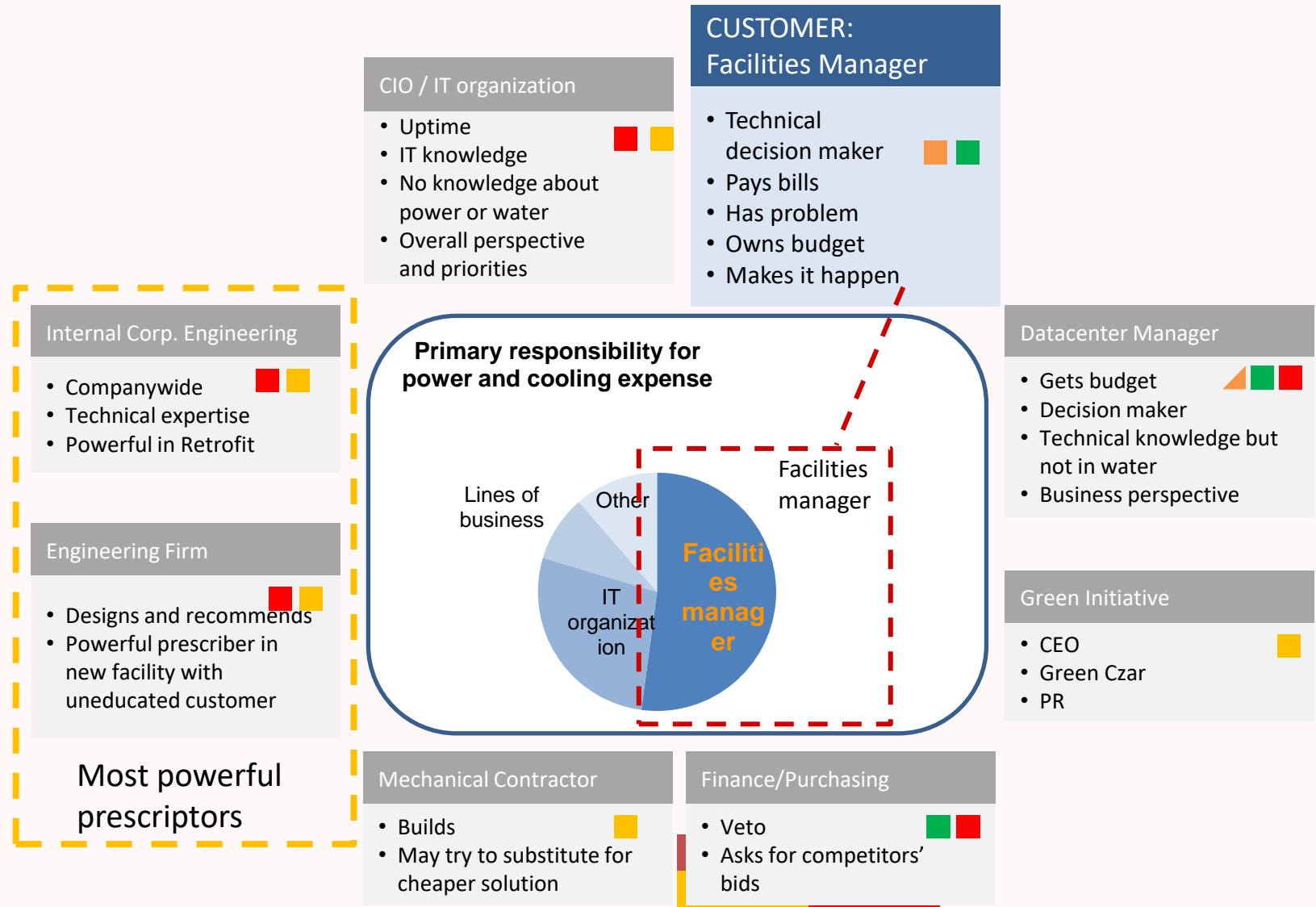
Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

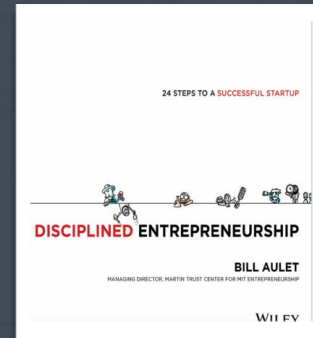


DMU for Mechanical Water Filtration System



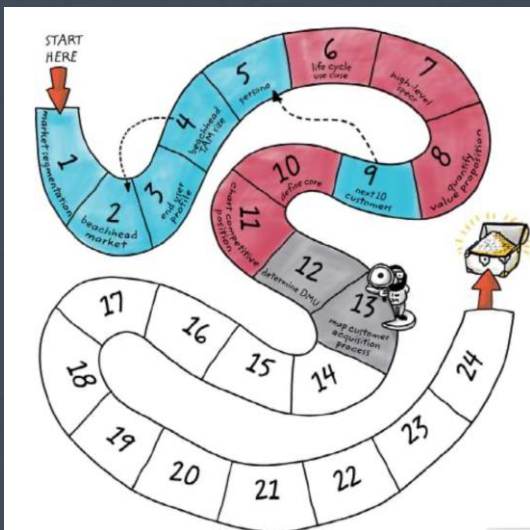
Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.





Section 4: How does your customer acquire your product?

Step 13: Map the Process to Acquire a Paying Customer



Section 4

Contents



- DH Step 12: Determine the Customer's DMU
- **DH Step 13: Map the Process to Acquire a Paying Customer**
- DH Step 18: Map the Sales Process to Acquire a Paying Customer

Summary of last step (#12)



To successfully sell the product to the customer, you will need to understand who makes the ultimate decision to purchase, as well as who influences that decision.

The Champion and the Primary Economic Buyer are most important; but those holding Veto Power, as well as Primary Influencers, cannot be ignored.

B2B situations are easier to map out, but the process is still important in a consumer situation; large consumer goods companies like Procter and Gamble have been doing this process for many years.

Goal



Once they see my product,
they are going to have to have it
and sales will immediately
go to the moon!



Actually it doesn't work
that way... companies have
a process to buy things
and it takes a while.
I suggest you learn it
and more realistically
manage expectations



Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.



University of Cyprus

Department of Computer Science



What are we doing?



- Map out the **Decision Making Process (DMP)** by which a customer decides to purchase your product:
 - the various steps with the different players and note the roles and various approval/authority levels for each person
- Estimate the sales cycle for your product.
- Identify any budgetary, regulatory, or compliance hurdles that would slow down your ability to sell your product.
- Why?

Why a DMP map?

- Understand and be realistic about the **time frame involved for each step** and give a reasonable (80% certainty) range.
 - The length of the sales cycle is a crucial determinant in **how expensive it will be for you to acquire new customers**.
 - It is also critically important to **project cash flow accurately**.
 - You need to go from initial contact to paying customer quickly enough to create sustainable business.
- Be sure to account for the **budgeting process** if your product/service requires this.
 - Build the foundation for the **Cost of Customer Acquisition** calculation.
 - Reach a point where you make more money from current customers than you spend attracting new customers. It always costs more than you would think to acquire customers.
- Identify hidden obstacles that will **inhibit your ability to sell your product and get paid**.
 - If something about your business will be a deal breaker, you want to know now.
- Be able to show potential lenders and/or investors that you understand the customer's buying process, which for many is a prerequisite to investing in your business.

How to map the DMP?

- The following items from the [Full Life Cycle Use Case](#) (Step 6) will be the basis for mapping the process to acquire a paying customer:
- How customers will [determine](#) they have a [need and/or opportunity](#) to move away from their status quo and how to activate customers to feel they have to do something different (purchasing your product)?
- How customers will [find out](#) about your product?
- How customers will [analyze](#) your product?
- How customers will [acquire](#) your product?
- How customers will [install](#) your product?
- How customers will [pay](#) for your product?

Clarification

- What is the difference between Step #6 (Full Life Cycle Use Case) and this one?
- Two Views of Similar Process
 - Step #6: Customer (End User) View
 - Step #13: Seller's View

Mapping the process

- Goal: capture more detail about the DMU, and map out the internal purchasing mechanisms of target customers.
- Basic **components** of the process include:
 - Lead generation
 - Access to influencers
 - Pre-purchase planning
 - Purchasing
 - Installation
- Factor in any **regulations** from governmental or quasi-governmental organizations that would potentially impact your ability to sell your product.
- Some elements in your map will vary depending on the industry.

Details to be considered

- For each component in the process, include:
- Who are the **key players** from the DMU that will be involved?
- What is their **influence** on the process?
 - Put this in **temporal** order and develop educated estimates on how long each component will take.
- What is their **budget authority** (amount and type)?
- **How long** will it take to complete each component you identify?
 - List them in **temporal sequence** noting any that can run in parallel. (Be diligent. You need to have at least 80 percent certainty in each step.
- What are the inputs and outputs of this component?

Converting Full Life Cycle Use Case (Step 6) to First Draft Sales Funnel											
Full Life Cycle Use Case Stages		#1 - Determine Need & Catalyst to Action	#2 - Find Out about Options	#3 - Analyze Options	#4 - Acquire Your Product	#5 - Pay	#6 - Install	#7 - Use & Get Value	#8 - Determine Value	#9 - Buy More	#10 - Tell Others
Sales Funnel Elements	#1 – Identification: Lead Generation Output: Leads	#2 – Consideration: Create Awareness to Potential Customers Output: Suspects		#3 – Engagement : Develop Initial Dialogue Output: Prospects	#5 – Purchase: Close Deal & Pay Output: Customers		#6 – Loyalty: Customer Support Output: Satisfied Customers			#7 – Advocacy: Sell More & Positive Word of Mouth Outputs: Repeat Customers and/or Evangelists	
				# 4 – Purchase Intent: Develop Interest to Intent Output: Qualified Prospects							

Budgeting/Purchasing Authority

- An individual can only purchase **items up to a certain dollar amount without approval** from a more senior person. Sometimes, approval comes directly from one decision maker, while other times, it kicks off a long and involved process with the purchasing department and its regulations.
 - Identifying these limits may help with your **Pricing Framework** later on: a price lower than an individual's limit means you can eliminate certain players from the DMU.
 - This could dramatically **reduce your sales cycle**.
- Identify if payment will come from the **yearly operating budget** or the **longer-term capital budget**
 - This could mean the difference between a three-month sales cycle and a one-year sales cycle, which could mean the success or failure of your new venture, especially if you are not aware of it a priori.

- Make sure you take into consideration the time it takes to move through each step in the process.
- Once you have made all your time estimates, go back and validate whether the estimates are reasonable.
 - Are you accounting for delays?
 - Are you being aggressive or conservative in your estimates?

Case study: Water Filtration System



- Secured first pilot program in a new data center in **less than nine months**, so they could have assumed that this was the sales cycle.
- But upon performing an analysis of developing the map of the Process to Acquire a Paying Customer more generally, they realized that the way they had secured **the pilot was not repeatable** for other customers.
- When they looked at the length of the acquisition process for new data centers after the pilot, they discovered that the sales cycle would take **an average of 2.5 years**.
- The team looked toward **retrofits** as a better way to enter the market due to its **shorter sales cycle**.
- The middle range for installing the product in retrofit projects was **just over a year**. (Even a year-long sales cycle is challenging for a startup, so even shorter would be ideal.)

Acquisition process: Water Filtr. System



- **New project**

- Contact CIO to get approval and gain access to internal company specialist
- Contact internal company specialist / green czar / Corporate Facilities Manager to influence Engineer
- Contact design engineer to work together in definition of water system, give specifications, and have them prescribe MWFS
- Contact general contractor and Purchasing to ensure purchase and proper installation

- **Retrofit**

- Contact Facilities Manager and help him sell to Data Center Manager
- If necessary, contact CIO to get approval and gain access to Data Center Manager and internal company specialists
- Contact Facilities Manager / Data Center Manager/ Purchases to ensure purchase of our product and proper installation

New vs Retrofit timing



Source: *Disciplined Entrepreneurship: 24 Steps to a Successful Startup*, Bill Aulet, Wiley 2013.

New Project

Lead generation	Access to influencers	Access to design engineers	Design phase	Construction phase: actual sale to contractor	Installation
1-2 months	2-4 months	2-4 months	6-12 months	12-15 months	1 month

Retrofit project

Lead generation	Access to facility manager	Access to influencers	Negotiation with Purchases and Budget Owners	Installation
1-2 months	4-6 months	2-4 months	2-3 months	1 month



1st Worksheet for Step #13 (DMP)

Process to Acquire a Paying Customer (Step #13)										
Stage #	1	2	3	4	5	6	7	8	9	10
General Description of Stage	Determine Need & Catalyst to Action	Find Out about Options	Analyze Options	Acquire Your Product	Pay	Install	Use & Get Value	Determine Value	Buy More	Tell Others
What does the customer do in this stage? (from the Full Life Cycle Use Case)										
Who is involved from the DMU?										
Budget limits & other considerations										
How much time will this stage take? (give a range)										
Action plan to accomplish stage										
Risks										
Risk mitigation strategy										
Misc.										

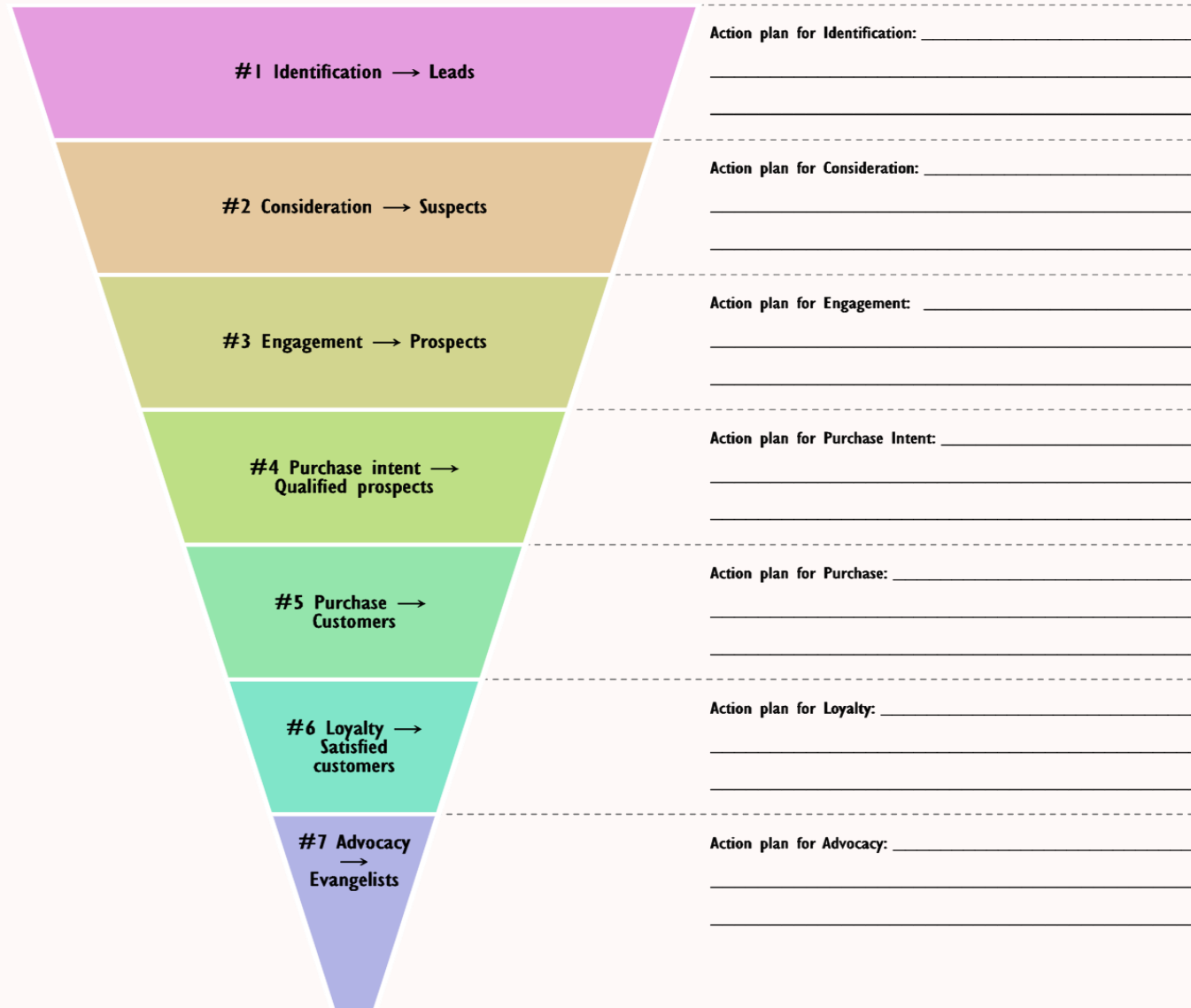
2nd Worksheet for Step #13

Time Element

Sales Funnel Element	Full Life Cycle Use Case Stage	Estimated Time to Complete
#1 – Identification: Lead Generation Output: Leads	n/a	
#2 – Consideration: Create Awareness to Potential Customers Output: Suspects	#1 - Determine Need & Catalyst to Action & #2 - Find Out about Options	
#3 – Engagement : Develop Initial Dialogue Output: Prospects & # 4 – Purchase Intent: Develop Interest to Intent Output: Qualified Prospects	#3 - Analyze Options	
#5 – Purchase: Close Deal & Pay Output: Customers	#4 - Acquire Your Product & #5 – Purchase: Close Deal & Pay Output: Customers	
Total time for sales cycle:		

3rd Worksheet for Step #13 (DMP)

Draft Sales Funnel



Sales Funnel Evolution

- This is just the first draft
- There will be many updates of this as you go forward in the process
- It will provide key metrics to measure your success, failures and bottlenecks

What is Going On? I

- We Have Done Steps #1-13
 - Persona
 - FLUC
 - QVP (faster, cheaper, same quality)
 - DMU & DMP
- This All Makes Sense But **The Dogs Aren't Eating the Dog Food**
- Customer Adoption is **Not** Happening

What is Going On? II

- Mental Model
- Habit
- Easy to change?

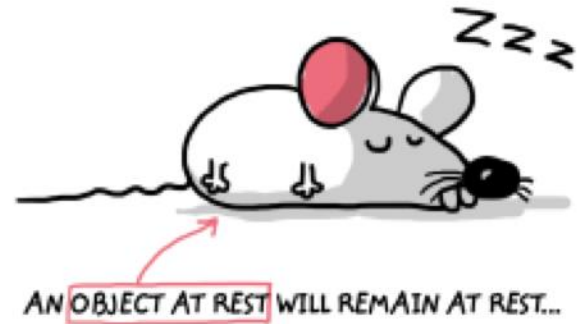
One important thing..



- Getting the first customers can **be very difficult**
- All Decision Making Processes for the customer are not the same ... Even if it is the same customer!
- Timing matters
- To get that first customer, you must overcome an enormous amount of **inertia** because it is significantly **easier** for the customer to **not buy your product** and **keep doing what he or she is currently doing**.
- The **status quo** is an extremely powerful force to overcome, especially before a product is widely accepted and people change their purchasing habits accordingly.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

NEWTON'S FIRST LAW OF MOTION



NEWTON'S FIRST LAW OF MOTION



AN OBJECT AT REST WILL REMAIN AT REST...



...UNLESS ACTED ON BY AN UNBALANCED FORCE.

NEWTON'S FIRST LAW OF MOTION



AN OBJECT AT REST WILL REMAIN AT REST...



...UNLESS ACTED ON BY AN UNBALANCED FORCE.



AN OBJECT IN MOTION WILL CONTINUE WITH CONSTANT SPEED AND DIRECTION...

NEWTON'S FIRST LAW OF MOTION



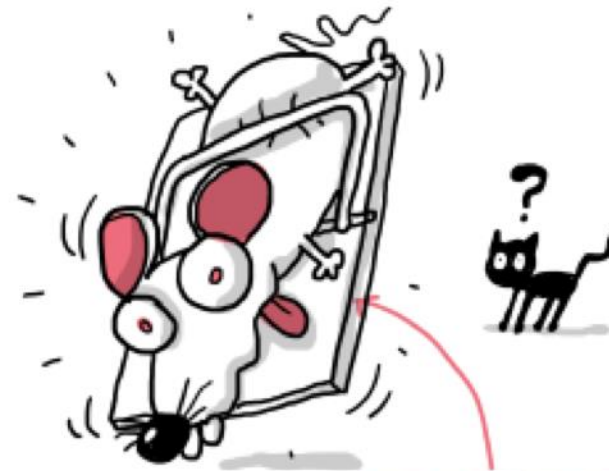
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AN OBJECT IN MOTION WILL CONTINUE WITH CONSTANT SPEED AND DIRECTION...



...UNLESS ACTED ON BY AN UNBALANCED FORCE.

Windows of Opportunity & Triggers

- A **Window of Opportunity** is a time period in which your target customer (end user, economic buyer, and/or champion) will be particularly open to considering your offering.
- A **Trigger** is a specific action you take within that Window of Opportunity to create an urgency and/or strong incentive for the customer to act.

WoO Examples

- **Seasonality** (selling lemonade in summer and Christmas wreaths in winter)
- **Crisis** (e.g., blackout, security breach) or **impending potential crisis** (e.g., forecast for a storm, the potential Y2K computer bug)
- **End of fiscal year** (extremely relevant for business, but also for some consumers due to taxes)
- **Budget planning cycle**
- **Life transitions** (e.g., graduation, first job, first home, pregnancy)
- **Change in leadership** (e.g., company hires a new chief information officer)
- **Change in regulation** (e.g., enactment of the Affordable Care Act)
- **Searching the Internet** and **finding your product** (more on this later)



Know your Windows of Opportunity and take advantage of them with well-designed Triggers—timing is crucial!

You need well-designed triggers

- A **salesperson suddenly appearing**, in person, on the phone, or in an online chat interface
- Offering a **discount that expires after a short period of time**
- Indications of **scarcity of supply**
- **Limited time availability** to join a special community
- **Special offer of additional value** to reward quick decision
- **Clear action** that will help you **avoid a disaster**—such as a security assessment to avoid a devastating
- **Cybersecurity breach that just hit** a competitor and is making headlines today



Windows of Opportunity

1. Expedia – you are looking at a flight
2. IBM – end of fiscal year at a utility
3. Students – beginning of the school year
4. Enterprise SW – competitor is acquired by Oracle
5. Hubspot – Visiting website
6. Security Company – after a high visibility breach
7. Politicians – Bad Obama sound bite

Trigger

- ➔ 1. “2 seats remaining at this price”
- ➔ 2. “I need to schedule my people for December”
- ➔ 3. Back to schools sales or give aways
- ➔ 4. Time bound Trade-in Program
- ➔ 5. Free Website Grader
- ➔ 6. Free audit of customer’s status
- ➔ 7. Immediate letter to ‘faithful’ soliciting donations

WORKSHEET

Now use the following worksheet to identify Windows of Opportunity for your product and choose one to focus on. Once you have chosen the Window of Opportunity, develop a spectrum of options of Triggers for that specific Window of Opportunity and choose which one you will focus on first to test for effectiveness.

Windows of Opportunity and Triggers

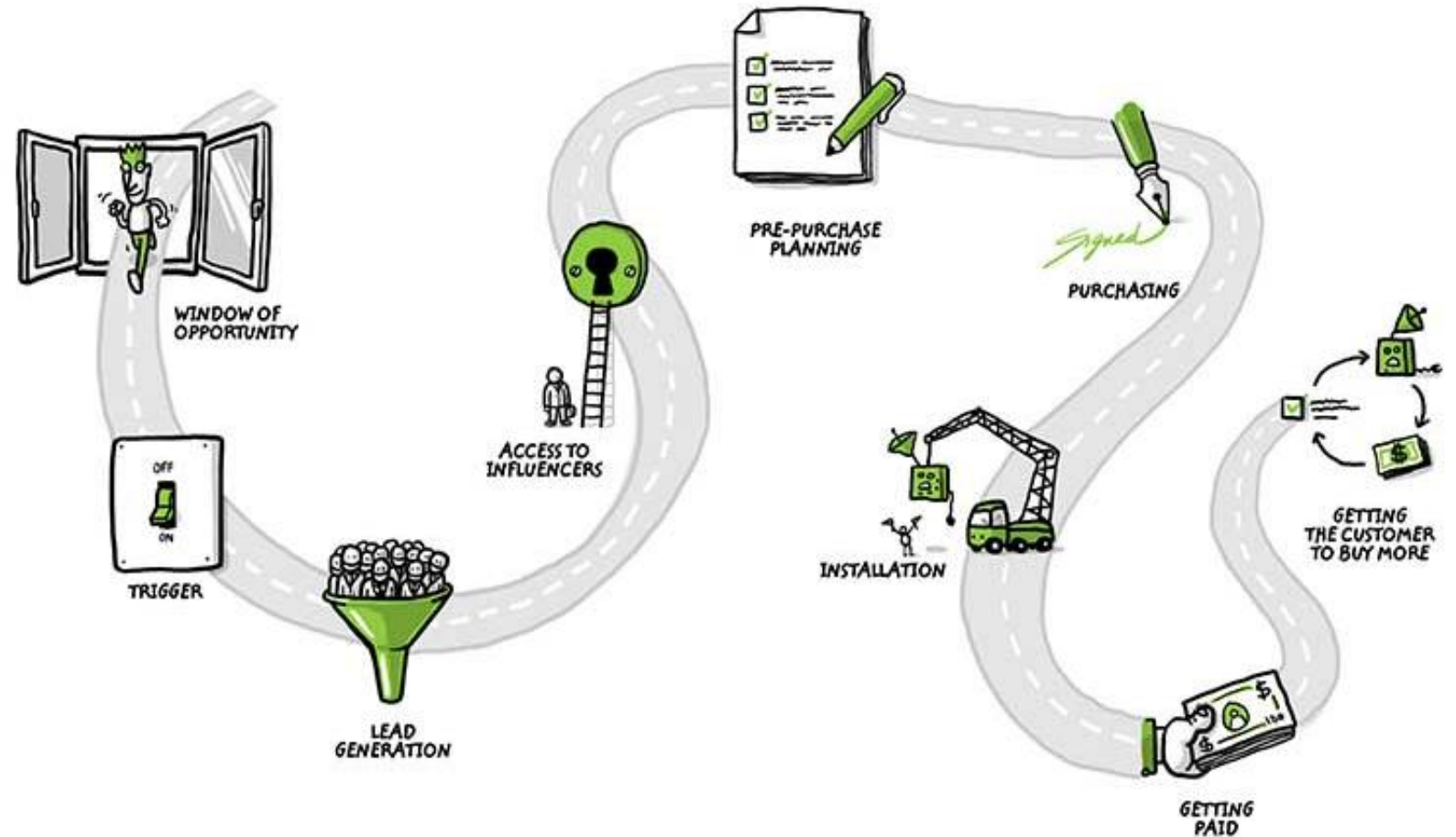
	Window of Opportunity Candidates: What? When? Why?	Who is the Window of Opportunity relevant to?		
		Champion	End User	Economic Buyer
1	What: When: Why:			
2	What: When: Why:			
3	What: When: Why:			



Where are we going?

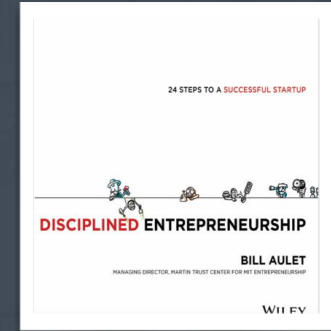


THE SALES PROCESS MAP



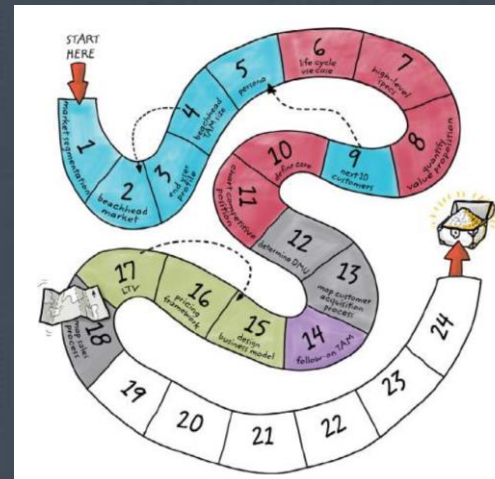
Understanding and utilizing Windows of Opportunity and Triggers help tremendously in kicking off the sales process and getting your customers to buy your product.





Section 4: How does your customer acquire your product?

Step 18: Map the Sales Process to Acquire a Customer



Section 4

Contents



- DH Step 12: Determine the Customer's DMU
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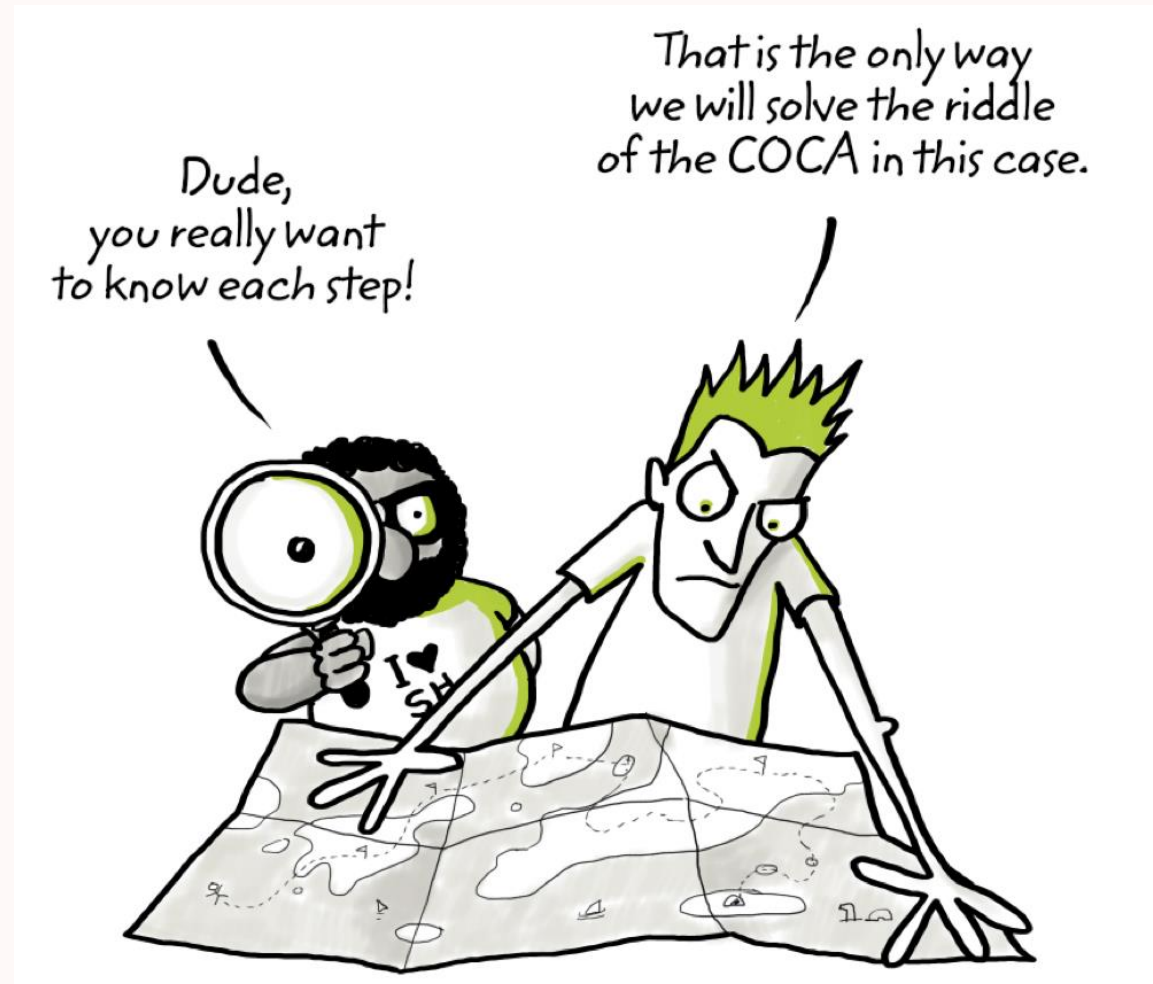
Summary of last step (#13)



- Determining the Process to Acquire a Paying Customer defines how the DMU decides to buy the product, and identifies other obstacles that may hinder your ability to sell your product.
- From elongated sales cycles to unforeseen regulations and hidden obstacles, selling a product can sometimes be far more difficult than simply meeting the Persona's needs.
- This step makes sure you have identified all the potential pitfalls in the sales process.

Why?

- The sales process is a critical input to estimating the **Cost of Customer Acquisition (COCA)** in Step 19.
- The sales process, including selecting your **sales channels**, will allow you to understand the unit economics of your product and then adjust accordingly to increase profitability.
- You can intelligently map the sales process if you have an *estimate from Step 17* of the Lifetime Value (LTV), which helps indicate which sales methods are affordable and practical for your startup.



Understanding the details of customer acquisition will make clear to you the drivers of costs so that you will know over time how to make the sales process shorter and more cost-effective.

- If you have a first-pass estimate on the lifetime value each customer brings to your business, the question becomes:

“How much it will cost to bring a new customer to your product?”

- Determining the **Cost of Customer Acquisition (COCA)** is challenging and often much more grossly miscalculated.
- The concept of COCA is relatively simple; but entrepreneurs tend to dramatically underestimate how much it costs to gain a new customer when they first start.
- To truly understand how much you will have to spend on your sales process in order to gain customers, you will conduct a rigorous, honest assessment based on facts, not hope, starting by mapping out your expected sales process.

What are we doing in this step?

- In this step you will focus on the sales process, mapping out
 - short-term
 - medium-term, and
 - long-termsales channels.

Overlooked factors

- The **cost behind all of the sales and marketing efforts** required to reach your sales prospects. These may include:
 - The salaries of salespeople, printing of brochures, creation of websites, costs of trade show exhibits, advertising in industry publications, development of white papers, etc.
- **Long sales cycles** that cost a lot of money. Entrepreneurs tend to remember only the shortest sales cycles.
- **All the customers who did not buy your product**, and the sales and marketing costs associated with reaching those customers.
 - How many frogs did you kiss before you found your prince (i.e., your first customer)?
- **Corporate shake-ups** that affect the customer's Decision-Making Unit. New managers bring in new products and people to accomplish their goals, which can hamper the effectiveness of an entrepreneur's efforts to sell to the customer.

Sales channels

- Field sales
- Inside sales
- Internet sales
- Third-party resellers

Categories of sales channels

Option	Pros	Cons
<p>1. Field Sales: Direct sales-people who are employees of the company. They call on prospects in person at some point in the process. They provide high-touch connection and line of communication to the potential customer. Also known as “outside sales.”</p>	<ul style="list-style-type: none">• Excellent for demand generation when creating new markets; may well be the only option for demand generation• High-touch approach creates excellent feedback loop• High-touch approach also generally creates deep customer loyalty	<ul style="list-style-type: none">• Very expensive (salary, bonus, expenses)• Requires an LTV of \$30K or likely higher• Hard to scale up as hiring them is hard and expensive and the success rate is unpredictable• Takes a long time to become productive• A challenge to manage

Categories of sales channels

<p>2. Inside Sales: Also known as “telesales” in the past, but today no longer just telephone sales reps. They use e-mail and other electronic communication to create and continue a dialogue with the customer, but do not visit the customer in person.</p>	<ul style="list-style-type: none">• Much cheaper than field sales• Maintain direct connection with prospects, potential customers, and customers• Able to get nuanced feedback from prospects because a human is in the loop• High productivity because of lack of travel• Good systems exist to further increase productivity and track progress of sales funnel and sales reps	<ul style="list-style-type: none">• Lower touch, resulting in less customer engagement and less demonstration of the company’s commitment to the customer• Still expensive because the salesperson is interacting one-on-one with customers• Some products just can’t be sold without an in-person demo or meeting with the customer
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Categories of sales channels

<p>3. Internet Sales: This is a general catch-all category for sales done by computers through automatically generated e-mails, big data analysis, social media, preference engines, etc. The key differentiator is that there is no human in the loop.</p>	<ul style="list-style-type: none">• Direct interaction with the customer• Ability above all others to systematically capture even more data on the customer and track their progress—as well as spot patterns and make intelligent recommendations• Lowest cost by far• Actually preferred by some prospects	<ul style="list-style-type: none">• Low touch• Can't read some nuances that only humans can• Some prospects do not react well to it• Privacy considerations• Can be hard to build customer loyalty• Risk for high LTV prospects/customers that others who use the higher touch channels above will steal these valuable customers
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Categories of sales channels

<p>4. Third-Party Resellers: These people sell your product but are not employees of your company. They include Value-Added Resellers (VARs), distributors, stores, catalogues, independent sales agents, etc.</p>	<ul style="list-style-type: none">• Instant geographic coverage• Easy to manage• Understand cultural context and have preexisting contacts in their databases• Lower cost than field sales• Don't have to hire, fire, and manage salespeople• Good for quick demand fulfillment• Potential temporary solution• Potential good solution for a mature product	<ul style="list-style-type: none">• They own the customer, not you (very bad!)• Unlikely to have direct interaction with prospects, hence miss important learning about customer needs• Poor at demand generation• Expensive compared to inside sales and Internet sales• Most likely low loyalty to you and your product (just another product in their portfolio)
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Which channels are affordable?

Estimated LTV	What you can afford for sales channels in the long term
~\$30	Only Internet sales; no human can be in the loop.
~\$300	Predominantly if not all Internet sales, with maybe a very small amount of inside sales for the most important prospects.
~\$3,000	Mix of Internet sales and inside sales and maybe some third-party resellers, especially if the product is mature or requires low support.
~\$30K	Mix of all channels, with heavy reliance on inside sales and judicious use of field sales on big accounts. Third-party resellers can play a role in this scenario for geographic coverage and quick scale-up.
~\$300K	Likely led by field sales, with support from inside sales and some third-party resellers in selected areas for geographic coverage.
~\$3M	Dominated by field sales, with other channels in a supporting role.
~\$30M	The field sales representatives are the all-powerful dictators; other sales channels don't even look at highly qualified prospects or customers without their approval. Customer intimacy and professionalism is crucial in this scenario.

Sales process mapping

- Start by determining for the short, medium, and long term **what proportion of sales will come from different channels**.
- Use the Sales Channels for the Short, Medium, and Long Term worksheet to define the **periods of time** and **proportions**, as well as **sales goals** to achieve during that period, and **assumptions** and **risks** involved.
- Define what **milestones** you need to reach during each period so that your company is prepared to shift to the sales strategy for the next period.
- Short term, medium term, and long term are defined in large part on the progress you make on your product.

Sales Channels for the Short, Medium, and Long Term

	Short Term—Initial Market Entry	Medium Term—Gaining Market Traction	Long Term—Steady State
How long—when does this time period start and end? (Include units—e.g., months, years.)			
What % of the sales (measured by revenue) for:			
- Field sales	____%	____%	____%
- Inside sales	____%	____%	____%
- Internet sales	____%	____%	____%
- Third-party reseller	____%	____%	____%
Key milestones for this time period, which, when achieved, indicate it is time to move to the next time period:	1. 2. 3.	1. 2. 3.	1. 2. 3.
Key assumptions:	1. 2. 3.	1. 2. 3.	1. 2. 3.
Highest risk factors:	1. 2. 3.	1. 2. 3.	1. 2. 3.
Summary for time period:			

Sales process change over time

- COCA starts very high and decreases over time.
 - The sales process necessary to reach and close customers at the founding of a new business requires much more time and investment than the same process does once a business has matured and begins to scale.
- The sales process is typically broken into three time periods for the sake of analysis.
 - You will use different sales methods or combinations of methods in each period.

Period 1: Short term

- **Focus:** create demand for your product and fulfil orders for the product.
- Product is still new. So, you need direct interaction with customers to:
 - explain value proposition and why your product is unique
 - rapidly iterate to improve product based on customer feedback,
- This is the missionary sales stage: ends when you start to see demand for your product that you did not directly generate.
- Direct salespeople ["business development" people]: traditionally a wise and effective investment here. However:
 - They are very expensive and they take time to get up to speed.
 - Good ones are hard to retain, and identifying good vs mediocre sales-people is hard to do.
- Web-based techniques such as **inbound marketing**, e-mail, social media marketing, and telemarketing can help lessen the need for direct salespeople, even at this stage.
 - Some products, particularly web apps, can do well with a free trial and robust documentation rather than relying heavily on direct salespeople.
 - One of the great benefits of this tool is that you can get extensive analytics on your customer that are not possible through the human channel.

Period 2: Medium term

- **Focus:** shifts from demand creation toward **order fulfilment** as word of mouth and distribution channels take on some of the demand creation burden.
- **Client management:** ensuring you retain existing customers and creating additional sales opportunities for them.
- **Distributors** or **value-added resellers (VARs)** are often used, especially to serve more remote markets, or smaller customers with lower LTV.
 - Using distributors or VARs substantially lowers your cost of customer acquisition but requires you to give up some of your profit margin to the distributor—**between 15 and 45 percent or higher** depending on the industry.
 - The decreased profit margin per unit is presumably offset by the **reduction in COCA** and the **speed** of entering new markets through already-existing distribution channels.
- **Direct salespeople** (who are more costly) can focus on larger customer opportunities with a higher LTV.

Period 3: Long term

- Sales group **Focus:** fulfilling customer orders.
- Your business will do very little demand creation, and will continue client management where appropriate.
- Internet and telemarketing avenues are commonly employed in a long-term strategy.
- There will have to be adjustments made as competitors come into the market, which will affect your ability to get to this stage and what you do once you get there.

Short Term

- Direct Sales (100%)




All end customers w/focus on strategic accounts in target market

This would continue until Word of Mouth becomes significant and product is matured and proven. Then as move from demand creation to demand fulfillment . . .



Figure 18.1 Example map of sales process.

Short Term

- Direct Sales (100%)  All end customers w/focus on strategic accounts in target market

This would continue until Word of Mouth becomes significant and product is matured and proven. Then as move from demand creation to demand fulfillment . . .


Medium Term

- Direct Sales (50%)  Largest customers
- Selected Regional Exclusive VARS (50%)  Medium and small accounts in target market

This would eventually evolve to more of an online commerce as the product becomes the standard and the product line expands and new markets are tested—estimated in year 3



Figure 18.1 Example map of sales process.

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This would eventually evolve to more of an online commerce as the product becomes the standard and the product line expands and new markets are tested—estimated in year 3

Long Term

- Direct Sales (25%)  Top 50 accounts & new market
- Selected Regional Exclusive VARS (40%)  Accounts below Top 50 & non-core markets
- Through Web Site & Direct Telemarketing (35%)  All customers in core market (with commission to VARS & Direct Sales)

Figure 18.1 Example map of sales process.

How to map your sales process?

- To develop your sales strategy, you must understand:

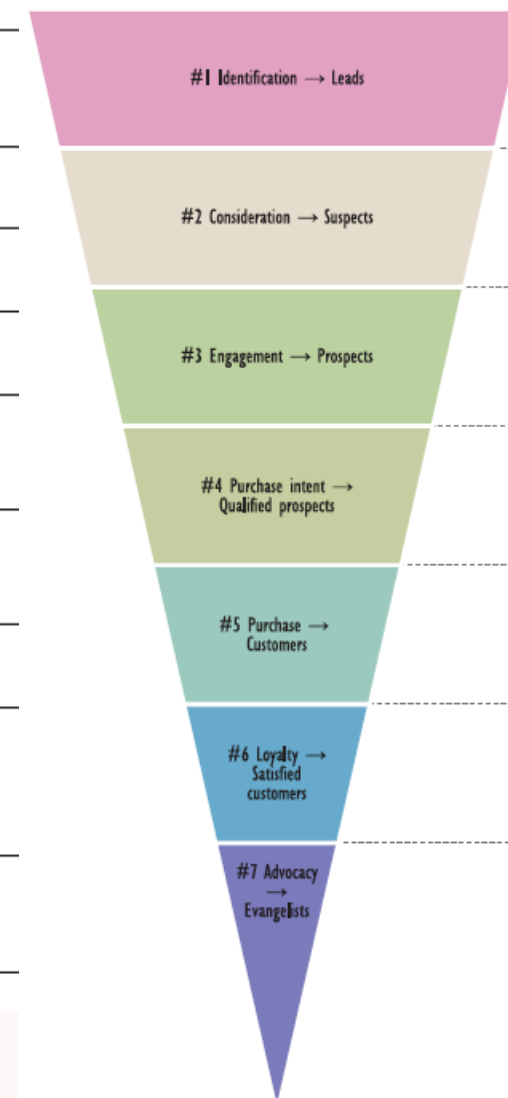
- which sales channels you will use and
- how your use of sales channels will change over time.

drawing on the work you have already done in the Full Life Cycle Use Case.

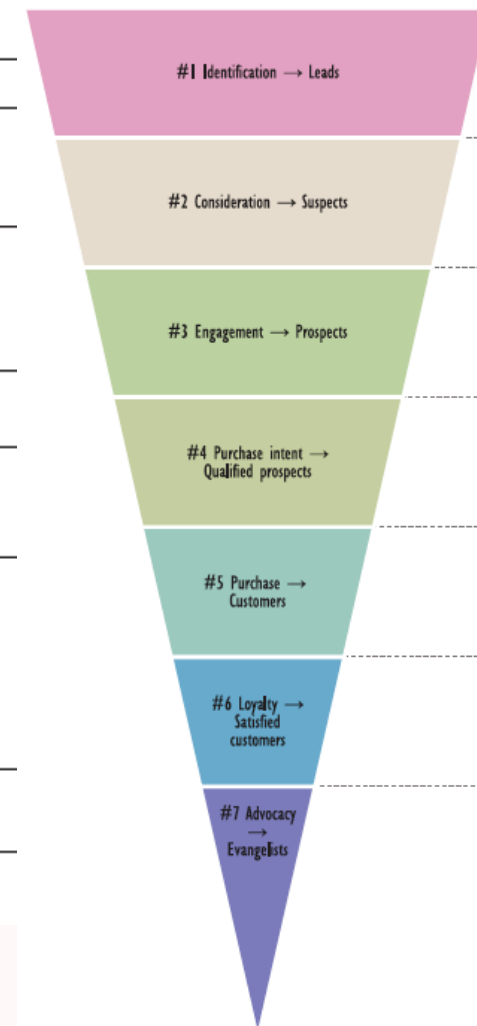
- Key questions that your sales process should address include:
 - How does your target customer become aware that they have a problem or an opportunity?
 - How will the target customer learn that there is a solution to this problem they have, or learn there is the opportunity they did not previously know about?
 - Once the target customer knows about your business, what is the education process that allows them to make a well-informed analysis about whether to purchase your product?
 - How do you make the sale?
 - How do you collect the money?

2nd Draft Sales Funnel Inputs

		Short Term	Medium Term	Long Term
#1: Identification (Output: Leads)	How will you generate leads?			
	What are your customer's watering holes?			
	Who from the customer's DMU is involved in this part of the funnel?			
#2: Consideration (Output: Suspects)	How do you start the initial dialogue with your leads?			
	What windows of opportunity or triggers exist?			
	Who from the DMU is involved?			
#3: Engagement (Output: Prospects)	How do you determine whether your value proposition is appealing to the customer?			
	How do you determine whether your pricing is in line with the customer's budget?			
	Who from the DMU is involved?			
#4: Purchase Intent (Output: Qualified Prospects)	How do you qualify that the customer is ready to purchase, and how do you develop a proposal for the purchase?			
	How do you close the sale and handle customer questions/objections?			



		Short Term	Medium Term	Long Term
#5: Purchase (Output: Customers)	Who from the DMU is involved?			
	How do you secure full commitment from the customer to purchase your product?			
	How does your customer pay for your product? Who pays?			
	Who from the DMU is involved?			
#6: Loyalty (Output: Satisfied Customers)	How do you ship and install the product?			
	How do you provide support to the customer so they use and get the expected value out of your product?			
	Who from the DMU is involved?			
#7: Advocacy (Output: Evangelists)	How do you encourage the customer to buy more product?			
	How do you encourage the customer to tell others about the product, and how do you measure whether customers are telling others about your product?			
	Who from the DMU is involved?			
	Who from the DMU is involved?			



Techniques and Actions to Maximize Yield Rate at Each Stage

Short Term: Summary of Techniques and Actions to Maximize Yield			
Stage in Funnel (starting at top)	Technique(s)	How to Maximize Conversion	Done by Whom? When?
#1—Identification (leads)			
#2—Consideration (suspects)			
#3—Engagement (prospects)			
#4—Purchase Intent (qualified prospects)			
#5—Purchase (customers)			
#6—Loyalty (satisfied customers)			
#7—Advocacy (evangelists)			

Medium Term: Summary of Techniques and Actions to Maximize Yield

Stage in Funnel (starting at top)	Technique(s)	How to Maximize Conversion	Done by Whom? When?
#1—Identification (leads)			
#2—Consideration (suspects)			
#3—Engagement (prospects)			
#4—Purchase Intent (qualified prospects)			
#5—Purchase (customers)			
#6—Loyalty (satisfied customers)			
#7—Advocacy (evangelists)			

Long Term: Summary of Techniques and Actions to Maximize Yield

Stage in Funnel (starting at top)	Technique(s)	How to Maximize Conversion	Done by Whom? When?
#1—Identification (leads)			
#2—Consideration (suspects)			
#3—Engagement (prospects)			
#4—Purchase Intent (qualified prospects)			
#5—Purchase (customers)			
#6—Loyalty (satisfied customers)			
#7—Advocacy (evangelists)			

Risk Factors

What are your three biggest risk factors in your go-to-market plan? How do you intend to mitigate those risks? What metrics will you use to monitor them and intervene as needed? (Remember, things never go exactly the way you want them to or as you plan them!)

1. Risk factor #1 and mitigation plan:

Metrics to watch:

Potential intervention strategy:

2. Risk factor #2 and mitigation plan:

Metrics to watch:

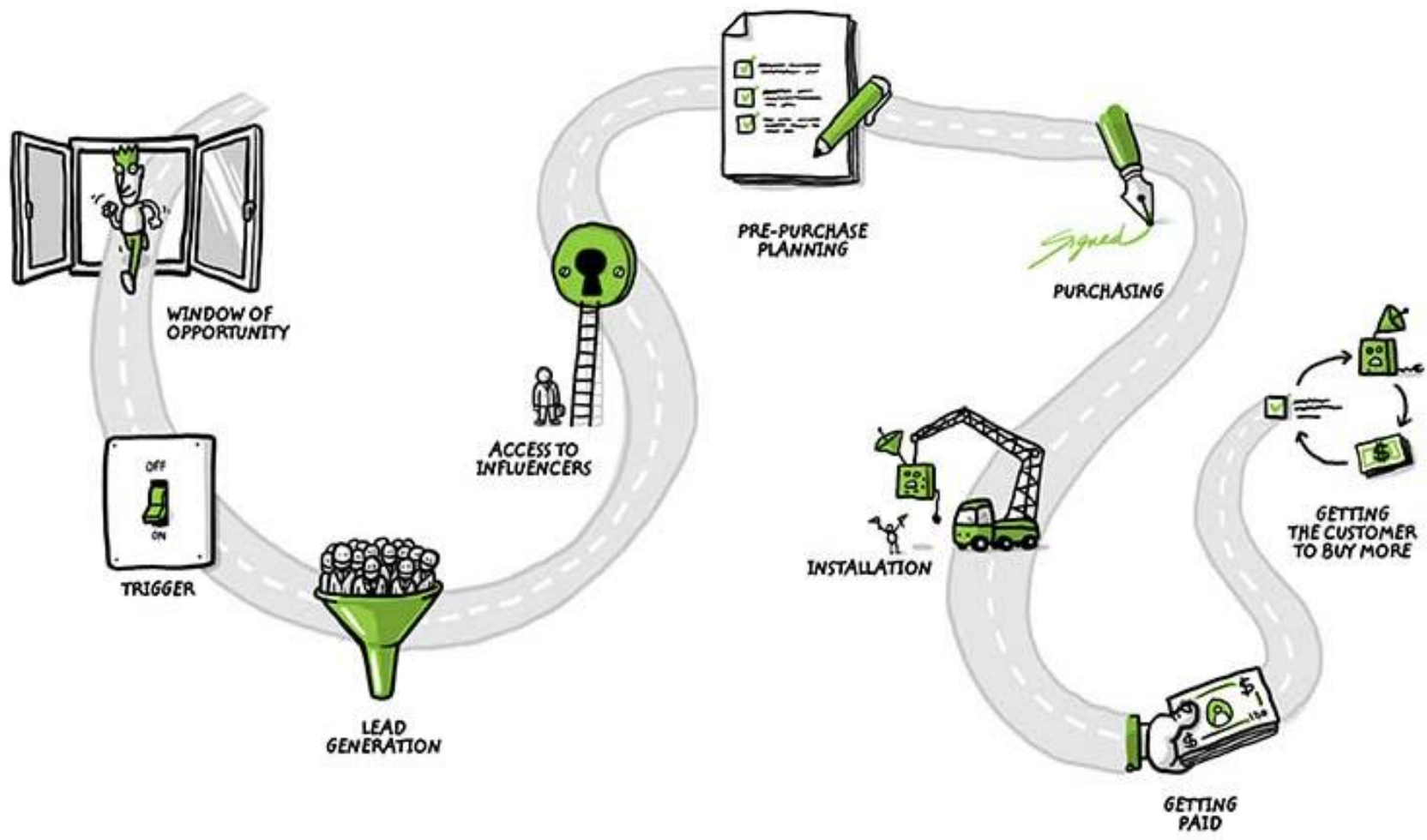
Potential intervention strategy:

3. Risk factor #3 and mitigation plan:

Metrics to watch:

Potential intervention strategy:

THE SALES PROCESS MAP



Sales Process examples



- **FarmVille** maker Zynga chose a viral approach to greatly reduce the need for salespeople.
- **Groupon's** model, by contrast, required heavy direct sales involvement to acquire merchants as customers, resulting in a high and steady COCA that affected the company's profit margin; however, on the other side of its two-sided market, Groupon has had its daily deals spread virally by effectively incentivising consumers to spread word of deals to their friends.
- **LinkedIn** has a more refined model.
 - They started with highly selective online ads and some direct salespeople (to sell their recruiting package).
 - Once they got market traction and a reasonable critical mass, they started to rely much more heavily on users recruiting their colleagues to join the site through a well-developed system of easy-to-send invitations, coupled with an effective algorithm suggesting possible new connections.
 - This system quickly started sending e-mails to people outside the network to join if they were not already in.
 - Once the company achieved high levels of market penetration, it focused its algorithm on making recommendations of people already on the site, to encourage more connections the user can make, keeping the user coming back and more deeply invested in the site so that switching would be more and more difficult.
- **Facebook** has similarly been able to leverage a network effect to bring in new users at very little cost, then increasingly tie them to their network with a similar algorithm to suggest likely people the user would like to be linked to.



Case study: Lark



- Silent alarm-clock manufacturer Lark Technologies realised in mapping out its sales process that it would need to **educate users** about what a silent alarm clock and sleep-coaching product was all about.
- It would take some hard work to get the market moving.
- CEO Julia Hu developed the following short-term, medium-term, and long-term plans.



Lark: Short term



- Engaging in [one-on-one selling](#) to potential customers, even setting up a table on the MIT campus on Commencement day to explain product and its value.
- CEO also sought and won lots of [public speaking opportunities](#) to create awareness of her product. This strategy had a [significant cost](#) associated with it because it pulled her away from the core operations aspects of her business.
- Many of the first units were sold to family and friends who could spread the word about the product.
- CEO also [engaged her Persona's primary influencers](#), such as the website Urban Daddy, a daily e-mail newsletter specifically targeted at wealthy young urban professionals.
- The company [created a website where customers could purchase](#) the product.
- They also experimented with the [search engine optimization](#) (SEO) to help drive traffic to the site.
- They also started to [experiment with social media](#) like Twitter, though with marginal results.

Lark: Medium term



- The company signed a deal with Apple to distribute its product in the Apple Store without requiring exclusivity.
- The strategy gave the Lark product **instant credibility**, in that it had been approved for sale in the Apple stores by Apple itself, as well as much broader exposure; but the company had to **give up a lot of margin**:
 - The product sold in the store was the hardware component ==> the store had to carry inventory and LARK's gross margin was significantly affected.
- However, the CEO no longer had to do one-on-one sales, instead focusing on recruiting distributors and improving LARK's website.

Lark: Long term



- The website is the key place to get info about the product and purchase it.
- The company expects:
 - 40% of its orders to come through the website (and other direct online channels),
 - 50% from the retail distribution channel, and
 - 10% from other channels

Reading Assignments



Study the following articles on sales and branding:

- **Sales Advice for Technical Founders** by Carol Luong, Y Combinator.
 - <https://blog.ycombinator.com/sales-advice-for-technical-founders/>
- **How to Create a Customer Acquisition Plan for Startups?** by Ryan Gum.
 - <https://ryangum.com/customer-acquisition-plan/>
- **Customer Acquisition Strategy for Startups: 23 Techniques to Win New Customers.**
 - <https://www.omnikick.com/customer-acquisition-strategy/>
- **8 components of branding your startup**, by George Debb, The Next Web.
 - <https://thenextweb.com/dd/2019/07/13/rip-fernando-corby-corbato-inventor-of-the-password-1926-2019/>
- **Enterprise sales for hackers** by Ryan Junee, Y Combinator
 - <https://blog.ycombinator.com/enterprise-sales-for-hackers/>



Module 3: Disciplined Entrepreneurship

Section 5: How do you Scale your business?

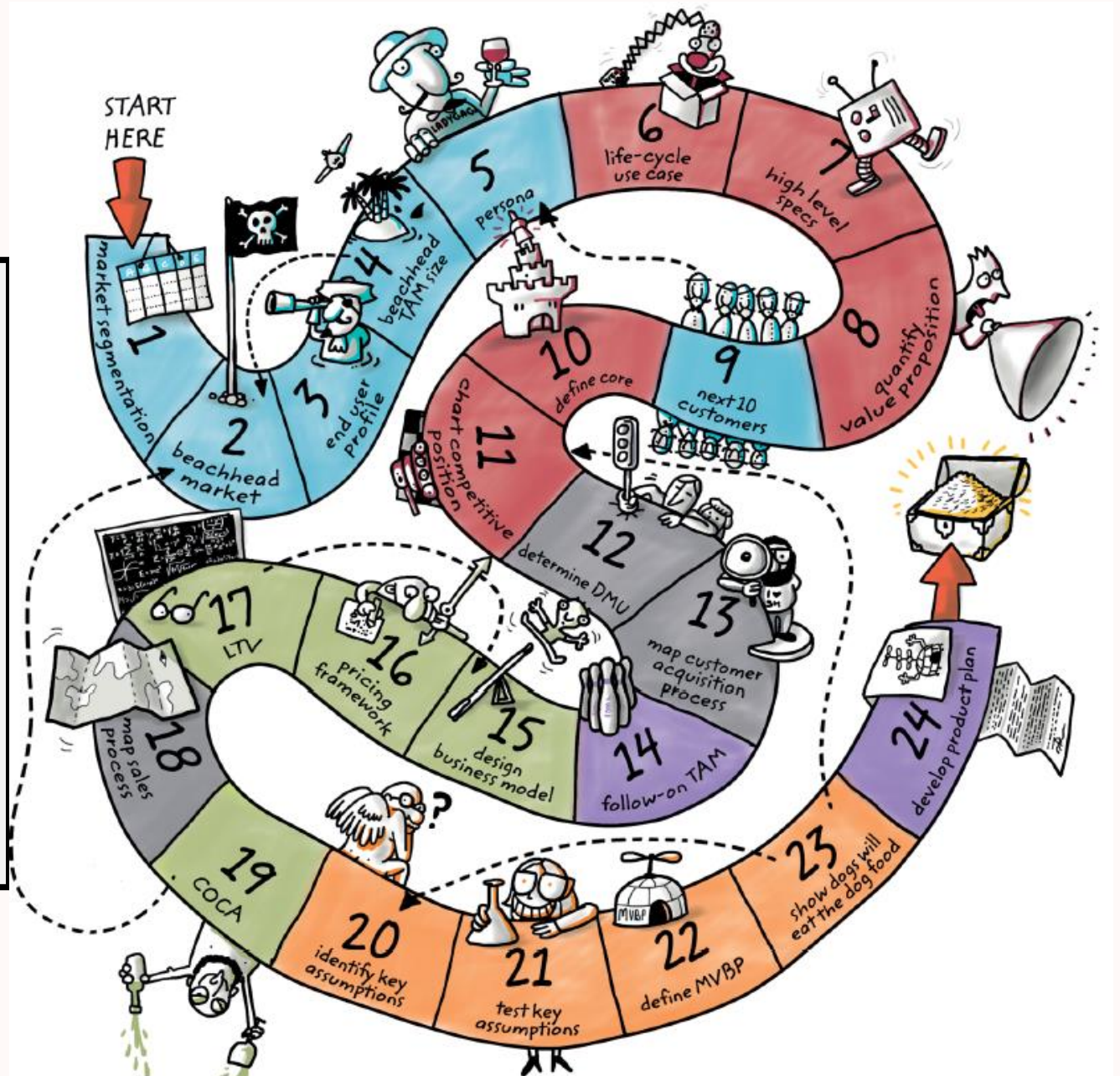


Recap



WHO IS YOUR CUSTOMER?

- 1 Market segmentation
- 2 Select a beachhead market
- 3 Build an end-user profile
- 4 Calculate the TAM size for the beachhead market
- 5 Profile the persona for the beachhead market
- 9 Identify your next customers



Section 5

Contents



- **DH Step 14: Calculate the Total Addressable Market Size for Follow-on Markets**
- DH Step 24: Develop a Product Plan

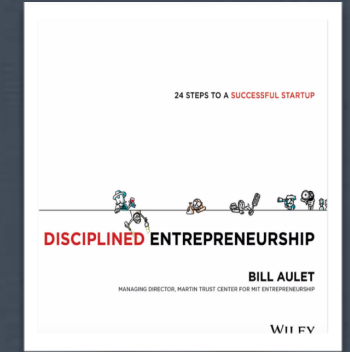
Section 5

Learning Objectives



After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Identify follow-up markets and estimate their size (Step 14).
- Understand how to identify follow-up markets and estimate their size (Step 24).



Section 5: How do you Scale your Business?

Step 14: Calculate the Total Addressable Market Size for Follow-on Markets





While maintaining a relentless daily focus on your beachhead market, you should also do some small amount of analysis on what happens if and when you win the beachhead market; from a general standpoint and without a great deal of detail, what do you project will be your next markets and how big will they be?

Broader TAM Sizing

- **What?**

- Calculate/Estimate the annual revenues from the top [follow-on markets](#) after you are successful in your beachhead market.

- **Why?**

- Shows the potential that can come from winning your beachhead and motivate you to do so quickly and effectively.

- **How?**

- Refine the TAM for the initial market and develop an estimate the broader TAM that includes the follow-on markets.
- Will not be as certain and specific as the first market.
- At any time as more information becomes available, go back and update other sections and not be constrained by this simple linear framework.

Moving Beyond Beachhead Segment

1. Is the target customer well funded & readily accessible to our sales force?
2. Do they have a compelling reason to buy?
3. Can we today, with the help of partners, deliver a whole product?
4. Is there entrenched competition that could block us?
5. If we win this segment, can we leverage it to enter additional segments?
- 6. Can we show results in an acceptable timeframe?**

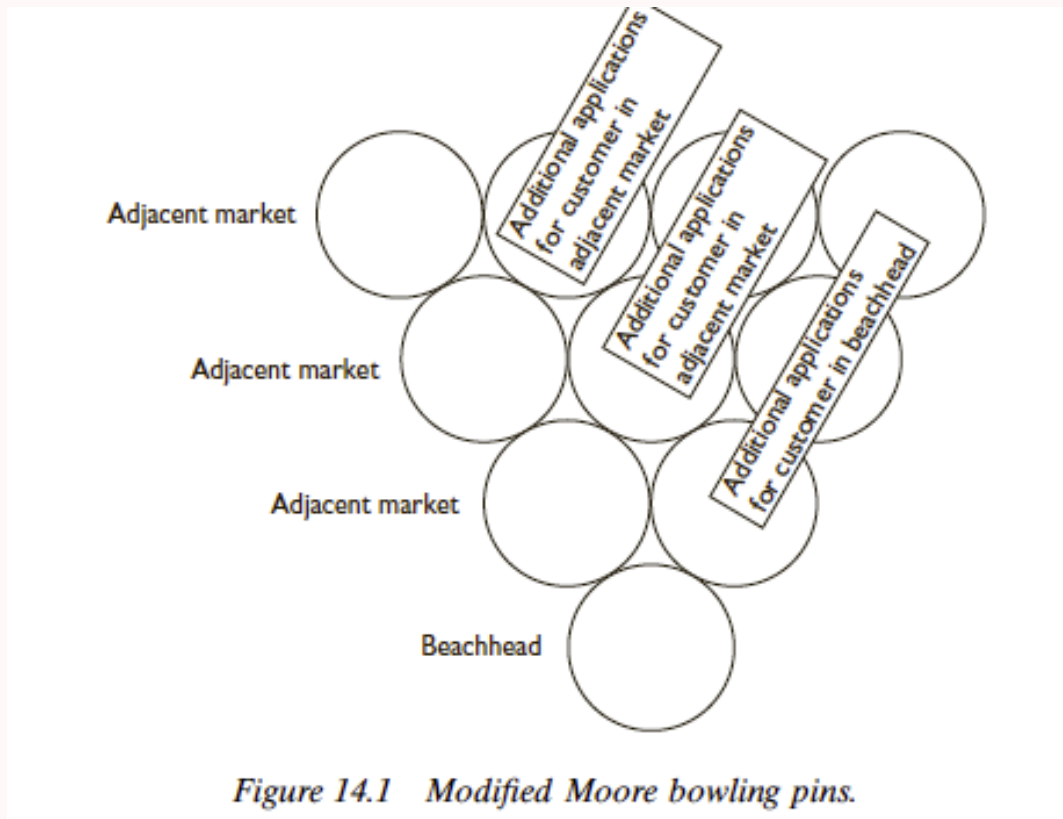
Follow-on Markets Definition

- Selling the **same customer additional products** or **applications**, which is often referred to as **up-selling**.
 - Keen awareness of your target customer can be used to determine what additional products you could create for or even resell to the customer.
 - Use existing sales and distribution channels to sell new products, leveraging the investment and positive relationship.
 - However, **making additional products will likely stretch your business** beyond your Core, which may hurt your Competitive Position in those markets, unless your Core is something related to customer relationships.
- Sell the same basic product to “**adjacent markets**,” which are markets similar to your beachhead.
 - Selling to these new markets **usually requires additional features, product refinement, and/or different packaging, marketing communications, or pricing**.
 - You are **leveraging the same Core**, and building off the expertise and scale developed in the beachhead market.
 - You will have to establish **new customer relationships in each adjacent market**, which can be risky and expensive.

Why look at follow-on markets?

- Keeps you cognizant of the long-term potential of your business as you begin to design your product and build capabilities.
- You will excite management, employees, and investors by showing that the business has the potential to be overwhelmingly successful.
- You will also get a better sense of other potential markets if your beachhead market turns out to be much more problematic than you envisioned and you have to either abandon it or revisit other options.

- While the Core of innovation-based startups often naturally leads to explore adjacent markets, you can pursue either strategy, or a mixture of the two, after dominating your beachhead market



Analogy of bowling pins:

the pins on the left side of the set are adjacent markets;

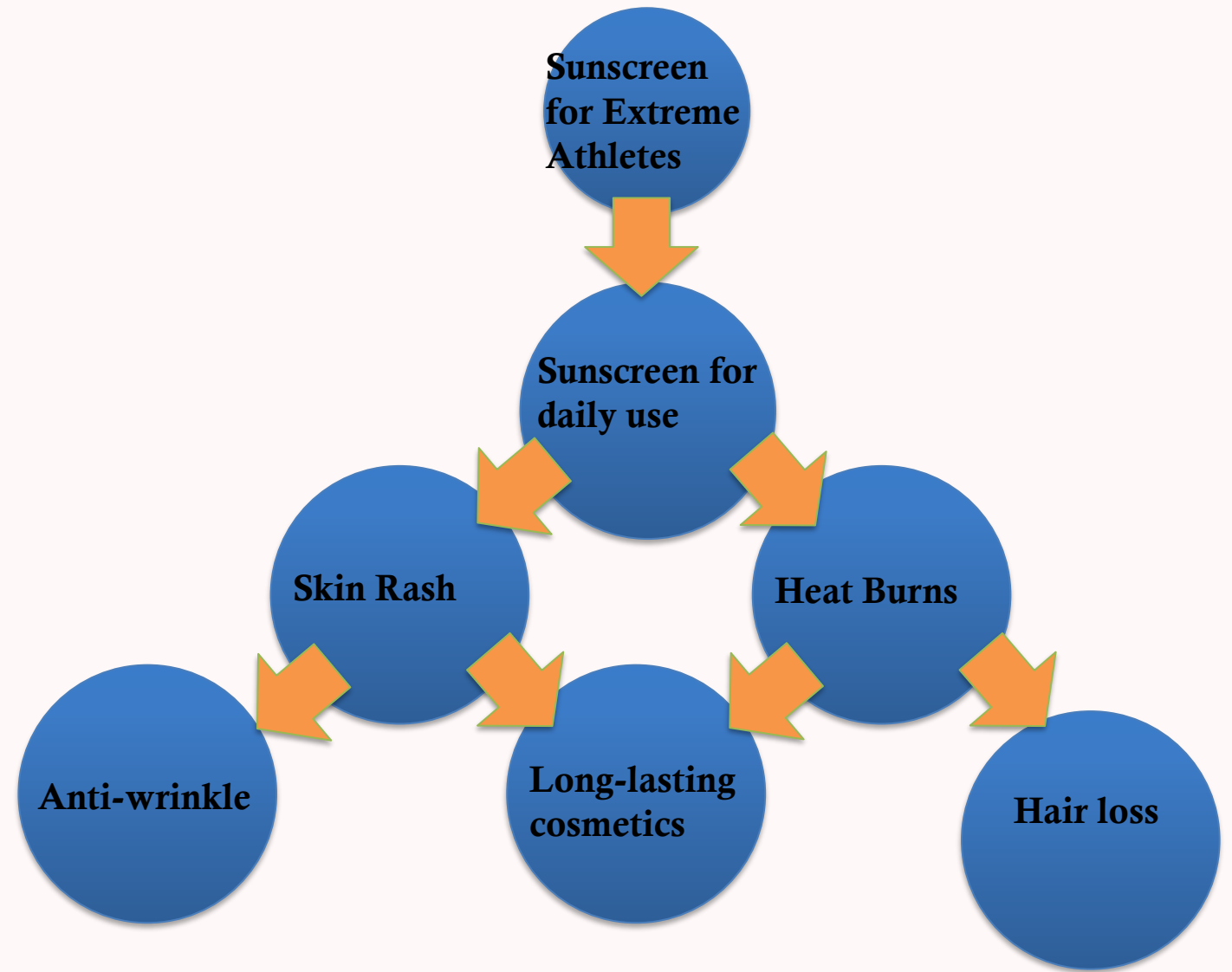
the pins on the right side of the set are additional applications for the customer in a particular market

[Geoffrey Moore, Crossing the Chasm]

How to calculate broader TAM?

- Think through the various adjacent markets and upselling opportunities that logically make sense with your product.
- You should be able to identify **at least five or six follow-on markets**.
- Use the same general methodology to calculate the TAM for each follow-on market that you did for your beachhead TAM in Step 4.
- If you want to attract venture capital and/or build a big business, the general rule is that the broader TAM (for 10 or less follow-on markets), plus your beachhead market TAM, should **add up to over \$1B**.
- Use all the techniques of Step #4, making sure the units are correct; but you need a lot less primary market research for now.
- Don't spend too much time for now.

Broader TAM Sizing Example



SMART SKIN CARE *Long-lasting protection for your skin*

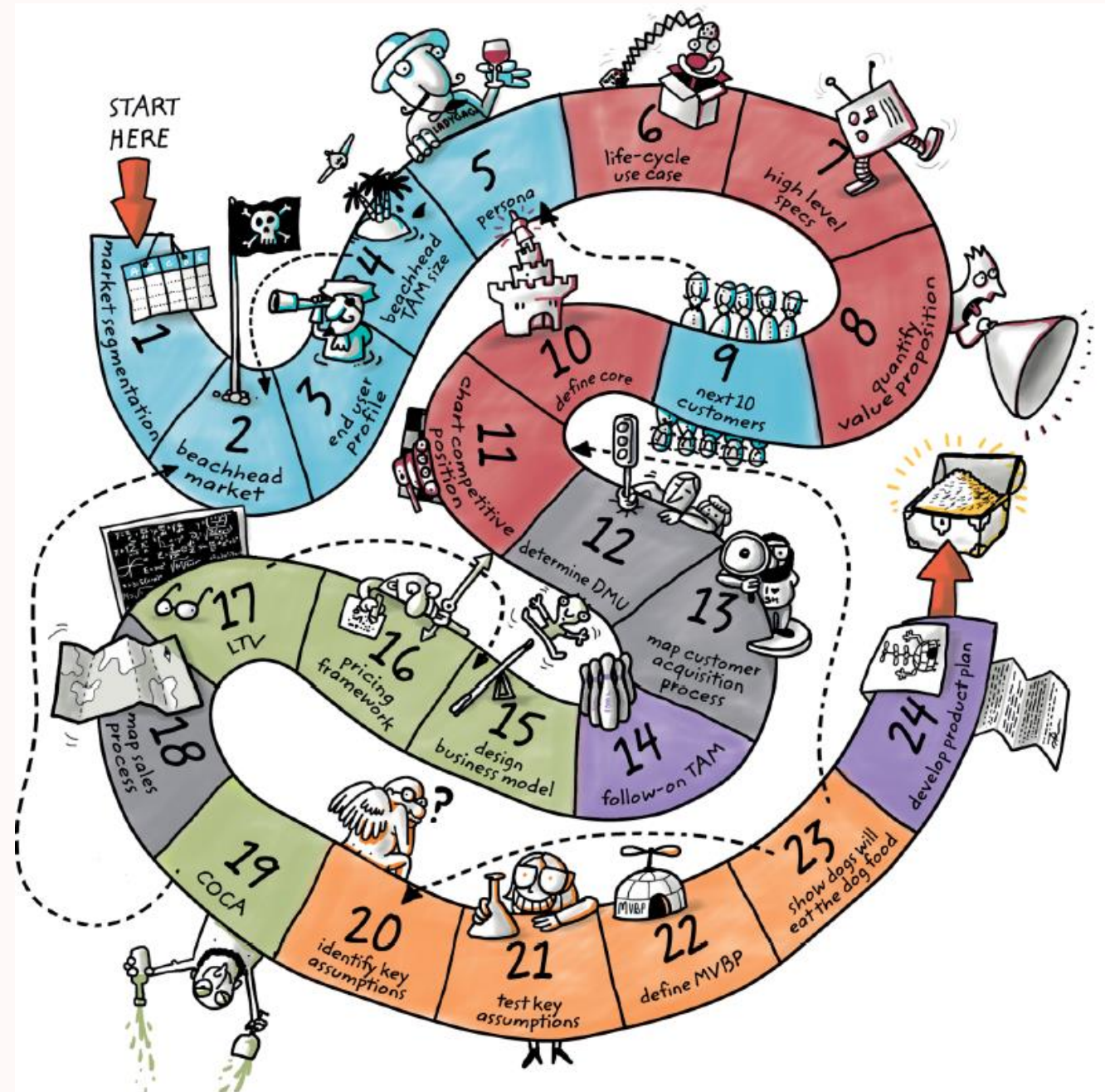


Module 3: Disciplined Entrepreneurship

Section 6: Business Models



Recap



Section 6

Contents



- DH Step 15: Business Model Design
- Business Model Patterns

Section 6

Learning Objectives



After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Understand and explain the Business Model Canvas methodology.
- Understand innovative Business Model Patterns and apply them to your idea.
- Appraise techniques to help you design Business Models.
- Understand the significance of Business Models.
- Understand, analyze and apply Freemium, Bait & Hook and Open Business Models.
- Understand the significance of Business Models.
- Understand and explain the Business Model Canvas methodology.
- Understand innovative Business Model Patterns and apply them to your idea.
- Appraise and apply techniques and tools to help you design Business Models.

Readings



- Chapter 2: Patterns. *Business Model Generation*, Alexander Osterwalder and Yves Pigneur, Wiley 2010.
- Chapters 16, 17, 19. *Disciplined Entrepreneurship*, Bill Aulet, Wiley 2013.
- Business Model Canvas: A Complete Guide.
 - <https://www.cleverism.com/business-model-canvas-complete-guide/>
- Cost Structure Block in Business Model Canvas.
 - <https://www.cleverism.com/cost-structure-block-in-business-model-canvas/>
- Chapters 16, 17, 19. *Disciplined Entrepreneurship*, Bill Aulet, Wiley 2013.
- Pricing Your Product by Sequoia.
 - <https://www.sequoiacap.com/article/pricing-your-product/>
- What's your TRUE customer lifetime value (LTV)? by David Skok.
 - <https://www.forentrepreneurs.com/ltv/>
- The 3 Pricing Strategies Your Startup Should Choose From by Tomasz Tunguz, Inc.
 - <https://www.inc.com/linkedin/tomasz-tunguz/only-3-pricing-strategies-your-startup-tomasz-tunguz.html>
- The 10 Most Popular Startup Revenue Models by Founders Intitute.
 - <https://fi.co/insight/the-10-most-popular-startup-revenue-models>

Videos



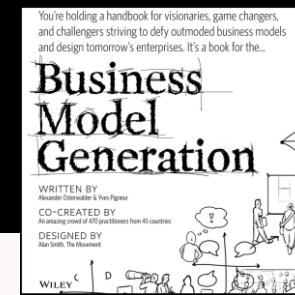
- Nine Business Models and the Metrics Investors Want by Anu Hariharan, Y Combinator (August 2019)
 - <https://www.youtube.com/watch?v=PTg3RZPXgLg>
 - Transcript:
<https://jotengine.com/transcriptions/M7tQs9xzHM4N7V6MdXB6nw>
- Concrete Steps to Calculate COCA by Bill Aulet, MIT.
 - <https://youtu.be/Tn23iwj3gvw>



What is a Business Model?



What is a Business Model?



Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

A business model describes the rationale of how an organization creates, delivers, and captures value.

The business model is like a **blueprint** for a strategy to be implemented through organizational **structures, processes, and systems.**

A business model can be described through **nine basic building blocks** that show the logic of how a company intends to make money.

Left canvas: efficiency

The Business Model Canvas

Designed for:

Designed by:

Date:

Version:

<h3>Key Partners</h3> <p>Who are our Key Partners? Who are our key suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform?</p> <p>MOTIVATIONS FOR PARTNERSHIPS Optimization and economy Reduction of risk and uncertainty Acquisition of particular resources and activities</p>	<h3>Key Activities</h3> <p>What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue streams?</p> <p>CATEGORIES Production Problem Solving Platform/Network</p>	<h3>Value Propositions</h3> <p>What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying?</p> <p>CHARACTERISTICS Newness Performance Customization "Getting the Job Done" Design Brand/Status Price Cost Reduction Risk Reduction Accessibility Convenience/Usability</p>	<h3>Customer Relationships</h3> <p>What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they?</p> <p>EXAMPLES Personal assistance Dedicated Personal Assistance Self-Service Automated Services Communities Co-creation</p>	<h3>Customer Segments</h3> <p>For whom are we creating value? Who are our most important customers?</p> <p>Mass Market Niche Market Segmented Diversified Multi-sided Platform</p>																								
<h3>Key Resources</h3> <p>What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue Streams?</p> <p>TYPES OF RESOURCES Physical Intellectual (brand patents, copyrights, data) Human Financial</p>	<h3>Channels</h3> <p>Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?</p> <p>CHANNEL PHASES 1. Awareness How do we raise awareness about our company's products and services? 2. Evaluation How do we help customers evaluate our organization's Value Proposition? 3. Purchase How do we allow customers to purchase specific products and services? 4. Delivery How do we deliver a Value Proposition to customers? 5. After sales How do we provide post-purchase customer support?</p>																											
<h3>Cost Structure</h3> <p>What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive?</p> <p>IS YOUR BUSINESS MORE Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing) Value Driven (focused on value creation, premium value proposition)</p> <p>SAMPLE CHARACTERISTICS Fixed Costs (salaries, rents, utilities) Variable costs Economies of scale Economies of scope</p>		<h3>Revenue Streams</h3> <p>For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues?</p> <table border="0"> <tr> <td>TYPES</td> <td>FIXED PRICING</td> <td>DYNAMIC PRICING</td> </tr> <tr> <td>Asset sale</td> <td>List Price</td> <td>Negotiation (bargaining)</td> </tr> <tr> <td>Usage fee</td> <td>Product feature dependent</td> <td>Yield Management</td> </tr> <tr> <td>Subscription Fees</td> <td>Customer segment dependent</td> <td>Real-time-Market</td> </tr> <tr> <td>Lending/Renting/Leasing</td> <td>Volume dependent</td> <td></td> </tr> <tr> <td>Licensing</td> <td></td> <td></td> </tr> <tr> <td>Brokerage fees</td> <td></td> <td></td> </tr> <tr> <td>Advertising</td> <td></td> <td></td> </tr> </table>			TYPES	FIXED PRICING	DYNAMIC PRICING	Asset sale	List Price	Negotiation (bargaining)	Usage fee	Product feature dependent	Yield Management	Subscription Fees	Customer segment dependent	Real-time-Market	Lending/Renting/Leasing	Volume dependent		Licensing			Brokerage fees			Advertising		
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Right canvas: Value



Section 6: Business Models

Step 15: Business Model Design

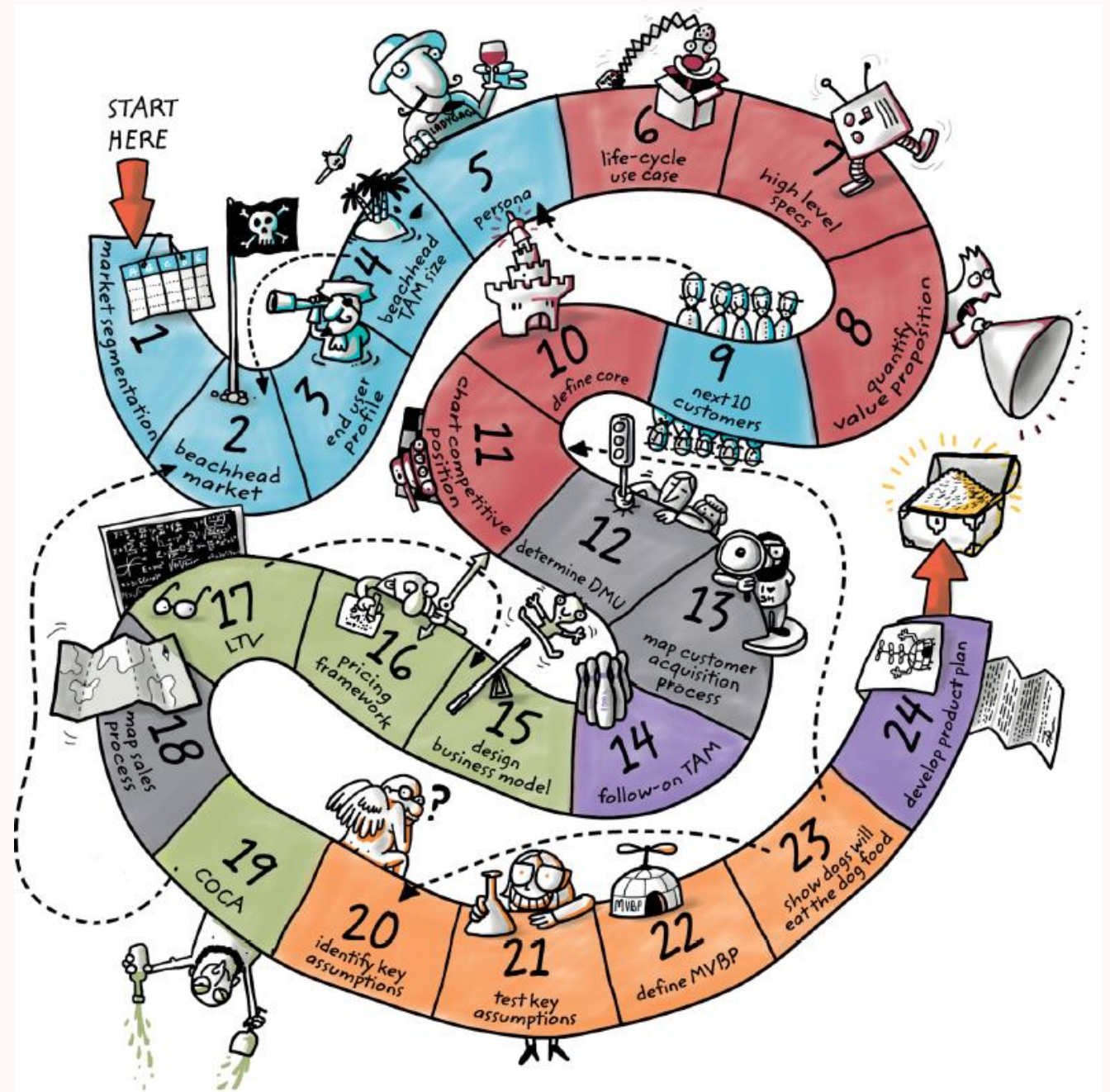


Outline



HOW DO YOU MAKE MONEY OFF YOUR PRODUCT?

- 15 Design a business model
- 16 Set your pricing framework
- 17 Calculate the lifetime value of an acquired customer (LTV)
- 19 Calculate the cost of customer acquisition (COCA)



What are we doing?



Step #15

- Examine existing **business models** across industries for capturing some of the value your product brings to your customer.
- Use the work you have done in other steps to brainstorm an innovative model for your venture.

Why are we doing this?



Why are we doing this?

- Entrepreneurs often invest a lot of time in
 - developing the End User Profile, the product definition, and the value proposition, **showing how they will create value for the customer,**
- but barely any time figuring out **how that value translates into a profitable business.**
- Why spend all this time focusing on innovation related to technology and product design without a commensurate amount of time on innovating with your business model?

Companies that spend time and effort on innovative business models can see enormous payback.

Business Model is not Pricing

- A business model is a framework by which you extract from your customers some portion of the value your product creates for them.
- It is the idea that the amount of money your venture gets paid is based on how much value the customer gets from your product, and not some arbitrary markup based on your costs.
- You should constantly be working toward achieving business models and pricing that are value-based even if you have to make temporary shifts along the way to get there.
- Pricing matters surprisingly less than designing an effective business model, because the latter has a more direct influence on your ability to extract value over the lifetime of your business.

Key Factors when designing a Business Model

1. **Customer**: Understand what the customer is willing to do.
 - The knowledge you gained from mapping the Decision-Making Unit and Process to Acquire a Paying Customer will be valuable here.
2. **Value Creation and Capture**: Assess how much value your product provides to your customer and when. Then determine which ways of capturing value match up well.
 - Your Quantified Value Proposition will help here.
3. **Competition**: Identify what your competition is doing.
4. **Distribution**: Make sure your distribution channel has the right incentives to sell your product.

What Types of Business Models are there to Capture Value?

- One Time Upfront Charge (plus maintenance)
- Licensing
- Subscription/Leasing
- Shared Savings
- Consumables
- O&M (Operating and Maintenance)
- Cost Plus
- Upsell high margin add ons
- Advertising
- Transaction %
- Freemium
- Cell Phone Plan (or PPA in energy)
- Utility model (per usage)
- Franchise model
- Micro-transactions
- Parking meter
- Other

Consumables

- For the customer, the benefit is a **low up-front cost**, with **ongoing costs based on usage**, which the customer can usually control.
- The customer might not have an easy way to pay for a large up-front cost but has much more capability to procure once usage has started. Once usage has started, they can justify the purchase of some consumable product the solution uses.
- The amount of consumable that needs to be purchased is directly related to usage; and, in many cases, your customer can pass the cost on to their own customers.
- This is a very popular model for **medical devices**, but it is also used frequently in the consumer space.
 - A highly visible and well recognized example is the razor/razor blade model made famous by Gillette.
 - HP is another example, where almost all if not all of their profit on printers comes from selling inkjet cartridges.

Cost Plus Scenario

- Customer pays a set percentage above the cost of producing the product.
 - Common in government contracts as well as situations where you and your customer want to share the risk of producing the product.
 - Attractive when product is immature and there will be scope creep, - the offering should mature and then migrate to a different business model.
 - Requires agreement on the accounting assumptions, trusting that the numbers are correct and will continue to be correct.
 - It can also create incentives that reward activity rather than progress, which is bad for both you and your customer.

Upsell with High-Margin Products

- The central product is sold at a very low margin, but the overall margin is increased from the sale of very high-margin add-on products.
- This business model is often used in consumer electronics stores or websites and frequently in new car sales.
- In a consumer electronics retailer, frequently an item like a camera might be sold at just above cost, which attracts the customer, but then they buy add-ons that have a higher margin and customers are sold a warranty extension for one, two, or three years that also has a very high margin.
- Like buying a car, it is the additional items like warranty extension, accessories, rustproofing, and the like that are the high-margin products where sellers make the lion's share of their profits.

Reselling the Data Collected—or Temporary Access to It

- Somewhat similar to the advertising model.
- Reselling user data requires **first attracting end users with a free product**, then **receiving money from third parties who pay for access to demographic and other information** about your users.
 - This is a major source of revenue for LinkedIn, which sells a special package for recruiters that gives access to a wide array of LinkedIn user data.
 - The medical industry also resells access to user data for market research.

Transaction Fee

- Online retailers often pay or receive a commission for referrals that lead to sales.
- One obvious example is [eBay](#), which receives a fee from each successful auction, paid by the seller.
- The model is similar to how credit card companies work, where a percentage of each transaction goes to the credit card company.

Parking Meter

- Charge very low prices but very high late fees.
- Used also by credit card companies and (for a while) Blockbuster.
 - The problem that **Blockbuster** discovered, however, is that loyal customers can become alienated by such late fees, so when Netflix emerged with the tagline “no late fees,” Blockbuster lost significant market share and never recovered.
- The lesson is, **do not take advantage of your customer's naivete as a central pillar of your business model.**

Operating and Maintenance

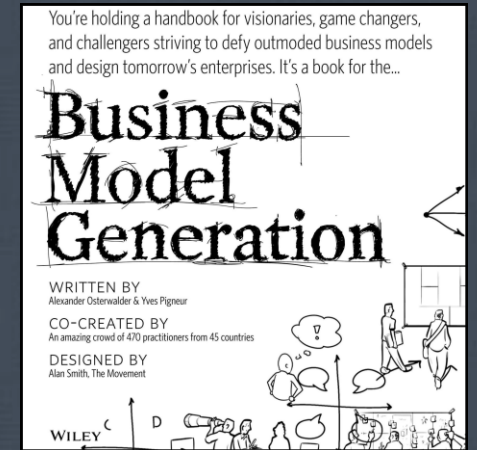
- A new business might not want to really sell a product but rather get paid for running a plant or other operation for a fee.
- While this is similar in some ways to a consulting agreement, the customer has more incentives to control or cut costs, as it will directly impact the customer's income.
- This model is common in the energy sector.

Microtransactions

- A new successful model that came into vogue with online computer games, and is now being tested to try to save newspapers, is microtransactions.
- In this model, the customer is asked to provide their credit card and then they make very small (defined as less than \$12; often they are \$1 or less) transactions for digital goods (which have virtually no marginal cost because they are electrons).
- There are many of them so they can add up.

Section 6: Business Models

Business Model Patterns



Business Model Patterns



- **Pattern** in architecture is the idea of capturing architectural design ideas as archetypal and reusable descriptions.
- **Business model pattern**: business models with similar characteristics, similar arrangements of business model Building Blocks, or similar behaviors.

Business Model Patterns



- **Unbundled**
- Long Tail
- Multi-sided
- Free Advertising
- Freemium (RedHat, Skype)
- Open Business Models

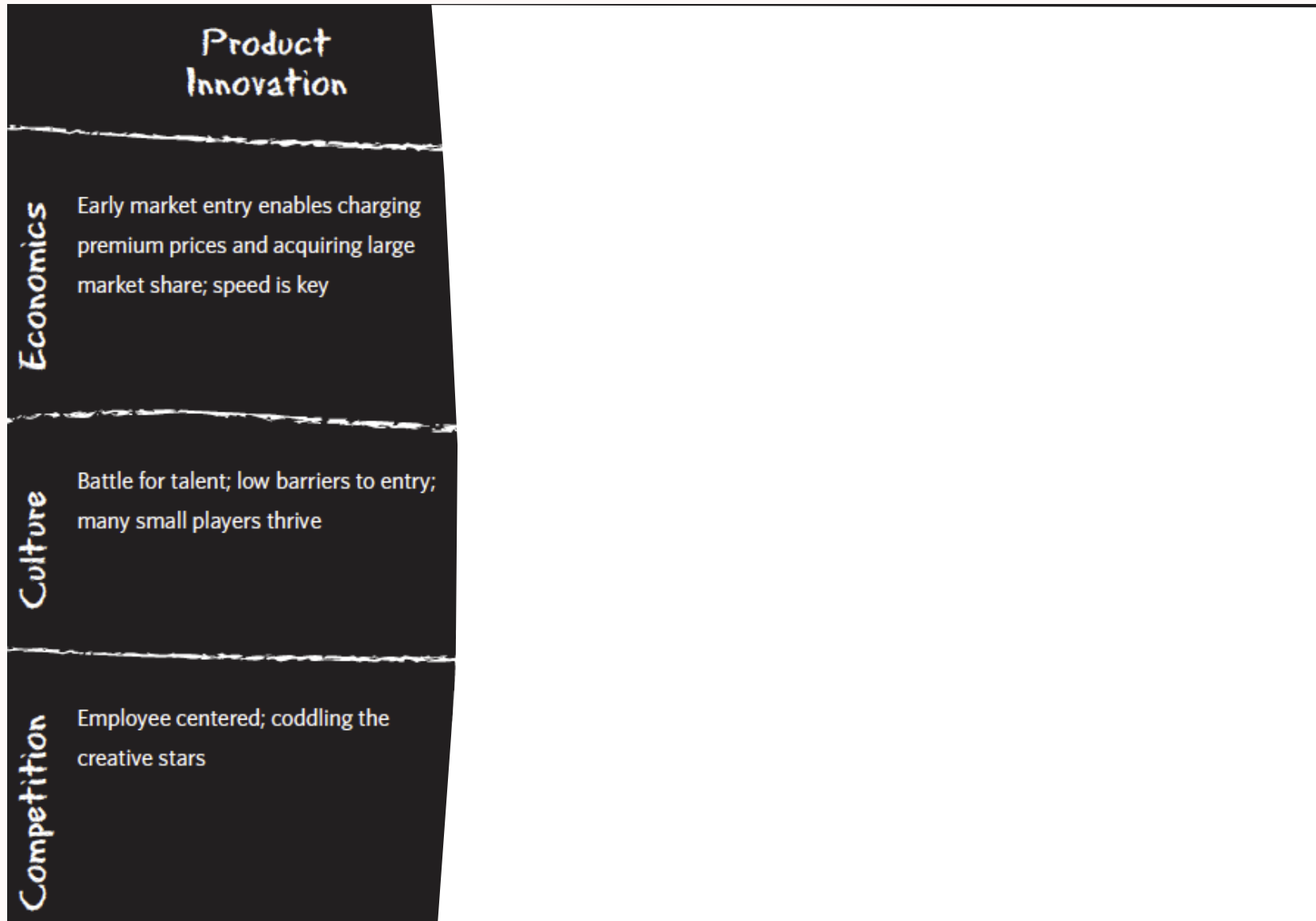
Unbundling Business Models

- The concept of the “unbundled” corporation holds that there are three fundamentally different types of businesses:
 - Customer Relationship
 - Product innovation, and
 - Infrastructure.
- Each type has different economic, competitive, and cultural imperatives.
- The three types may co-exist within a single corporation, but ideally they are “unbundled” into separate entities in order to avoid conflicts or undesirable trade-offs.

Roles of "unbundled" corporations

- **Customer Relationship businesses**: finding and acquiring customers and building relationships with them.
- **Product innovation businesses**: develop new and attractive products and services
- **Infrastructure businesses**: build and manage platforms for high volume, repetitive tasks.
- Companies **should separate these businesses and focus on only one of the three internally** [Hagel and Singer]
 - Each type of business is driven by different factors: when bundled together within the same organisation, they can conflict with each other or produce undesirable trade-offs.

Three Core Business Types



Three Core Business Types

	Product Innovation	Customer Relationship Management
Economics	Early market entry enables charging premium prices and acquiring large market share; speed is key	High cost of customer acquisition makes it imperative to gain large wallet share; economies of scope are key
Culture	Battle for talent; low barriers to entry; many small players thrive	Battle for scope; rapid consolidation; a few big players dominate
Competition	Employee centered; coddling the creative stars	Highly service oriented; customer-comes-first mentality

Three Core Business Types

	Product Innovation	Customer Relationship Management	Infrastructure Management
Economics	Early market entry enables charging premium prices and acquiring large market share; speed is key	High cost of customer acquisition makes it imperative to gain large wallet share; economies of scope are key	High fixed costs make large volumes essential to achieve low unit costs; economies of scale are key
Culture	Battle for talent; low barriers to entry; many small players thrive	Battle for scope; rapid consolidation; a few big players dominate	Battle for scale; rapid consolidation; a few big players dominate
Competition	Employee centered; coddling the creative stars	Highly service oriented; customer-comes-first mentality	Cost focused; stresses standardization, predictability, and efficiency

Private banking Case Study



- Traditionally, private banking institutions were vertically integrated and performed tasks ranging from wealth management to brokerage to financial product design:
 - **Outsourcing** was costly, and
 - private banks preferred keeping everything in-house due to **secrecy** and **confidentiality** concerns.
- But secrecy became less of an issue with the **demise of the mystique** surrounding Swiss banking practices, and **outsourcing became attractive** with the breakup of the banking value chain due to the emergence of specialty service providers such as:
 - **transaction banks**, which focus exclusively on handling banking transactions
 - **financial product boutiques**, which concentrate solely on designing new financial products.

Private banking unbundling



- Zurich-based private banking institution **Maerki Baumann** is an example of a bank that has unbundled its business model.
- It spun its **transaction-oriented platform business** into a **separate entity called Incore Bank**, which does banking services to other banks and securities dealers.
- Maerki Baumann now focuses solely on building **Customer Relationships and advising clients**.

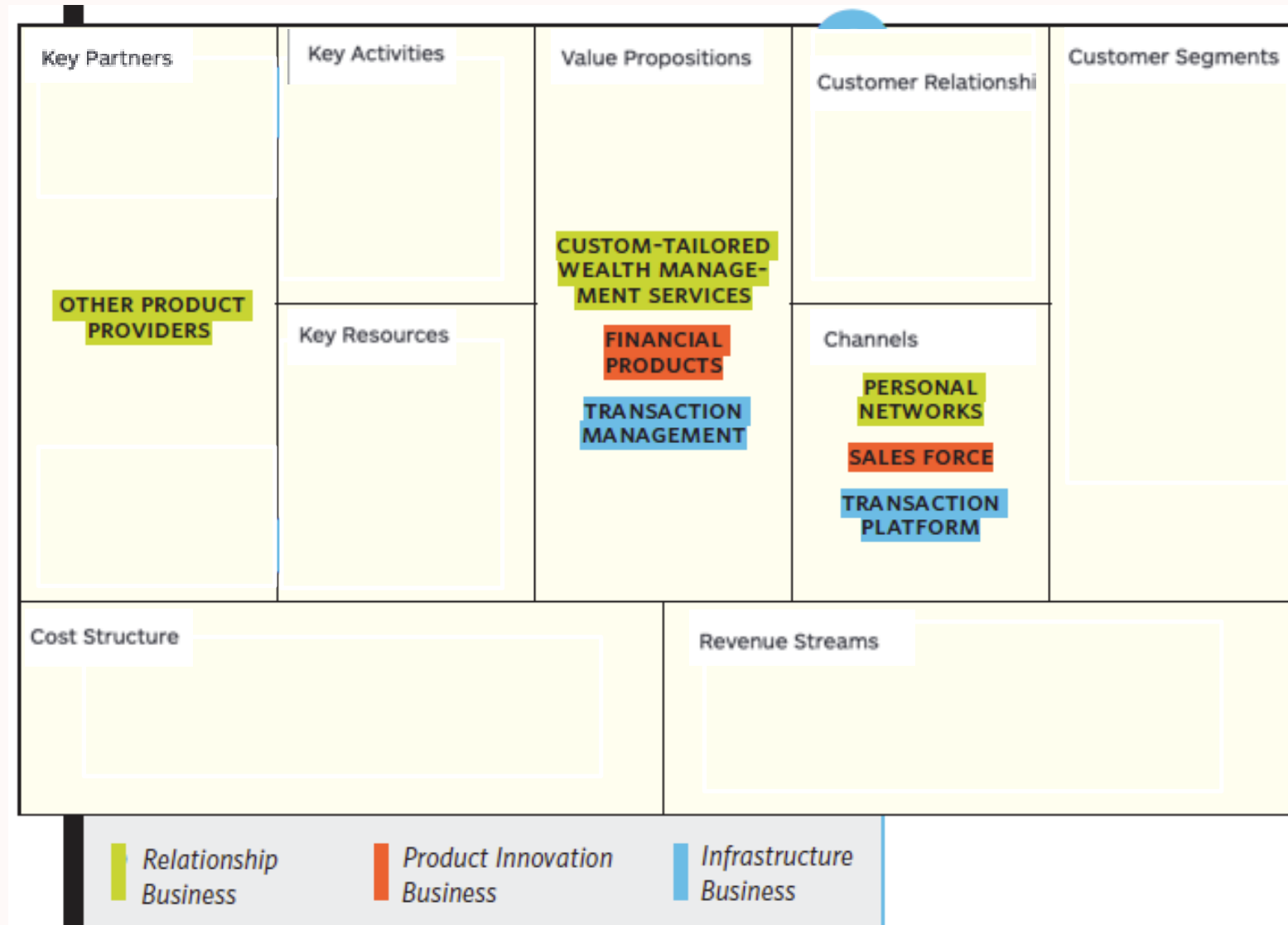
Private banking unbundling



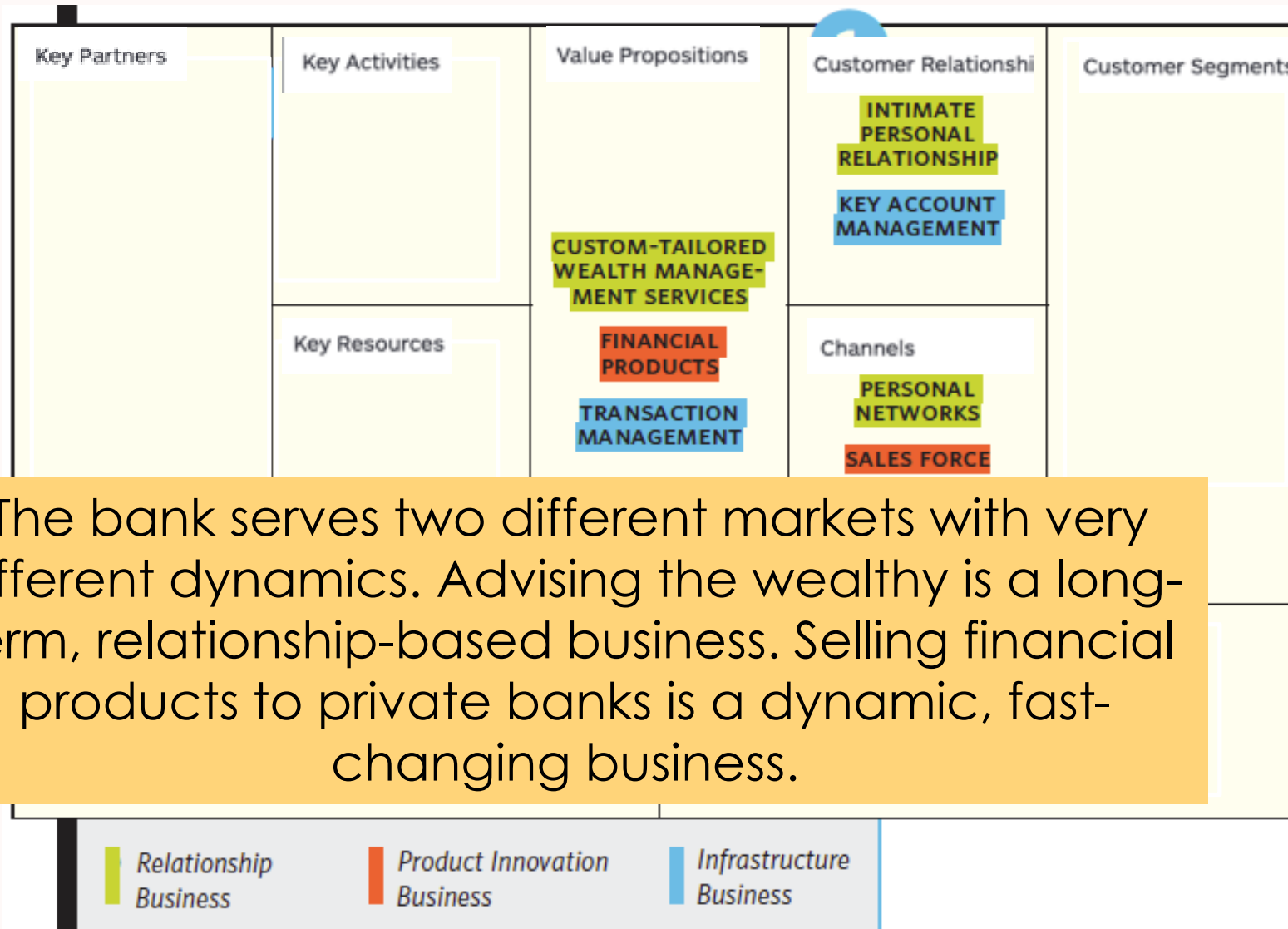
- Geneva-based Pictet, the largest Swiss private bank, has preferred to remain **integrated**.
 - This 200-year-old institution develops **deep Customer Relationships**, handles many client transactions, and designs its own financial products.
- Though the bank has been successful with this model, it has to carefully manage **trade-offs** between three fundamentally different types of businesses.

The Private Banking Model

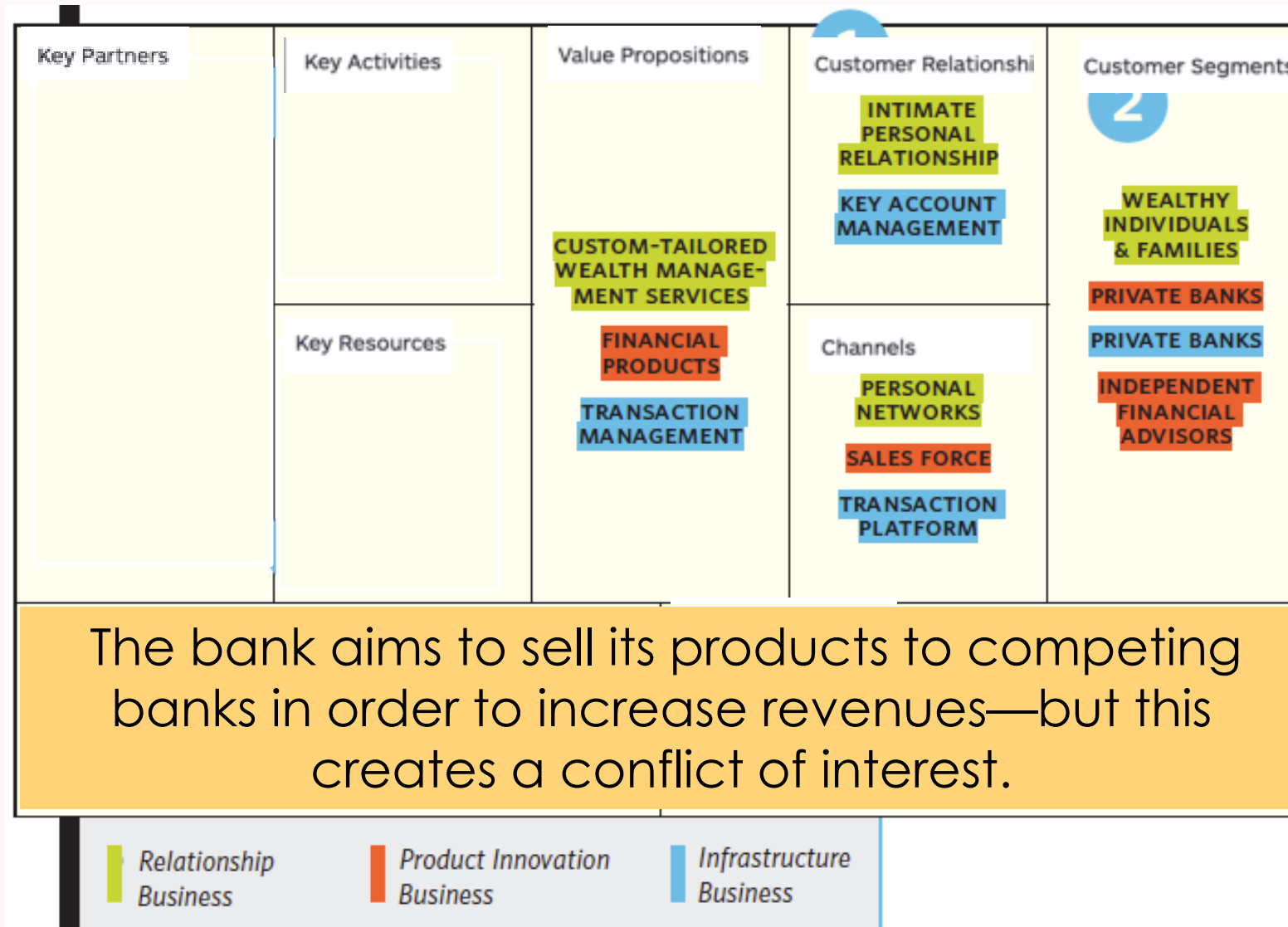
Value Proposition, Channels, Key Partners



The Private Banking Model trade-offs: Customer Relationships



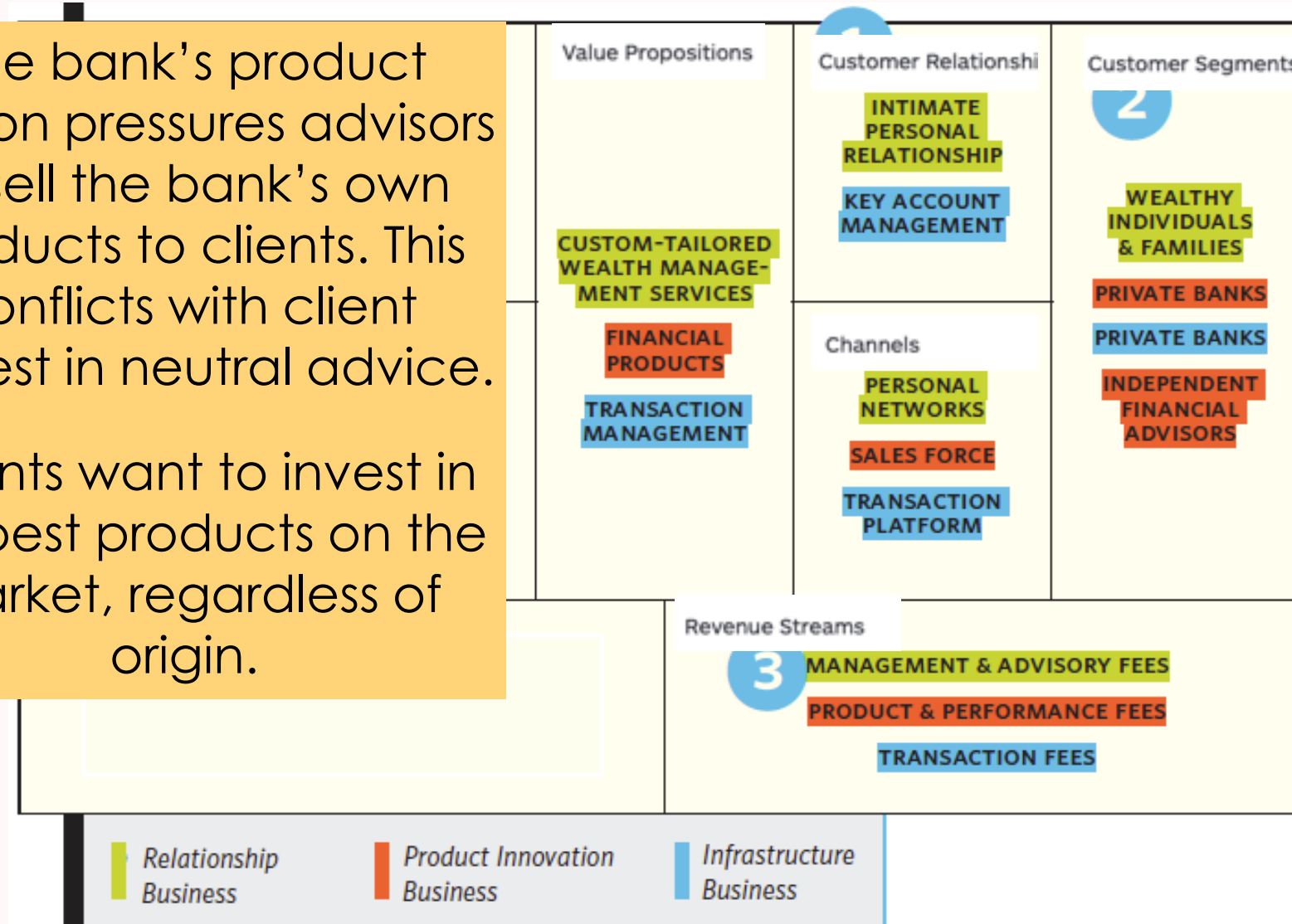
Trade-offs: Customer segments



Trade-offs: Revenue streams

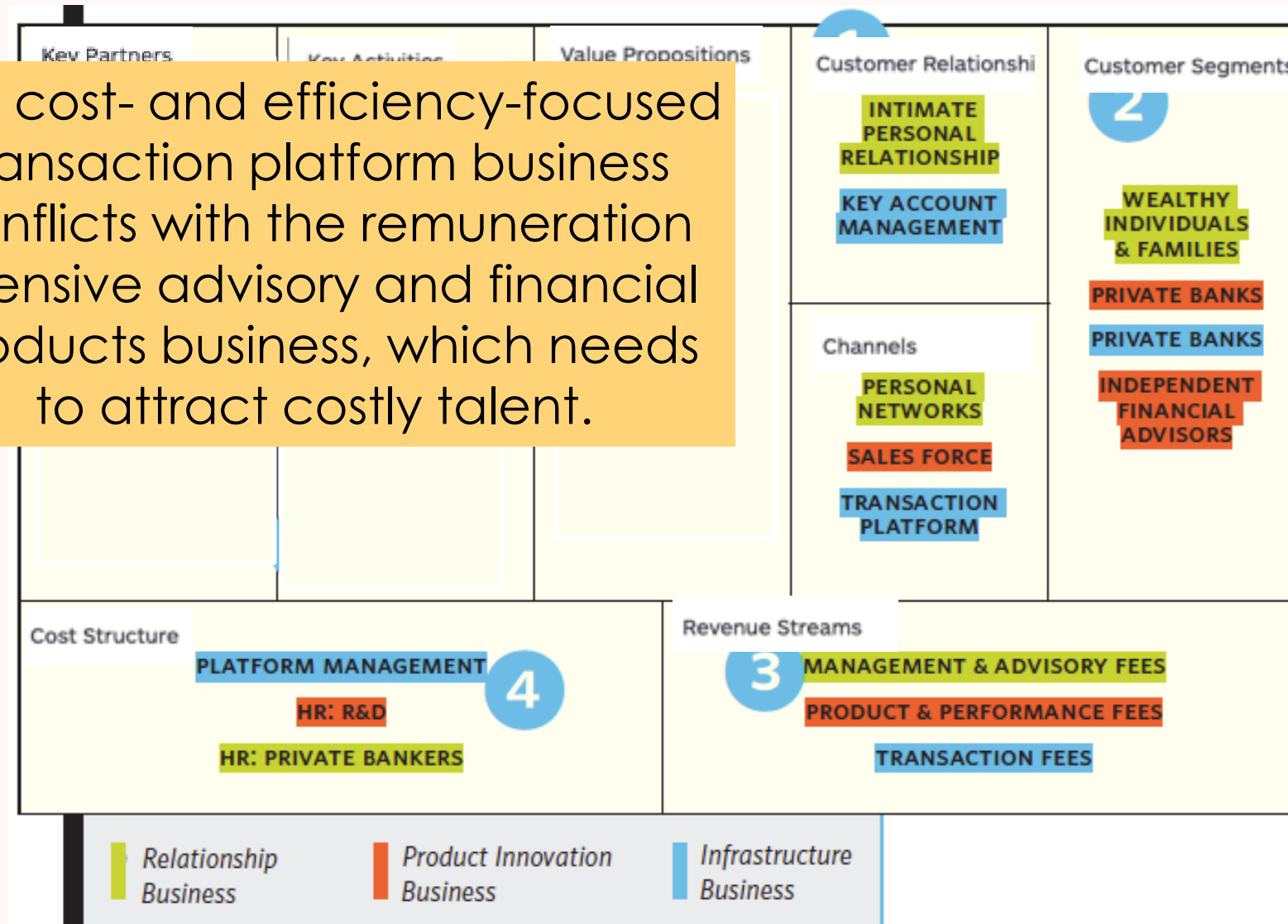
The bank's product division pressures advisors to sell the bank's own products to clients. This conflicts with client interest in neutral advice.

Clients want to invest in the best products on the market, regardless of origin.

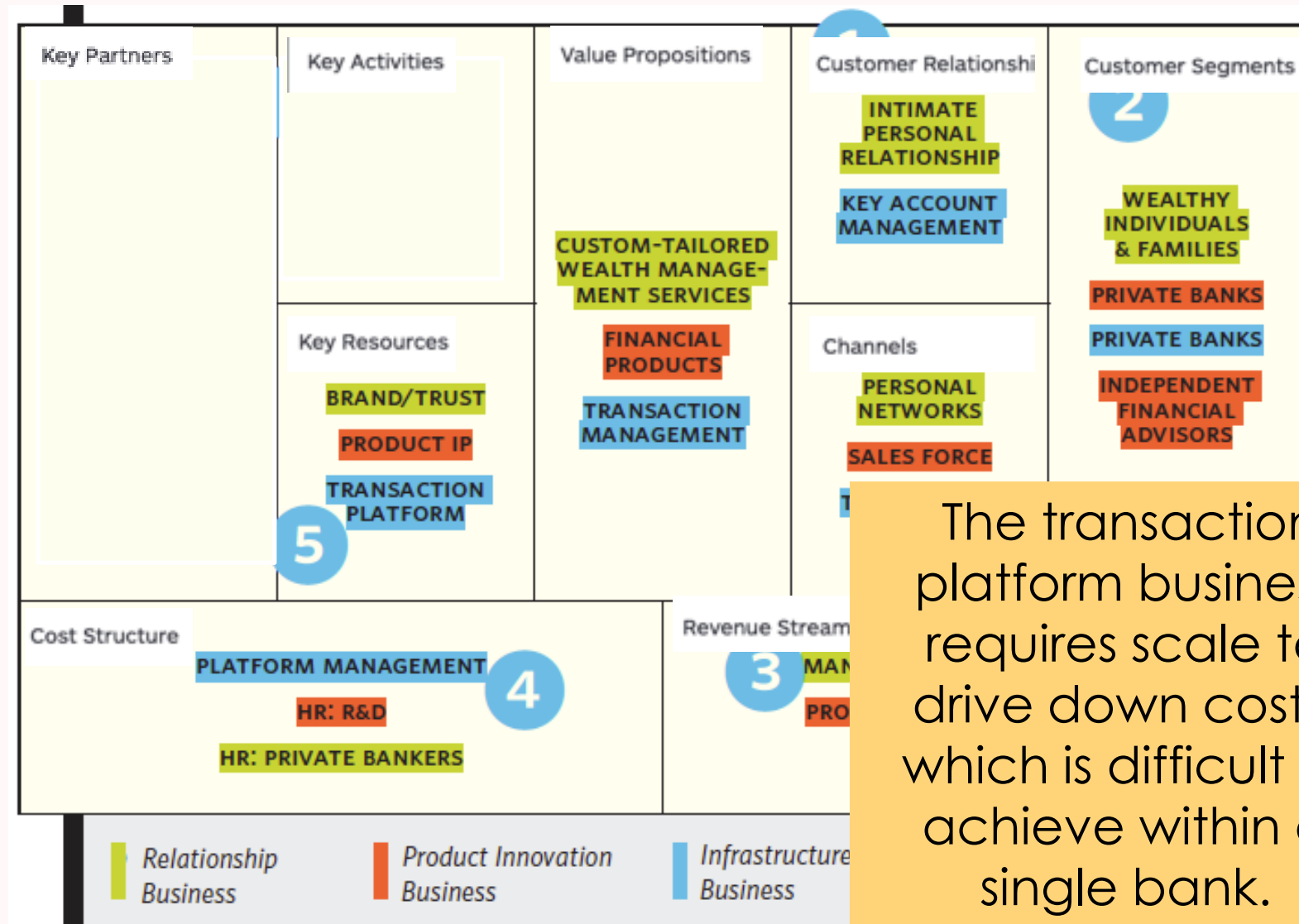


Trade-offs: Cost structure

The cost- and efficiency-focused transaction platform business conflicts with the remuneration intensive advisory and financial products business, which needs to attract costly talent.

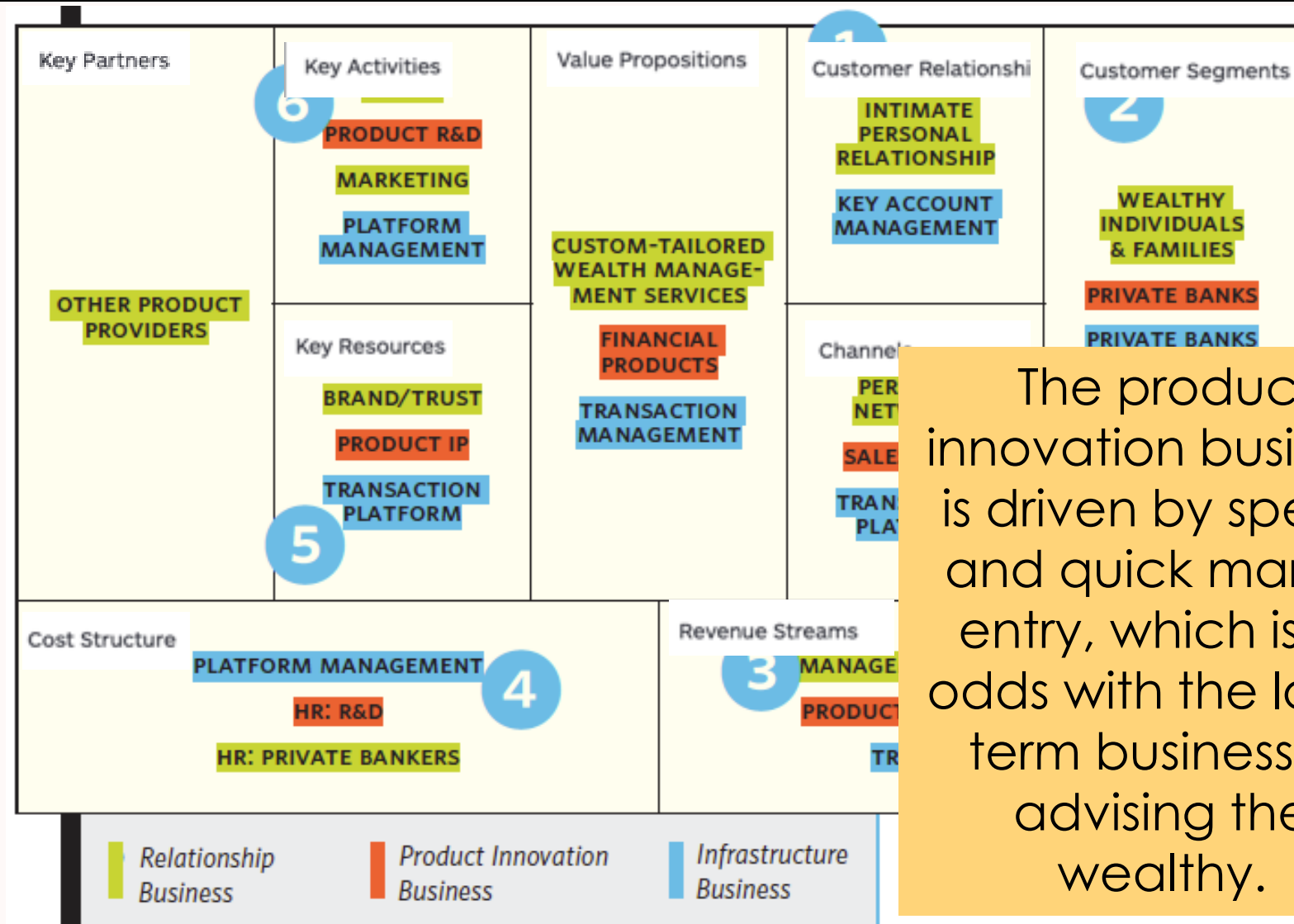


Trade-offs: Key resources



The transaction platform business requires scale to drive down costs, which is difficult to achieve within a single bank.

Trade-offs: Key activities



The product innovation business is driven by speed and quick market entry, which is at odds with the long-term business of advising the wealthy.

Unbundling the Mobile Telco

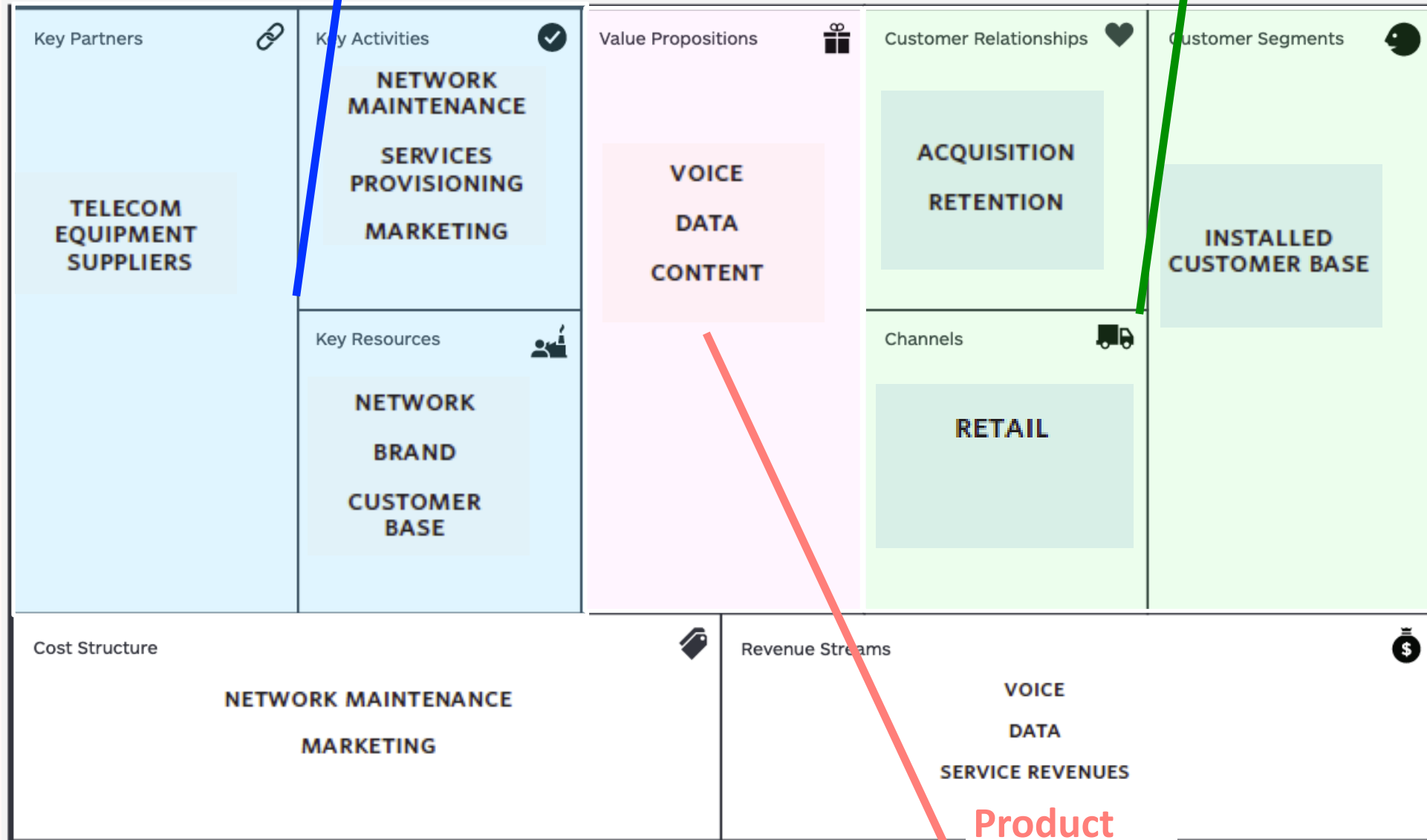


- Mobile telecommunication firms have started unbundling their businesses.
- Traditionally they **competed on network quality**, but now they are striking network sharing **deals** with **competitors** or **outsourcing network operations** altogether to equipment manufacturers. **Why?**
- Because they realize that **their key asset** is no longer the network—it is **their brand and their Customer Relationships**.

Infrastructure Management

Customer Relationship

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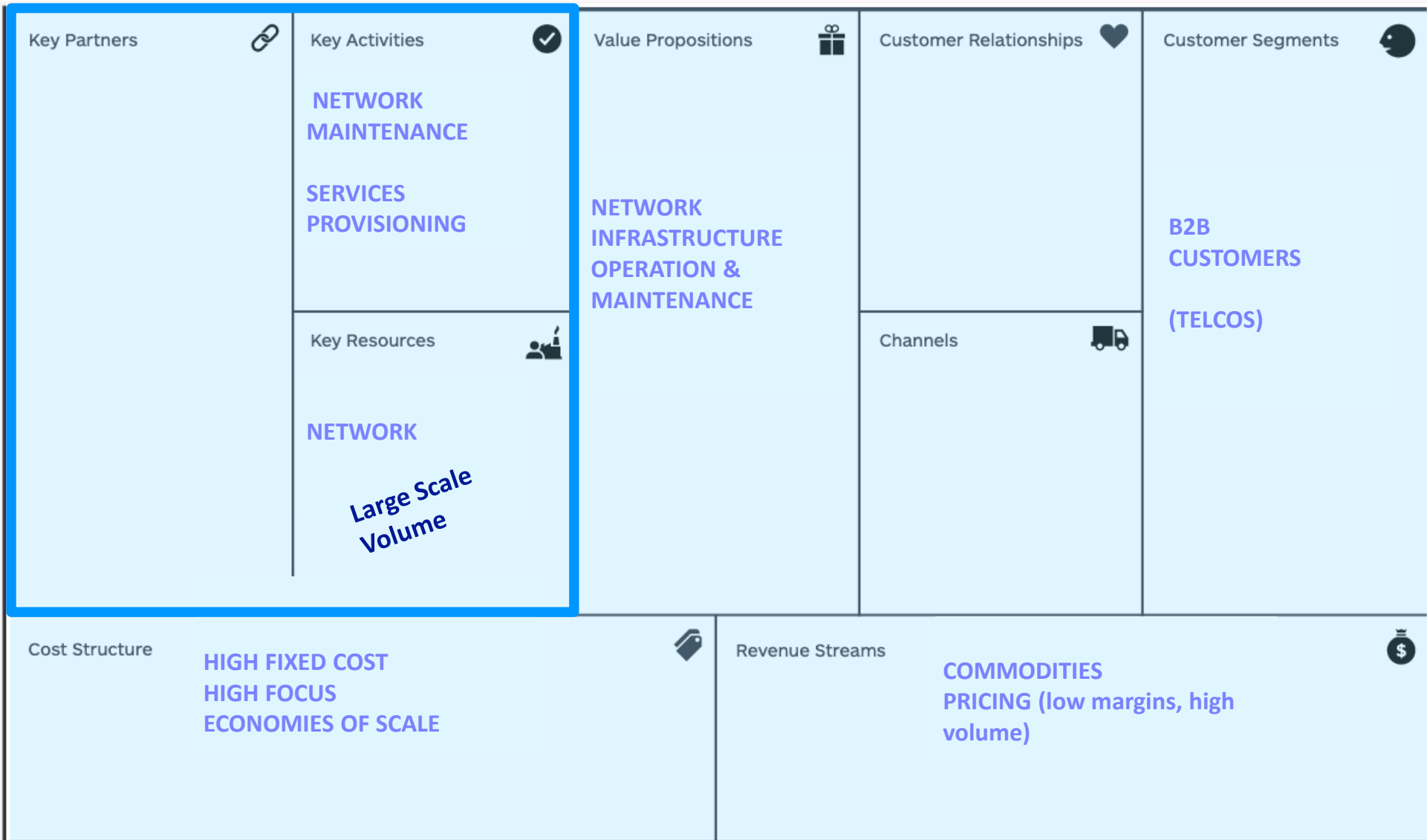


Product Innovation

Equipment Manufacturers

- Telcos such as France Telecom, KPN, and Vodafone have **outsourced operation and maintenance** of some of their networks to equipment manufacturers such as Nokia Siemens Networks, Alcatel-Lucent, and Ericsson.
- Equipment manufacturers **can run the networks at lower cost** because they service several telcos at a time and thus benefit from **economies of scale**.

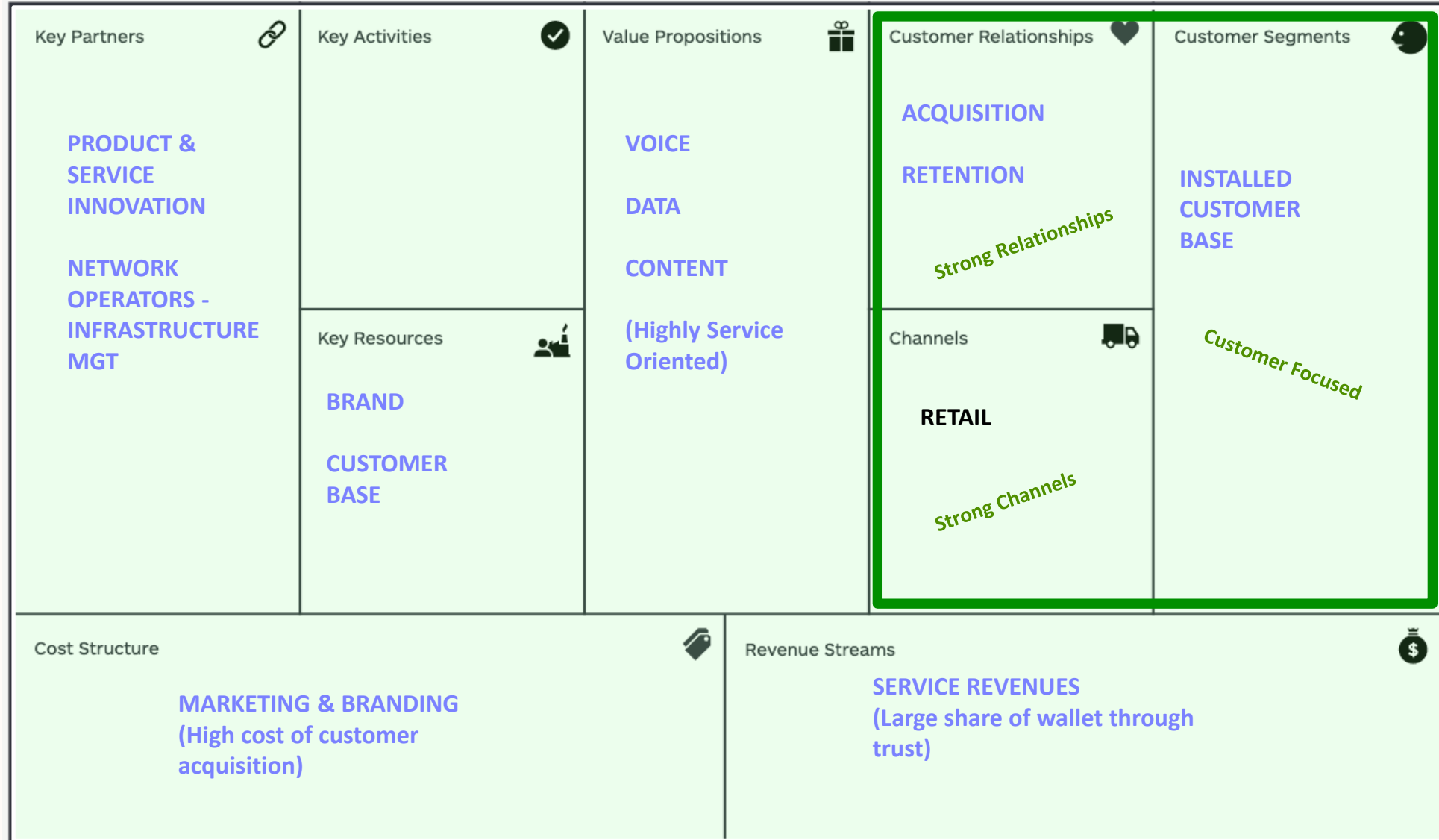
Equipment Manufacturers



Unbundled Telco

- After unbundling its infrastructure business, a telco can sharpen its focus on **branding** and **segmenting customers and services**.
- **Customer relationships** comprise its **key asset** and its **core business**.
- By concentrating on customers and increasing share of wallet with current subscribers, it can leverage investments made over the years **acquiring** and **retaining customers**.
- One of the first mobile telcos to pursue strategic unbundling was Bharti Airtel, now one of India's leading telcos.
 - It outsourced network operations to Ericsson and Nokia Siemens Networks and IT infrastructure to IBM, allowing the company to focus on its core competency: **building Customer Relationships**.

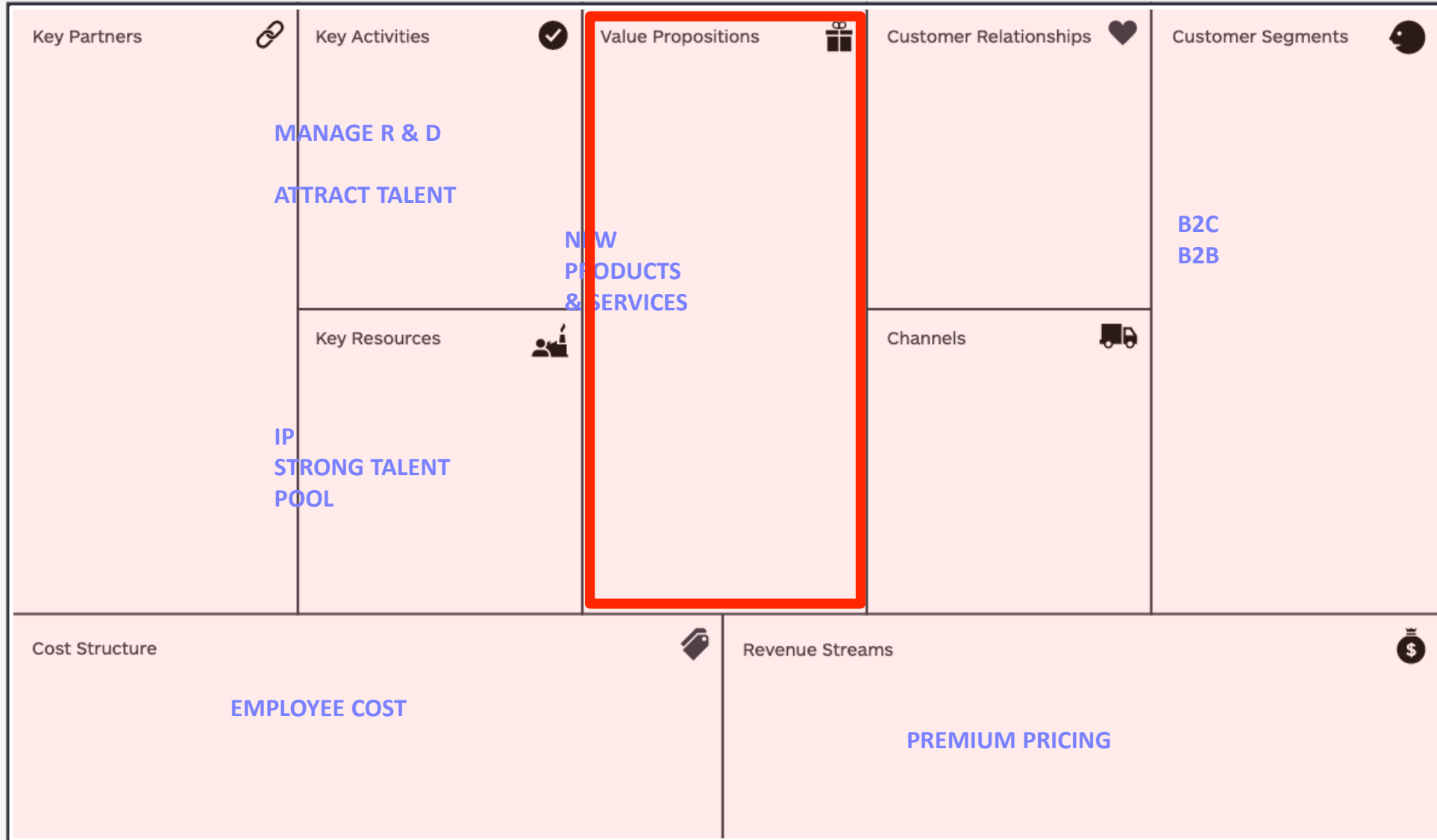
Unbundled Telco



Content Providers

- For [product and service innovation](#), the unbundled telco can turn to smaller, creative firms.
- Innovation requires creative talent, which smaller and more dynamic organizations typically do a better job of attracting.
- Telcos work with multiple third-parties that assure a constant supply of new technologies, services, and media content such as mapping, games, video, and music.
- Two examples are Mobilizy of Austria and Sweden's tat.
 - Mobilizy focuses on location-based service solutions for smartphones (it developed a popular mobile travel guide)
 - tat concentrates on creating advanced mobile user interfaces.

Content Providers



Business Model Patterns



- Unbundled
- **Long Tail**
- Multi-sided
- Free Advertising
- Freemium (RedHat, Skype)
- Open Business Models



What is the Long Tail?

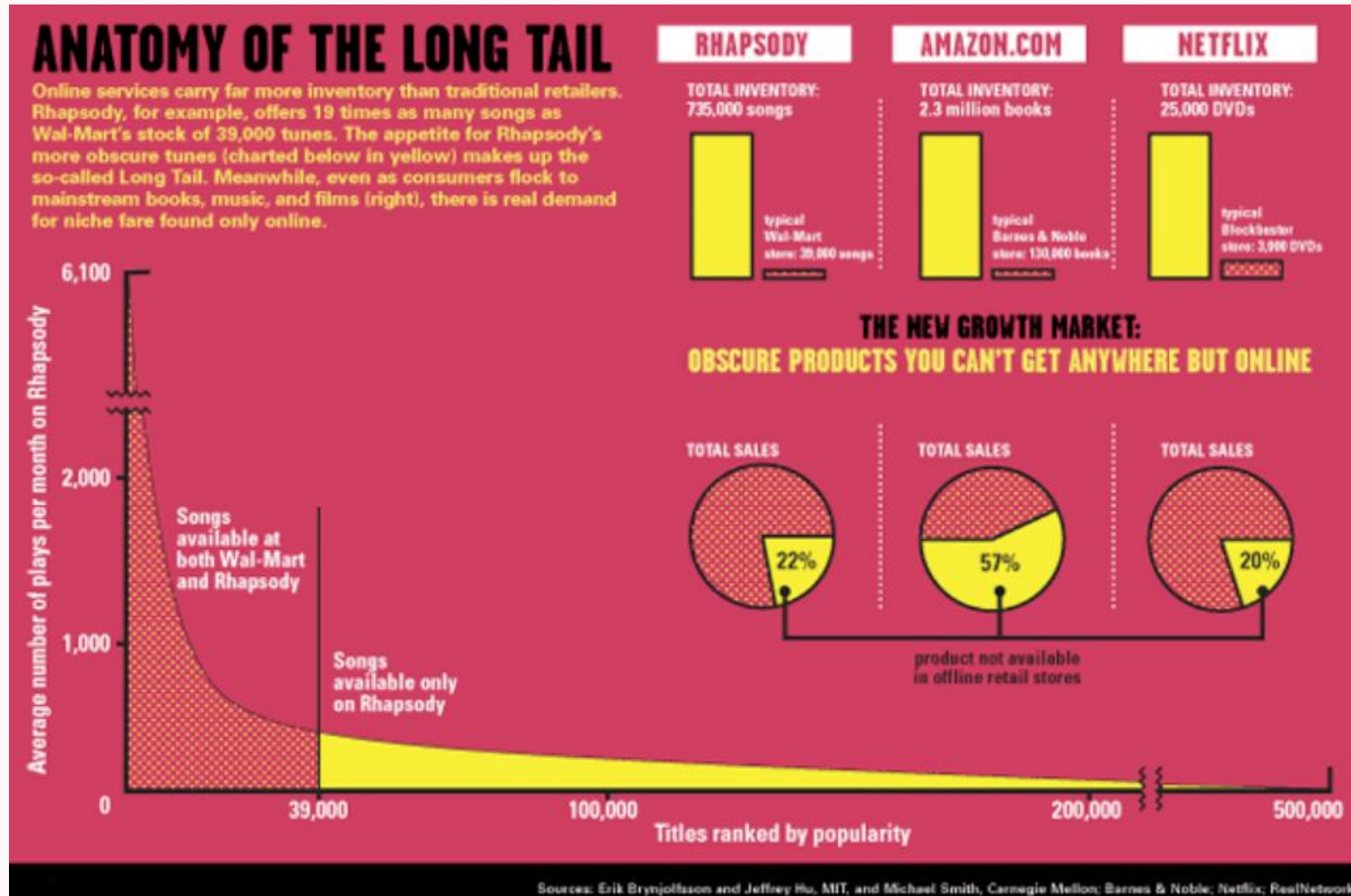
The Long Tail



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- Long tail business models are about selling less of more.
- They focus on offering a large number of niche products, each of which sells relatively infrequently.
 - Aggregate sales of niche items can be as lucrative as the traditional model whereby a small number of bestsellers account for most revenues.
- Long Tail business models require low inventory costs and strong platforms to make niche content readily available to interested buyers.

The Long Tail



<https://www.wired.com/2004/10/tail/>

The Long Tail

THE BIT PLAYER ADVANTAGE

Beyond bricks and mortar there are two main retail models – one that gets halfway down the Long Tail and another that goes all the way. The first is the familiar hybrid model of Amazon and Netflix, companies that sell physical goods online. Digital catalogs allow them to offer unlimited selection along with search, reviews, and recommendations, while the cost savings of massive warehouses and no walk-in customers greatly expands the number of products they can sell profitably.

Pushing this even further are pure digital services, such as iTunes, which offer the additional savings of delivering their digital goods online at virtually no marginal cost. Since an extra database entry and a few megabytes of storage on a server cost effectively nothing, these retailers have no economic reason not to carry *everything* available.



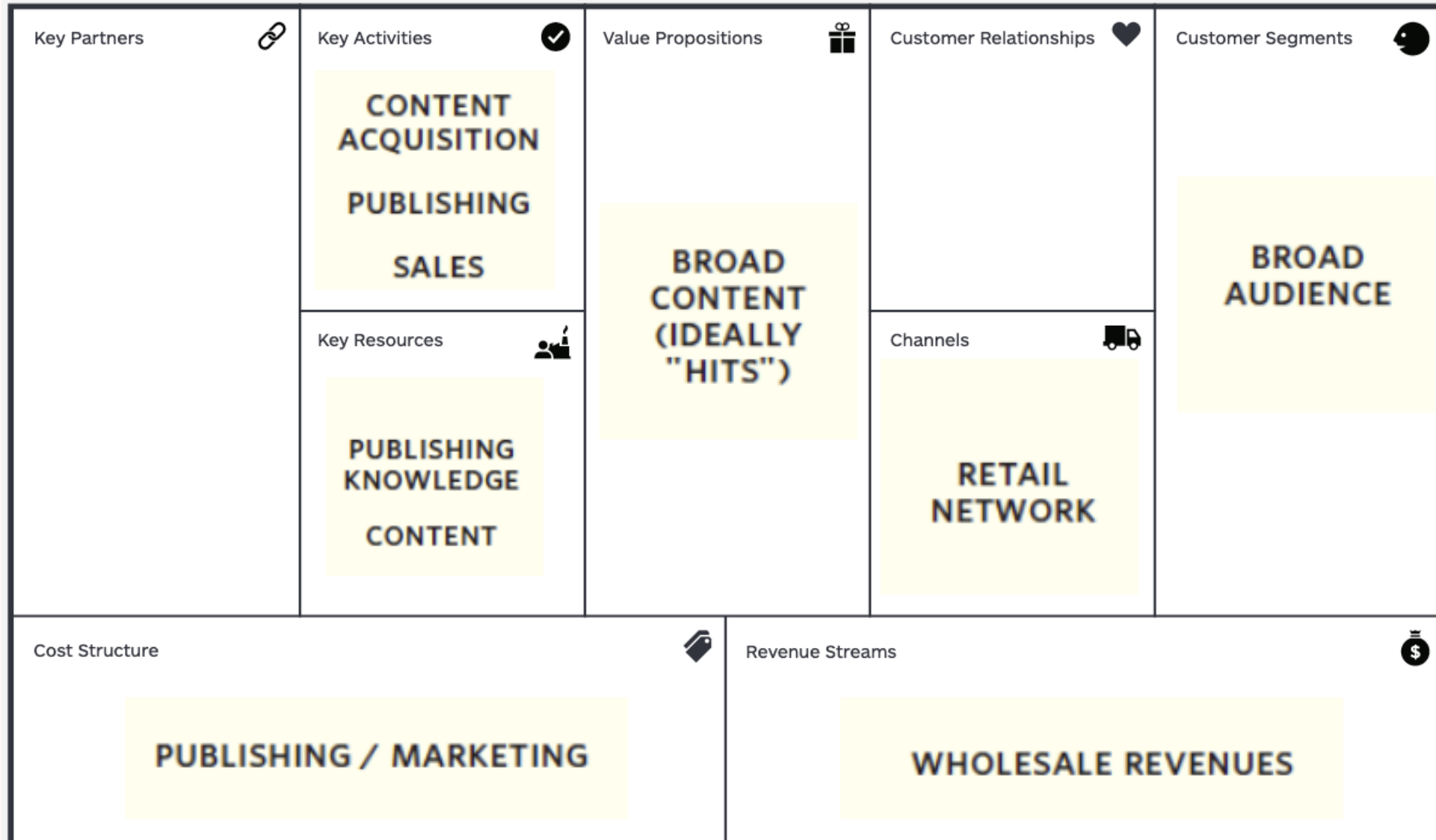
Factors contributing to Long Tail Business Models

- **Democratization of tools of production:** Falling technology costs gave individuals access to tools that were prohibitively expensive just a few years ago. Millions of passionate amateurs can now record music, produce short films, and design simple software with professional results.
- **Democratization of distribution:** The Internet has made digital content distribution a commodity, and dramatically lowered inventory, communications, and transaction costs, opening up new markets for niche products.
- **Falling search costs to connect supply with demand:** The real challenge of selling niche content is finding interested potential buyers. Powerful search and recommendation engines, user ratings, and communities of interest have made this much easier.

The Transformation of the Book Publishing Industry

- The traditional book publishing model is built on a **process of selection** whereby publishers screen many authors and manuscripts and select those that seem most likely to achieve minimum sales targets.
- Less promising authors and their titles are rejected because it would be unprofitable to copyedit, design, print, and promote books that sell poorly.
- Publishers are most interested in books they can print in **quantity** for sale to **large audiences**.

The Old Model

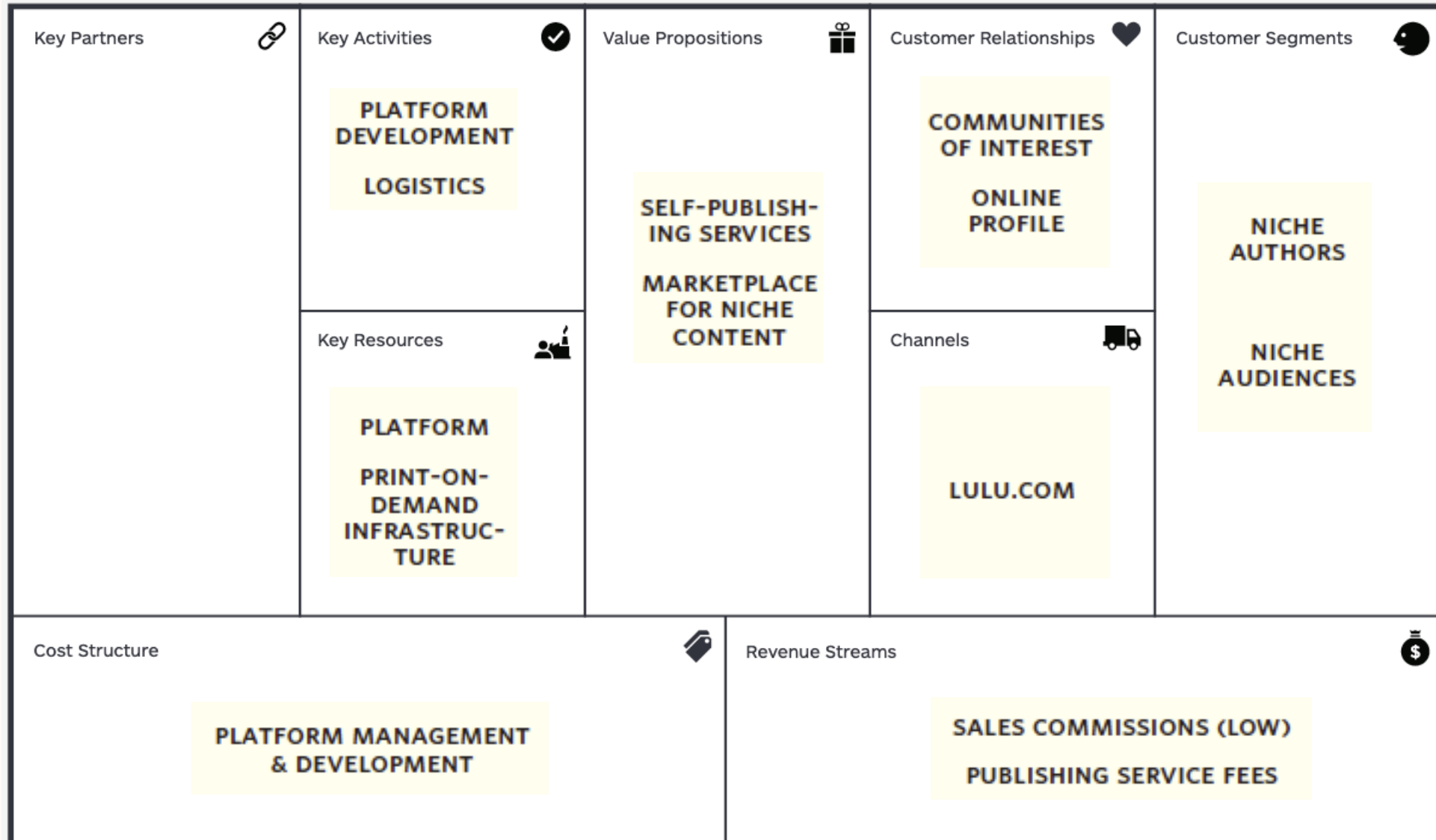


The New Model

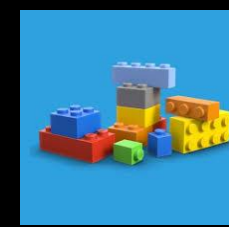


- Lulu.com turned the traditional bestseller-centric publishing model on its head by **enabling anyone to publish**.
- Lulu.com's business model is based on **helping niche and amateur authors bring their work to market**.
- It eliminates traditional entry barriers by providing authors the tools to craft, print, and distribute their work through an online marketplace.
- This contrasts strongly with the traditional model of selecting “market-worthy” work.
 - The more authors Lulu.com attracts, the more it succeeds, because authors become customers.
- Lulu.com is a **multi-sided platform** that serves and connects authors and readers with a Long Tail of user-generated niche content.
 - This works because books are printed only in response to actual orders.
 - The failure of a particular title to sell is irrelevant to Lulu.com, because such a failure incurs no costs.

The New Model



LEGO's Long Tail



- Intensifying competition in the toy industry forced LEGO to seek innovative new paths to growth:
 - Licensing the rights to use characters from blockbuster movies such as Star Wars, Batman, and Indiana Jones. While such licensing is expensive, it proved to be an impressive revenue generator.
 - In 2005 LEGO started experimenting with user-generated content. It introduced LEGO Factory, which allows customers to assemble their very own LEGO kits and order them online.

LEGO's Digital Designer



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- Using software called [LEGO Digital Designer](#), customers can:
 - Invent and design their own buildings, vehicles, themes, and characters, choosing from thousands of components and dozens of colors.
 - Design the box containing the customized kit.
- With LEGO Factory, LEGO turned passive users into active participants in the LEGO design experience.
 - This requires transforming the supply chain infrastructure, and because of low volumes LEGO has not yet fully adapted its support infrastructure to the new LEGO Factory model.
 - Instead, it simply tweaked existing resources and activities.










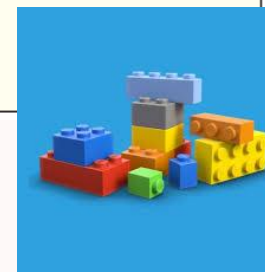
LEGO's Business Model



- LEGO took a step *beyond mass customization* by entering Long Tail territory.
- In addition to helping users design their own LEGO sets, LEGO Factory **sells user-designed sets online**.
- What's important for LEGO is that the **user-designed sets expand a product line** previously focused on a **limited number of best-selling kits**:
 - A first step towards implementing a Long Tail model as a complement—or even alternative—to a traditional mass-market model.

LEGO Factory: Customer-Designed Kits

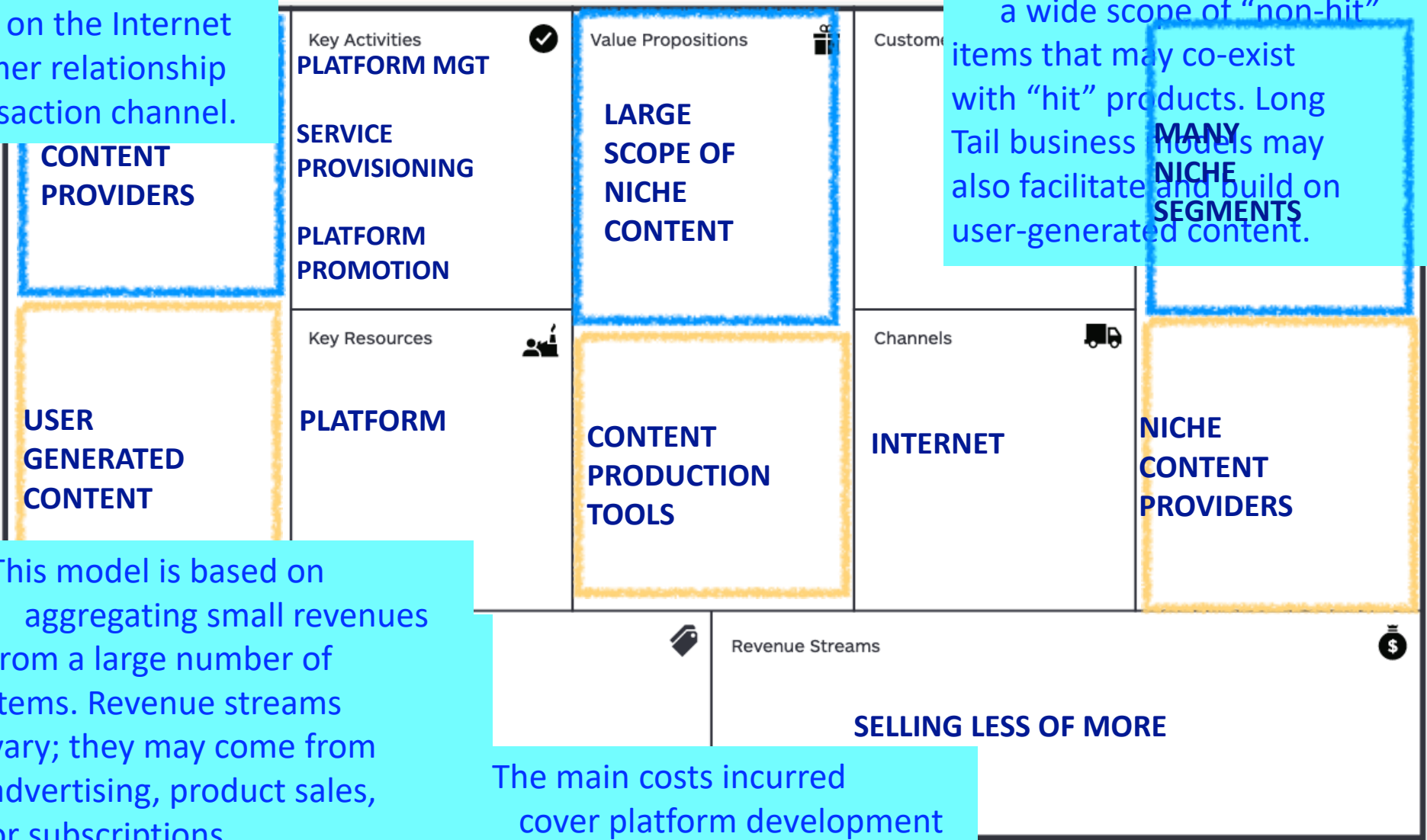
<p>KP </p> <p>Customers who build new LEGO designs and post them online become key partners generating content and value</p>	<p>KA </p> <p>LEGO has to provide and manage the platform and logistics that allow packaging and delivery of custom-made LEGO sets</p>	<p>VP </p> <p>LEGO Factory substantially expands the scope of the off-the-shelf kit offering by giving LEGO fans the tools to build, showcase, and sell their own custom-designed kits</p>	<p>CR </p> <p>LEGO Factory builds a Long Tail community around customers who are truly interested in niche content and want to go beyond off-the-shelf retail kits</p>	<p>CS </p> <p>Thousands of new, customer-designed kits perfectly complement LEGO's standard sets of blocks. LEGO Factory connects customers who create customized designs with other customers, thus becoming a customer match-making platform and increasing sales</p>
<p>C\$ </p> <p>LEGO Factory leverages production and logistics costs already incurred by its traditional retail model</p>		<p>R\$ </p> <p>LEGO Factory aims to generate small revenues from a large number of customer-designed items. This represents a valuable addition to traditional high-volume retail revenues</p>		



The Long Tail Pattern

Long Tail business models usually rely on the Internet as a customer relationship and/or transaction channel.

Niche content providers
 Long Tail business models focus on niche customers. It is characterized by offering a wide scope of "non-hit" items that may co-exist with "hit" products. Long Tail business models may also facilitate and build on user-generated content.



This model is based on aggregating small revenues from a large number of items. Revenue streams vary; they may come from advertising, product sales, or subscriptions.

The main costs incurred cover platform development and maintenance.



Business Model Patterns



- Unbundled
- Long Tail
- **Multi-sided**
- Free Advertising
- Freemium (RedHat, Skype)
- Open Business Models

Multi-sided platforms



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- Multi-sided platforms bring together two or more distinct but interdependent groups of customers.
- Such platforms are of value to one group of customers only if the other groups of customers are also present.
- The platform creates value by facilitating interactions between the different groups.
- A multi-sided platform grows in value to the extent that it attracts more users, a phenomenon known as the network effect.



Multi-sided platforms



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- Known by economists as [multi-sided markets](#), are an important business phenomenon that has existed for a long time
- Proliferated with the rise of information technology.
- Examples:
 - Visa credit card
 - Microsoft Windows operating system
 - Financial Times
 - Google
 - Wii and PSP game consoles,
 - Facebook etc
- They represent an increasingly important business model pattern.



Multi-sided platforms



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- They create value as intermediaries by connecting these groups:
 - Credit cards, for example, link merchants with cardholders;
 - computer operating systems link hardware manufacturers, application developers, and users;
 - Newspapers link readers and advertisers;
 - Video gaming consoles link game developers with players.
- The key is that the platform must attract and serve all groups simultaneously in order to create value.



Multi-sided platforms



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- The platform's **value** for a particular user group depends substantially on the **number of users on the platform's "other sides."**
- One way multi-sided platforms solve this problem is by subsidizing a Customer Segment.
- Though a platform operator incurs costs by serving all customer groups, it often decides to lure one segment to the platform with an inexpensive or free Value Proposition in order to subsequently attract users of the platform's "other side."
- One difficulty multi-sided platform operators face is understanding which side to subsidize and how to price correctly to attract customers.



Key questions



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- Operators of multi-sided platforms must ask themselves:
 - Can we attract sufficient numbers of customers for each side of the platform?
 - Which side is more price sensitive? Can that side be enticed by a subsidized offer?
 - Will the other side of the platform generate sufficient revenues to cover the subsidies?



Google's business model



- Prior to Google, the business model or “value capture framework” of search engines was to fit as many banner advertisements on a page as possible, and to charge as much as possible for them.
- Google, used simple text ads and targeted them based on the keywords used in a particular search.
- Advertisers found this technique more attractive than banner ads, because they had better data on the effectiveness of individual ads, and could make more effective ads based on the data.
 - This [highly innovative business model](#) is what made Google the juggernaut it is today, not the technical proficiency of its search algorithm.
- Ironically, this idea of commercially viable contextual search was not Google's but rather came from Overture, which was the first to bring to the commercial market a credible keyword-based advertising solution under the name of GoTo.com.
 - Google simply embraced the idea more enthusiastically and executed a rollout plan that made it the de facto leader in online advertising.

Google's business model



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- The heart of Google's business model is its Value Proposition of providing extremely targeted text advertising globally over the Web.
- Through a service called AdWords, advertisers can publish advertisements and sponsored links on Google's search pages (and on an affiliated content network as we will later see).
- The ads are displayed alongside search results when people use the Google search engine.
- Google ensures that only ads relevant to the search term are displayed.
- The service is attractive to advertisers because it allows them to tailor online campaigns to specific searches and particular demographic targets.
- The model only works, though, if many people use Google's search engine. The more people Google reaches, the more ads it can display and the greater the value created for advertisers.



Google's business model



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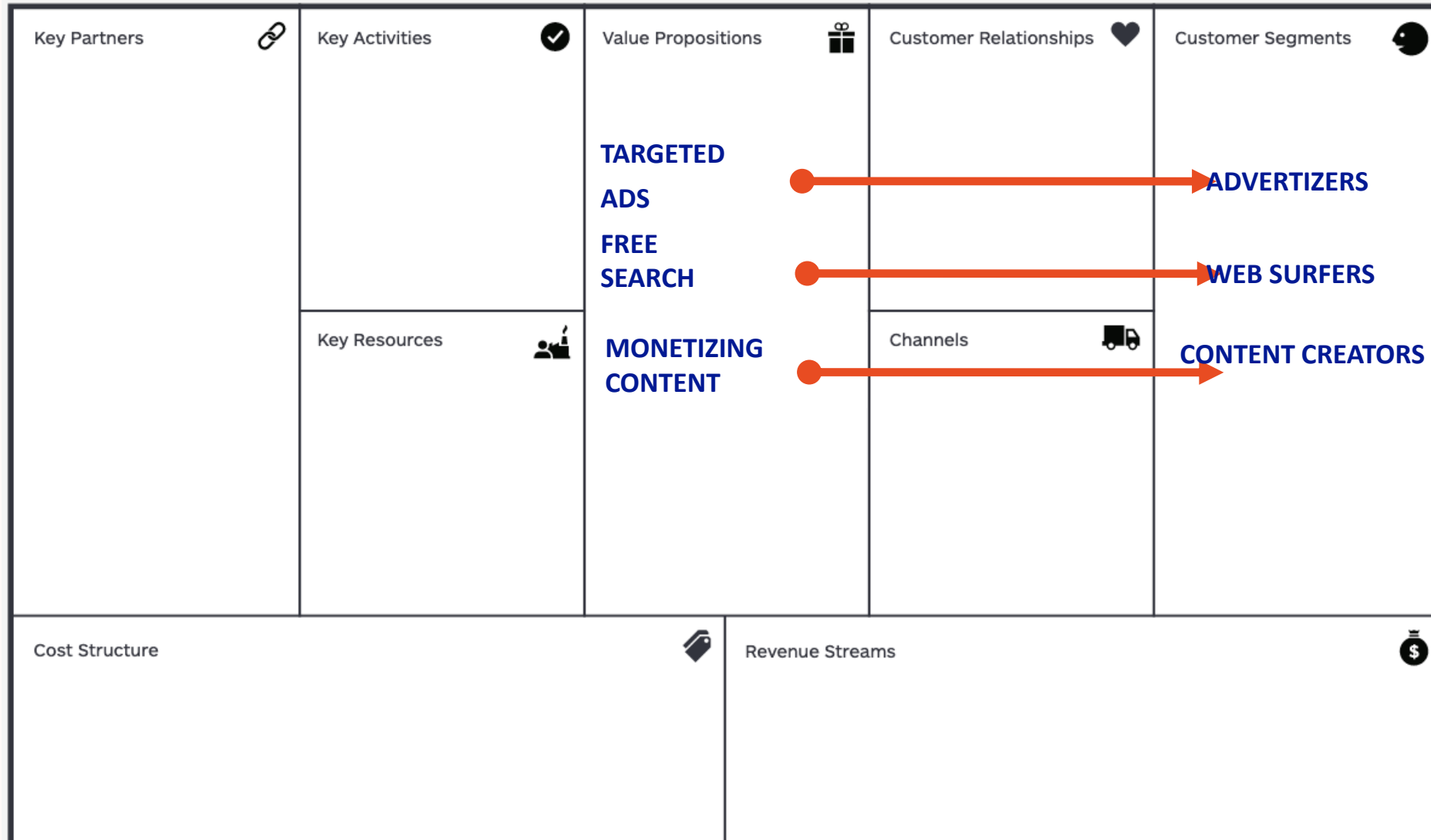
- Google's Value Proposition to advertisers depends heavily on the number of customers it attracts to its Web site.
- So Google caters to this second group of consumer customers with a powerful search engine and a growing number of tools such as Gmail (Web based e-mail), Google maps, etc. To extend its reach even further, Google designed a third service that enables its ads to be displayed on other, non- Google Web sites.
- This service, called AdSense, allows third parties to earn a portion of Google's advertising revenue by showing Google ads on their own sites.
- AdSense automatically analyzes a participating Web site's content and displays relevant text and image ads to visitors. The Value Proposition to these third party Web site owners, Google's third Customer Segment, is to enable them to earn money from their content.



Google's Business Model



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Google's Revenue Model



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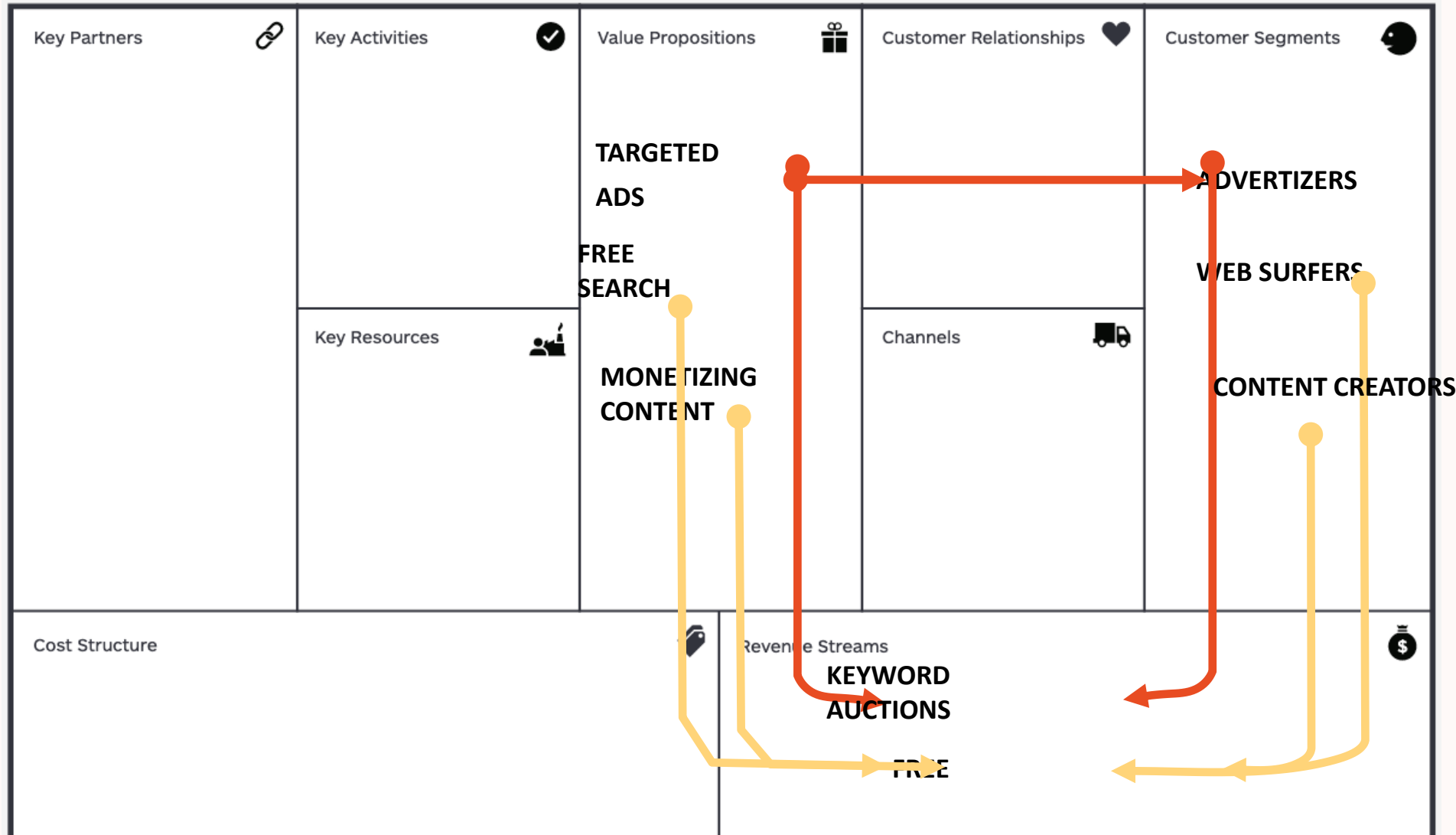
- As a multi-sided platform Google has a very distinct revenue model:
 - It makes money from one Customer Segment, **advertisers**, while subsidizing free offers to two other segments: **Web surfers** and **Content owners**.
- This is logical because **the more ads** it displays to Web surfers, the **more it earns from advertisers**.
- **Increased advertising earnings**, in turn, motivates **even more content owners to become AdSense partners**.
- Advertisers don't directly buy advertising space from Google. They bid on ad-related keywords associated with either search terms or content on third party Web sites.
- The bidding occurs through an AdWords auction service: the more popular a keyword, the more an advertiser has to pay for it.
- The substantial revenue that Google earns from AdWords allows it to continuously improve its free offers to search engine and AdSense users.



Google's Revenue Model



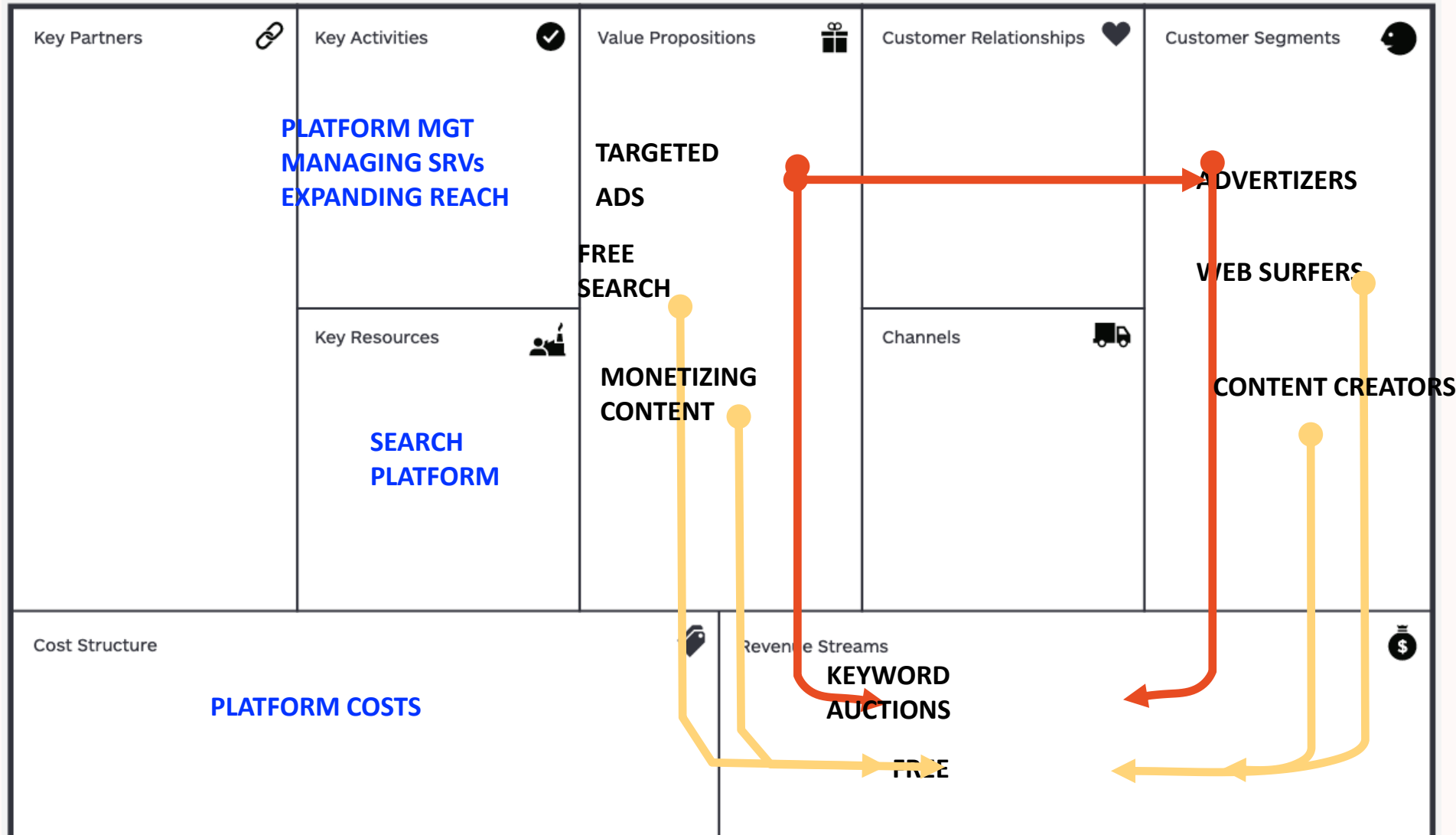
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Google's Key Resources



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Apple's Evolution into a Platform Operator

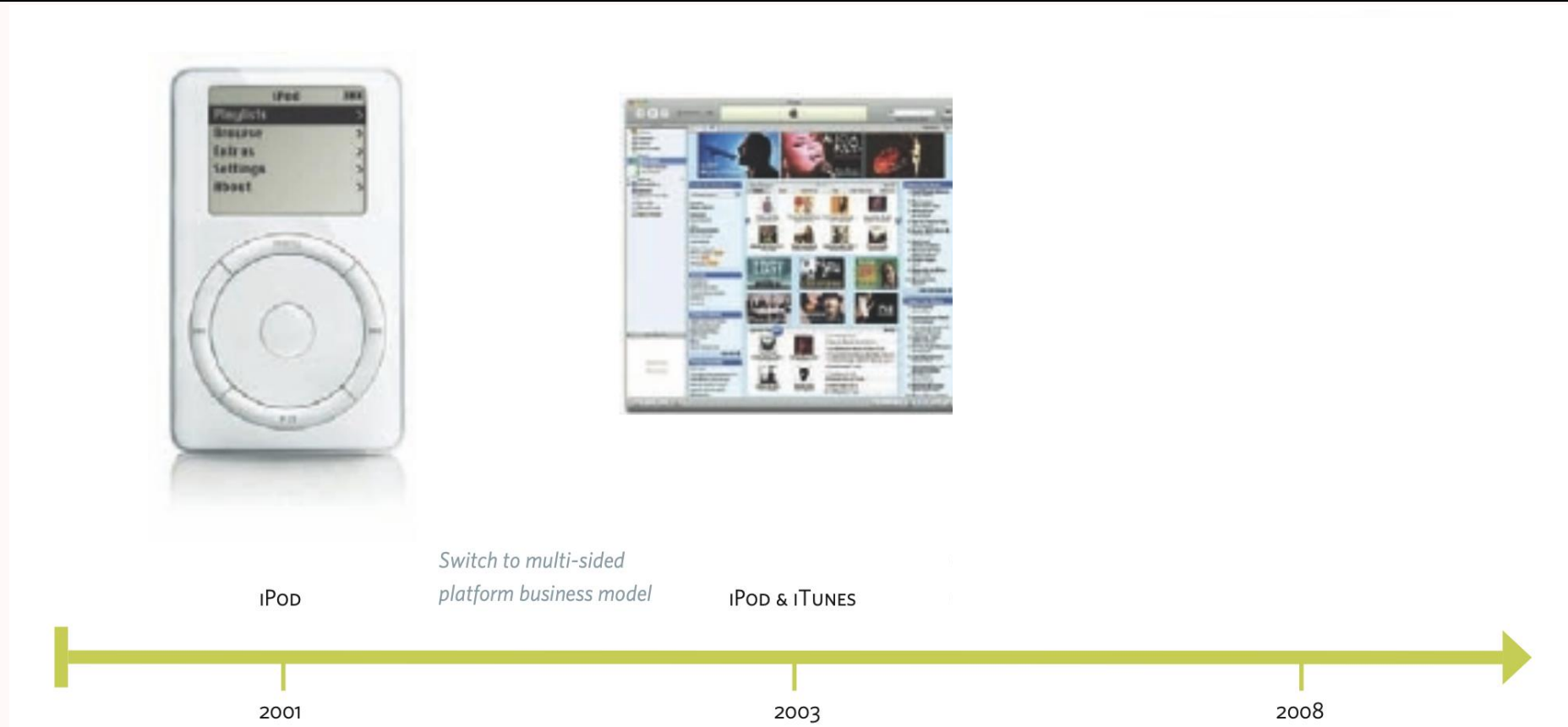


iPod



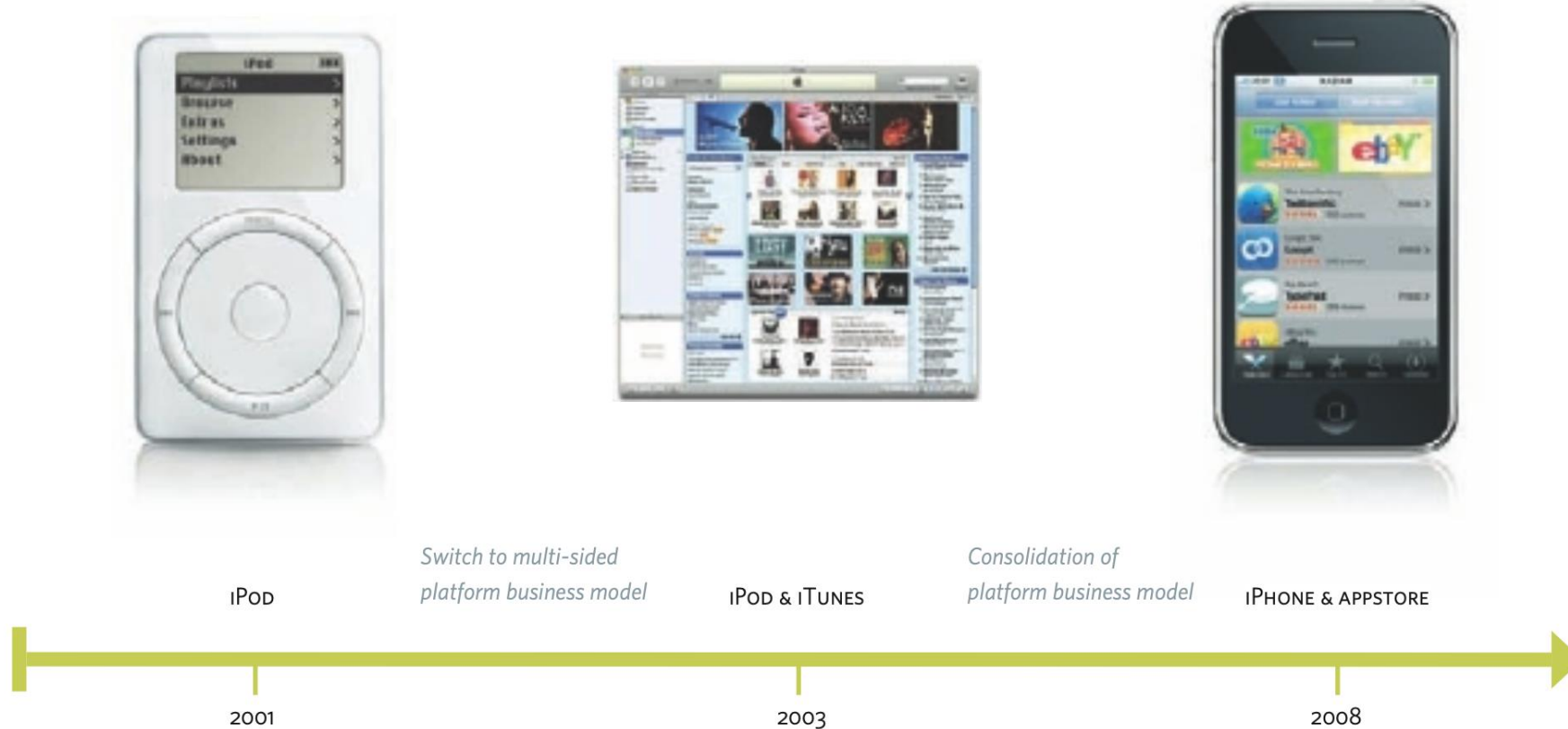
Apple introduced the iPod in 2001 as a stand- alone product. Users could copy their CDs and download music from the Internet onto the device. The iPod represented a technology platform for storing music from various sources. At this point, though, Apple was not exploiting the platform aspect of the iPod in its business model.

Apple's Evolution into a Platform Operator



In 2003 Apple introduced the iTunes Music Store, which was closely integrated with the iPod. The store allowed users to buy and download digital music in an extremely convenient way. The store was Apple's first attempt at exploiting platform effects. iTunes essentially connected "music rightsholders" directly with buyers. This strategy catapulted Apple to its position today as the world's largest online music retailer.

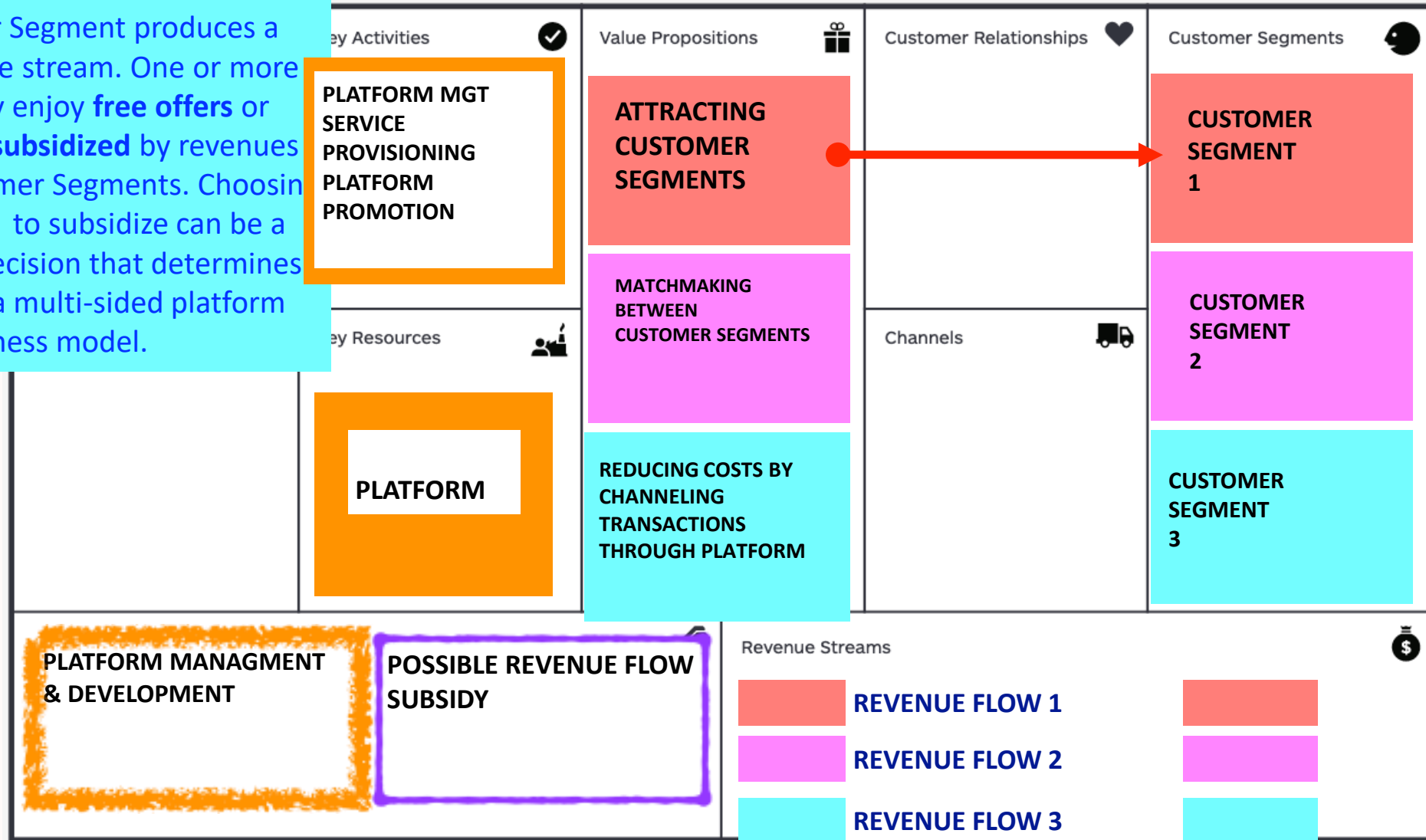
Apple's Evolution into a Platform Operator



In 2008 Apple consolidated its platform strategy by launching its App Store for the highly popular iPhone. The App Store allows users to browse, buy, and download applications directly from the iTunes Store and install them on their iPhones. Application developers must channel sales of all applications through the App Store, with Apple collecting a 30 percent royalty on each application sold.

Multi-sided platform pattern

Each Customer Segment produces a different revenue stream. One or more segments may enjoy **free offers** or **reduced prices subsidized** by revenues from other Customer Segments. Choosing which segment to subsidize can be a crucial pricing decision that determines the success of a multi-sided platform business model.



Business Model Patterns



- Unbundled
- Long Tail
- Multi-sided
- **Free Advertising**
- Freemium (RedHat, Skype)
- Open Business Models

Free is King

- Any marketer or economist will confirm that the **demand generated at a price of zero** is **many times higher** than the **demand generated at one cent** or any other price point.
- «Σαν το μούχτι εν εσσει»



Free as Business Model

- In the free business model at least **one substantial Customer Segment** is able to **continuously** benefit from a **free-of-charge offer**.
- Non-paying customers are financed by another part of the business model or by another Customer Segment.
- In recent years, free offers have exploded, particularly over the Internet.



iCloud



Tik Tok



Red Hat



Evernote



Free as a Business Model

- The question, of course, is how can you systematically offer something for free and still earn substantial revenues?
- Part of the answer is that **the cost of producing certain giveaways**, such as online data storage capacity, **has fallen dramatically**.
- To make a profit, an organization offering free products or services **must still generate revenues** somehow.

Free as a business model

- The rise of new free-of-charge offers is closely related to the fundamentally different economics of digital products and services.
- For example, creating and recording a song costs an artist time and money, but the cost of digitally replicating and distributing the work over the Internet is **close to zero**.
- Hence, an artist can promote and deliver music to a global audience over the Web, as long as he or she finds other Revenue Streams, such as concerts and merchandising, to cover costs.

Free Business Model patterns

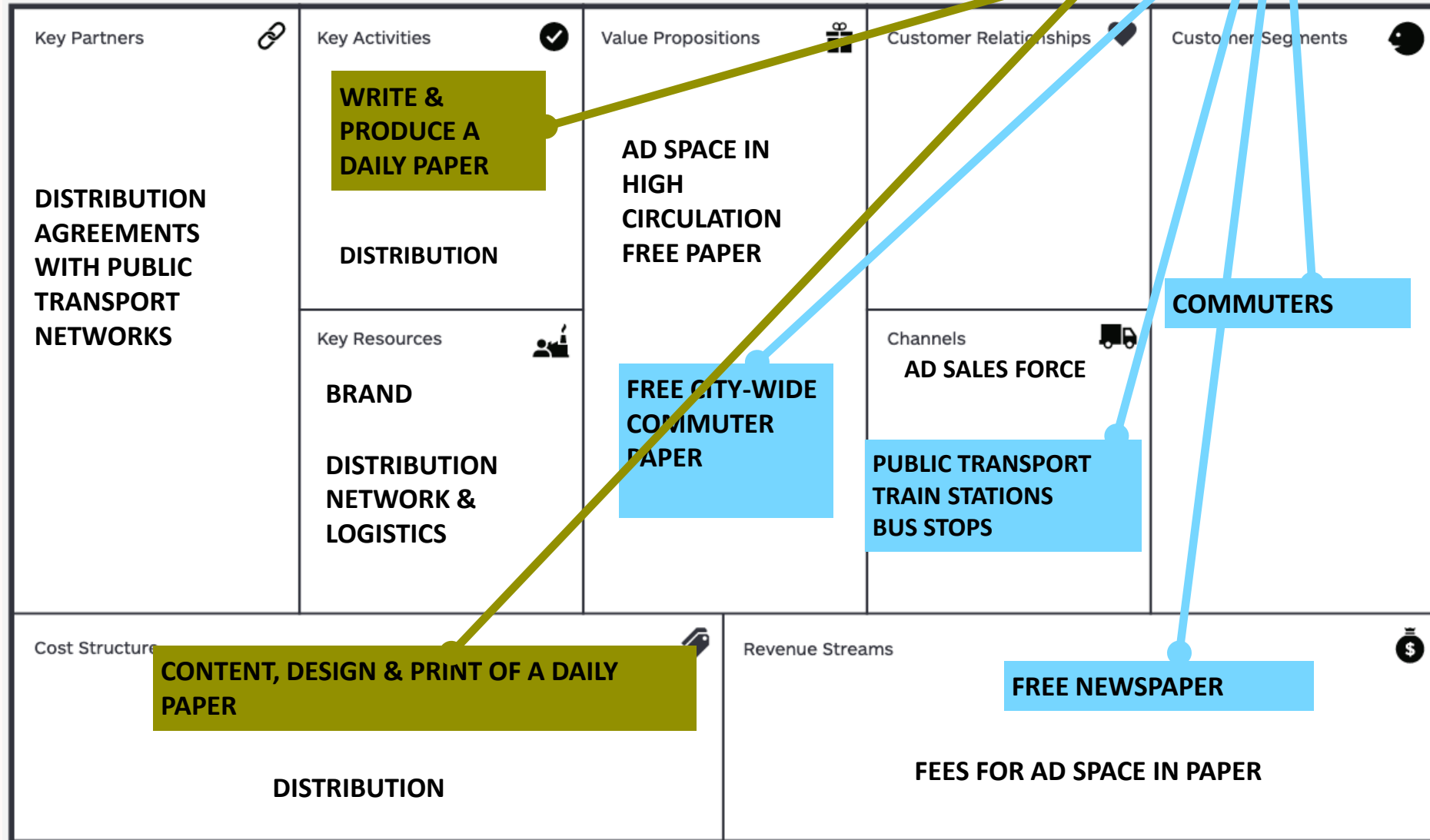
- There are several patterns that make integrating free products and services into a business model possible. The most common are:
 - Free offer based on multi-sided platforms: **advertising**-based.
 - Free basic services with optional premium services: the so-called “**freemium**” model.
 - The “**bait & hook**” model whereby a free or inexpensive initial offer lures customers into repeat purchases.

Advertising: A Multi-Sided Platform Model - Metro Newspaper Case Study

- **Metro** is a free newspaper that started in Stockholm and is now available in dozens of cities around the world.
- Metro modified the traditional daily newspaper model:
 1. It offered the paper for **free**.
 2. It focused on distributing in **high-traffic commuter zones and public transport networks** by hand and with **self-service racks**. This required Metro to develop its own distribution network, but enabled the company to **quickly achieve broad circulation**.
 3. It **cut editorial costs** to produce a paper just good enough to entertain younger commuters during their short rides.

Metro Business Model

Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

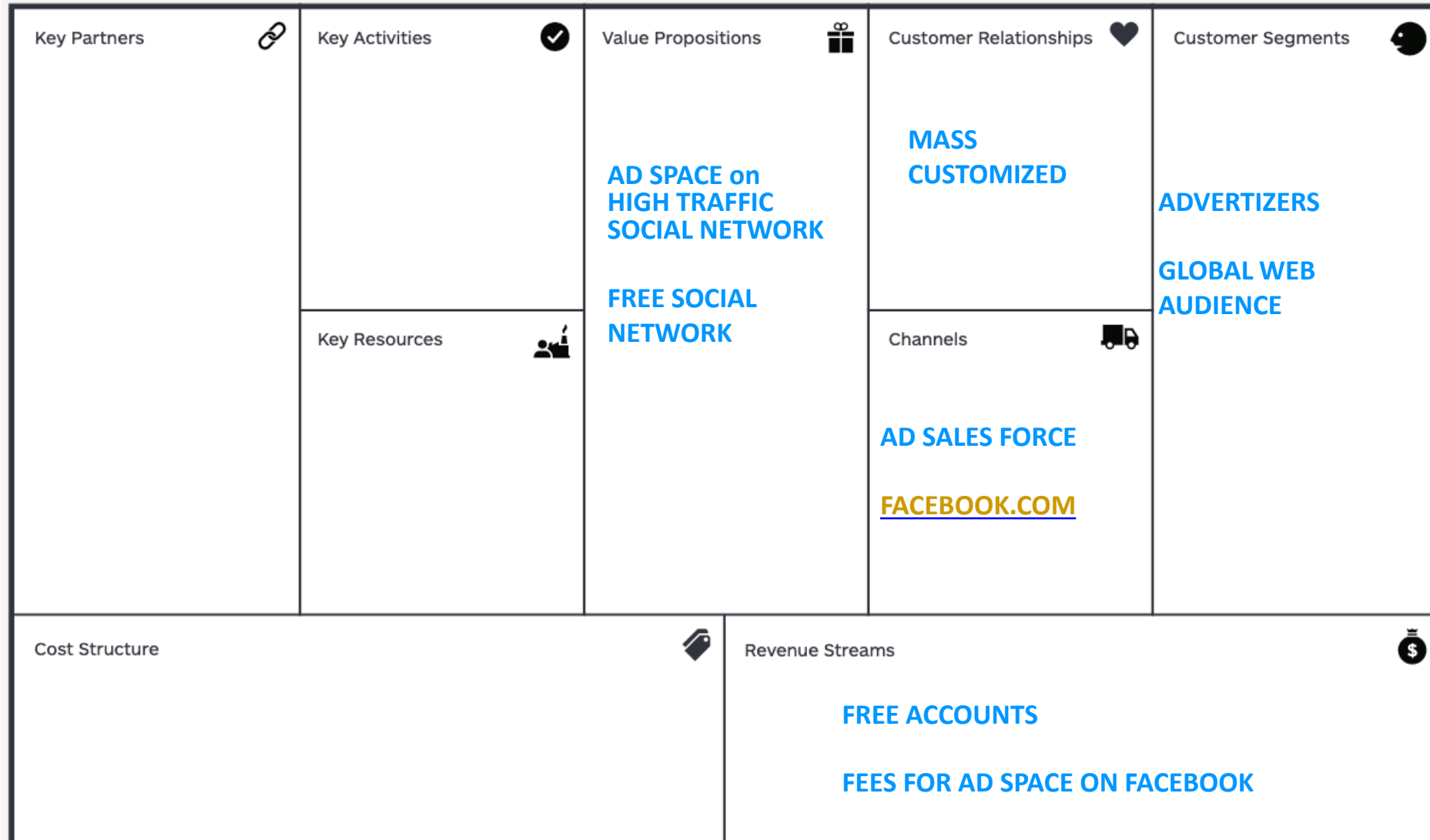


ASSURE HIGH CIRCULATION
MINIMIZE COST

Beware

- A large number of users does not automatically translate into strong advertising revenues, as the social networking service **Facebook** has demonstrated.
- The company claimed **over 200 million active users as of May 2009**, and said **more than 100 million log on to its site daily**.
- Yet **users were less responsive to Facebook advertising** than to traditional Web ads, according to industry experts.
- While advertising is only one of several potential Revenue Streams for Facebook, **clearly a mass of users did not guarantee huge advertising revenues (circa 2010)**.

Facebook (2010)

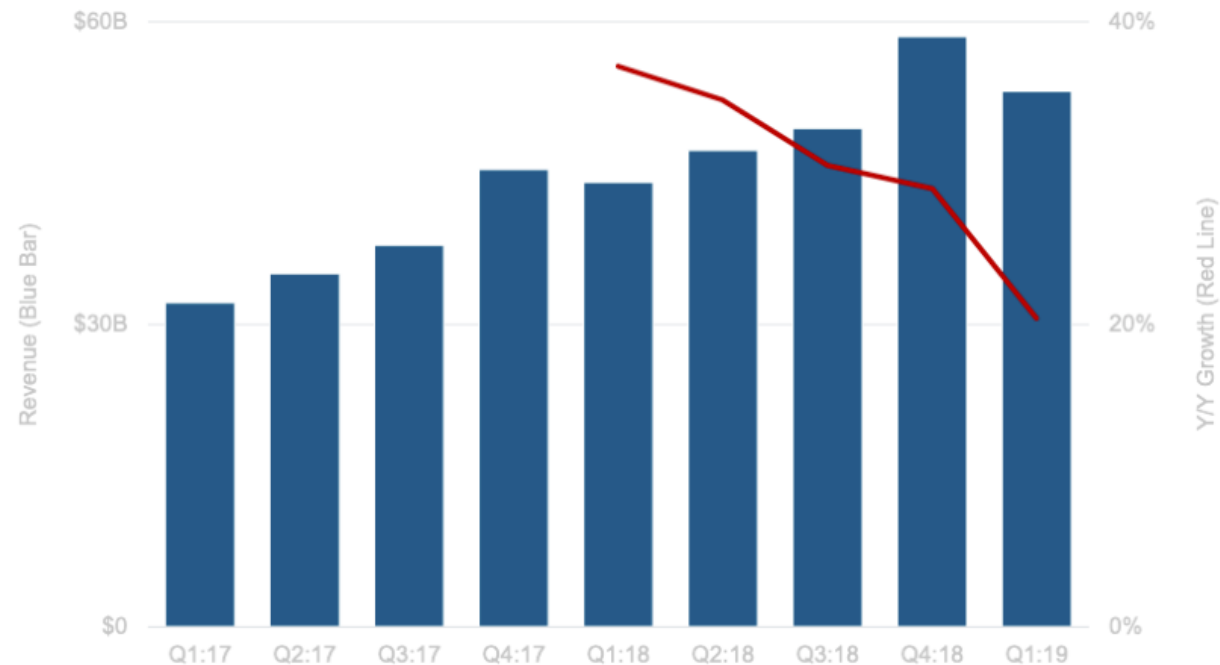


Facebook: today?



Internet Ad Revenue (Quarterly – Leading USA Platforms) =
Decelerating +20% vs. +29% (Y/Y – Q1 vs. Q4)

Leading USA-Based Online Ad Platform Revenue, Global



Source: Mary Meeker, Internet Trends Report 2019.

Facebook: today?

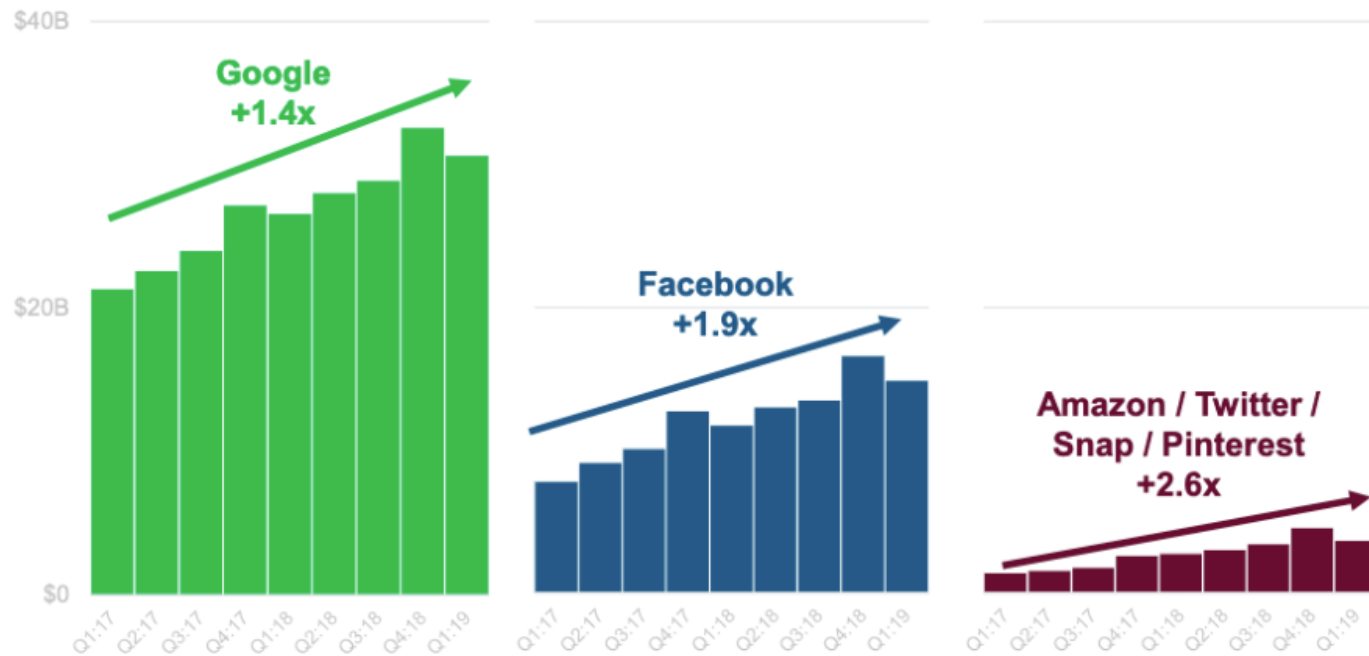
Internet Ad Platforms =

Google + Facebook Lead But Others Gaining Share



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Select USA-Based Advertising Platform Revenue, Global



R

Source: Mary Meeker, Internet Trends Report 2019.

let, Wiley 2013.



Free Advertising Pattern

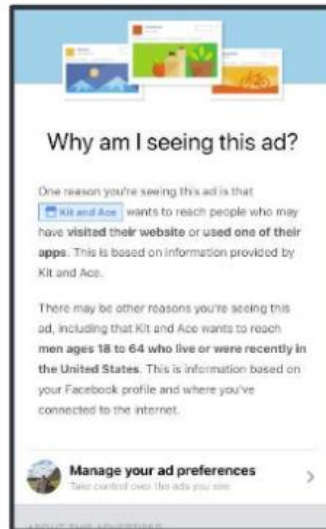


Ad evolution

Ad Share Gain Drivers =
Better Targeting + New Creative + Commerce + High-Relevance

Facebook

Targeting
Audience Customization



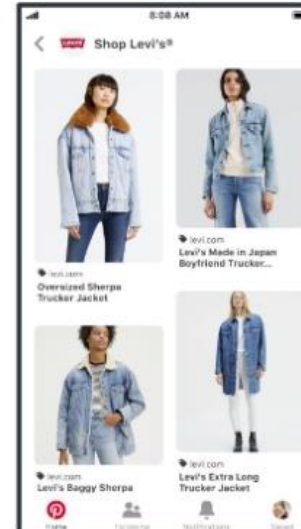
YouTube

Machine Learning
Automatically Time-Edited Clips



Pinterest

Commerce
Shoppable Catalogs



Twitter

High-Relevance
Promoted Tweets



Source: Mary Meeker, Internet Trends Report 2019.

2019 INTERNET TRENDS REPORT

BOND

INTERNET TRENDS 2019

Mary Meeker

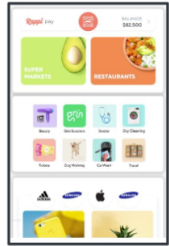
June 11 @ Code 2019



Latin America (Rappi) = Digitizing Delivery... 8MM Orders + ~2x in Four Months

Rappi

Digital Delivery Platform

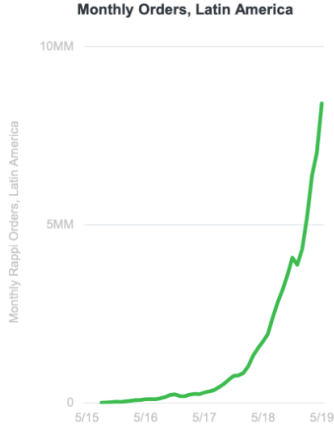


Latin America has a great delivery culture. Cities are chaotic, delivery was super manual & not all stores offered it — there was plenty of inefficiency & high costs.

We thought: what if we digitized this ecosystem & started to deliver anything in under 30 minutes for less than a dollar?

Simon Borrero, Sebastian Mejia, Felipe Villanarín, Andrés Bilbao, Guillermo Plaza – Co-Founders, 6/19

Monthly Orders, Latin America




Source: Rappi (6/19)

BOND Internet Trends 2019 59

China (Meituan Dianping) = Connecting Consumers & Local Businesses... ~6MM Merchants + ~2x in Two Years

Meituan Dianping

Fulfillment

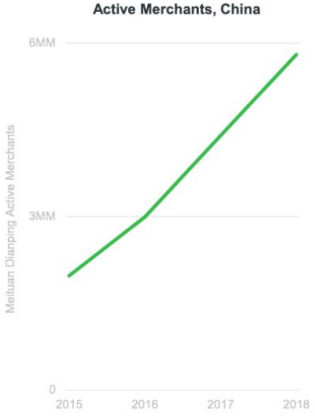


Traditionally, local merchants in China — mostly micro & small businesses — have very few marketing channels available to them. We have become the go-to platform for local search & consumer service discovery.

Based on our data analytics, we leveraged user search queries to connect them with high-quality local merchants who match their preference. We are able to help merchants reach a vast quantity of potential consumers with a low upfront cost & high conversion rates.

Xing Wang – Co-Founder, Chairman & CEO, Meituan Dianping, 3/19

Active Merchants, China



Source: Meituan Dianping Release (2015-2019) Note: An active merchant is a merchant who has completed at least one transaction, purchased online marketing services, processed a payment through Meituan Dianping's service, or generated an order through Meituan Dianping's ERP system.


BOND Internet Trends 2019 58

Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

China (Pinduoduo) = Connecting Consumer Preferences & Manufacturers... 443MM Buyers + ~2x in Five Quarters

Pinduoduo

Group Discovery / Buying

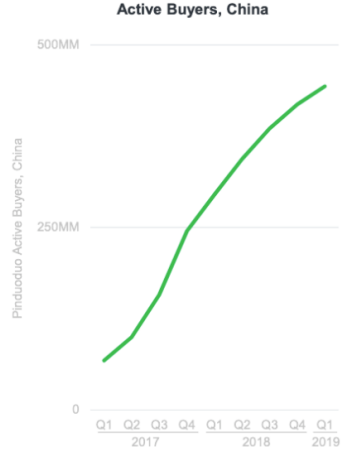


We call it **consumer-to-manufacturer**, where we understand the users' needs first & enable upstream providers, be it farmers, manufacturers, etc. to produce appropriate products for our users. This is different from how the current system works, where upstream producers design, manufacture & sell without necessarily being in tune with the changing needs of their targeted users.

As we add more users to the network & also gain more data points through their increasing interaction with our platform, we can further refine our engine to deliver an even better user experience that keeps up with our users' evolving preferences.

Pinduoduo – Q4:18 Earnings Call, 3/19

Active Buyers, China




Source: Pinduoduo SEC Filings (2018), Q4:18 Earnings Call (3/19) & Morgan Stanley. Note: An active buyer is a buyer who has completed at least one transaction in the past 12 months.

BOND Internet Trends 2019 57

Southeast Asia (Shopee) = Mobile-First Social Commerce... \$10B in Gross Merchandise Value + ~2x in One Year

Sea Limited / Shopee

Mobile / Social Shopping

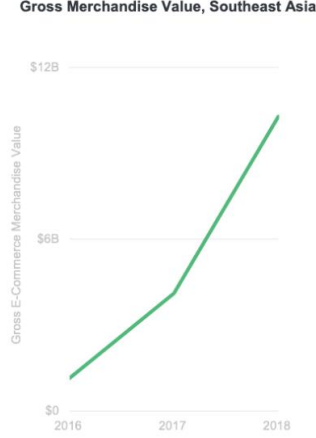


Shopee's ability to grow rapidly over a short period of time is a testament to its focus on building a mobile-centric, socially engaging marketplace with emphasis on high margin products from a highly diverse seller base.

...Shopee has combined its marketplace offering with integrated payments, logistics infrastructure & a comprehensive set of services.

Forrest LI – CEO, SEA Limited, 2/19

Gross Merchandise Value, Southeast Asia



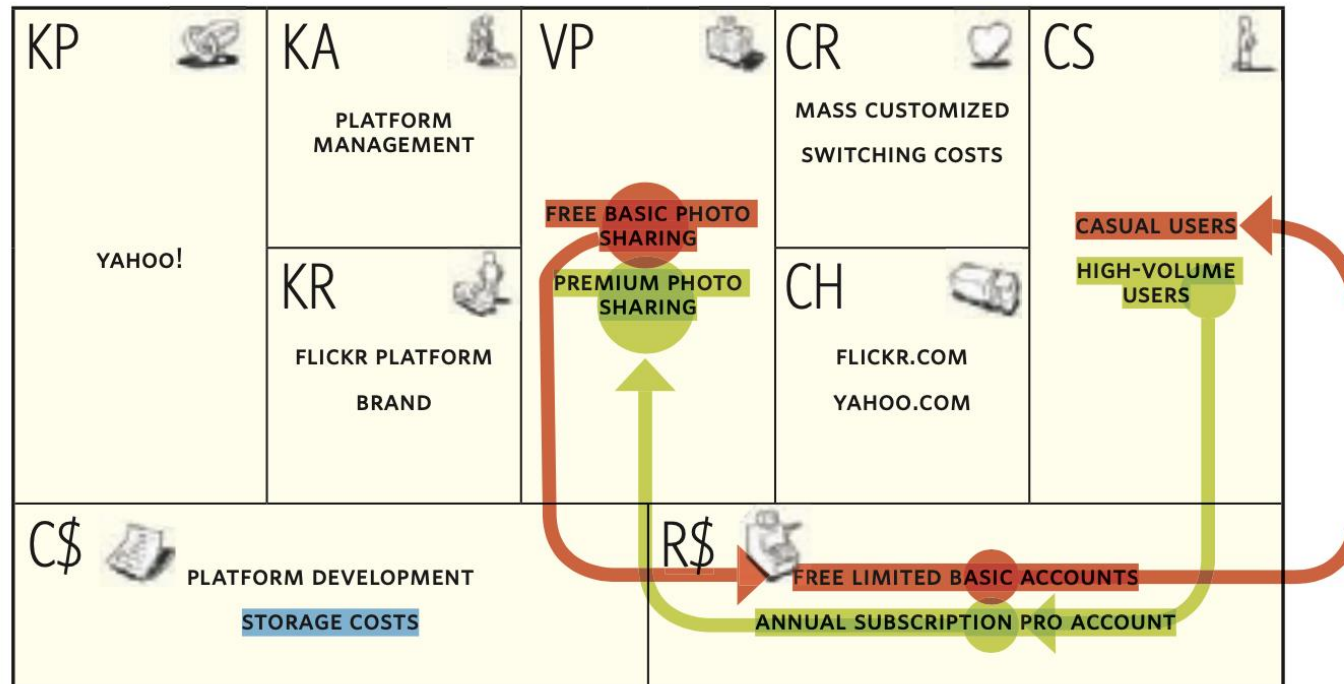
Source: Sea Limited Q1:19 Earnings (2/19), Goldman Sachs Investment Research. Sea Limited operates commerce in Malaysia, Singapore, The Philippines, Thailand, Taiwan, Indonesia & Vietnam.

BOND Internet Trends 2019 61

Freemium

- The term “freemium” was coined by Jarid Lukin and popularized by venture capitalist Fred Wilson on his blog.
- It stands for business models that **blend free basic services with paid premium services**.
- The freemium model is characterized by a **large user base** benefiting from a free, no-strings-attached offer.
- Most of these users never become paying customers; only a small portion, **usually less than 10 percent of all users, subscribe to the paid premium services**.
 - This small base of paying users subsidizes the free users.
 - This is possible because of the low marginal cost of serving additional free users.
- In a freemium model, the key metrics to watch are:
 1. the average cost of serving a free user, and
 2. the rates at which free users convert to premium (paying) customers.

Flickr



Fixed and sunk costs
related to platform
development

Variable cost
depending on number
of photos stored

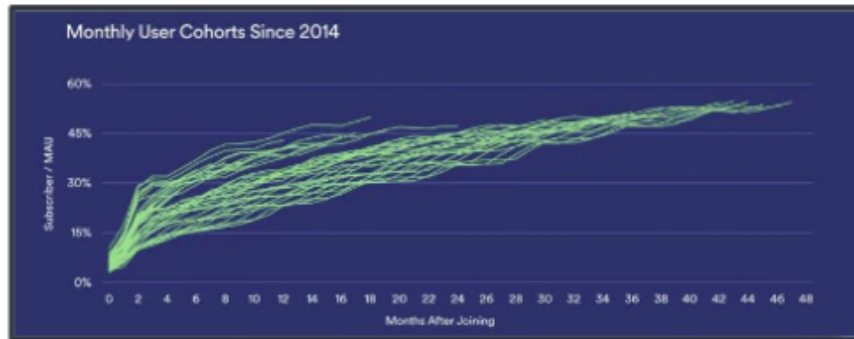


Large base of basic
accounts for casual users

Small base of paying
"pro" users

Happy Customers... Spotify = Free User Conversion to Paid Subscribers...

Free Ad-Supported Product...

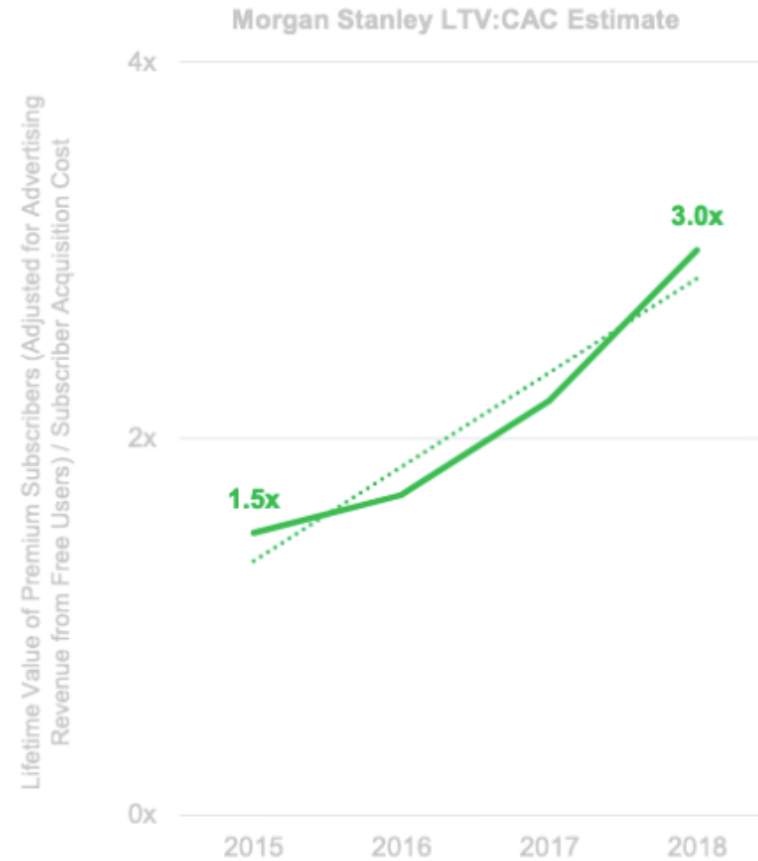


Our freemium model accounts for ~60% of our gross added premium subscribers... the ad-supported service is a subsidy program that offsets costs of new subscriber acquisition.

Developing a better user experience produces by far the most viral effect & impact when investing in growth. Engagement drives conversion from free consumption to paid subscription.

Barry McCarthy – CFO, Spotify, 3/18

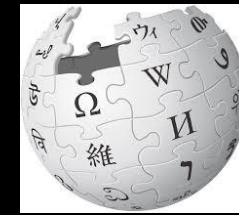
...Rising LTV / Subscriber Acquisition Cost Ratio



Enterprise Business Software

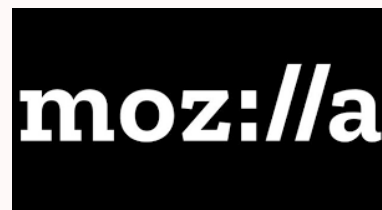
- Typical characteristics:
 - A high fixed cost of supporting an army of expert software developers who build the product;
 - A revenue model based on selling **multiple per-user licenses** and **regular upgrades** of the software.

Open Source Software



Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

- OSS is a type of computer software in which source code is released under a license in which **the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose.**
- Open-source software:
 - may be developed in a collaborative public manner
 - is a prominent example of open collaboration



Red Hat Case Study



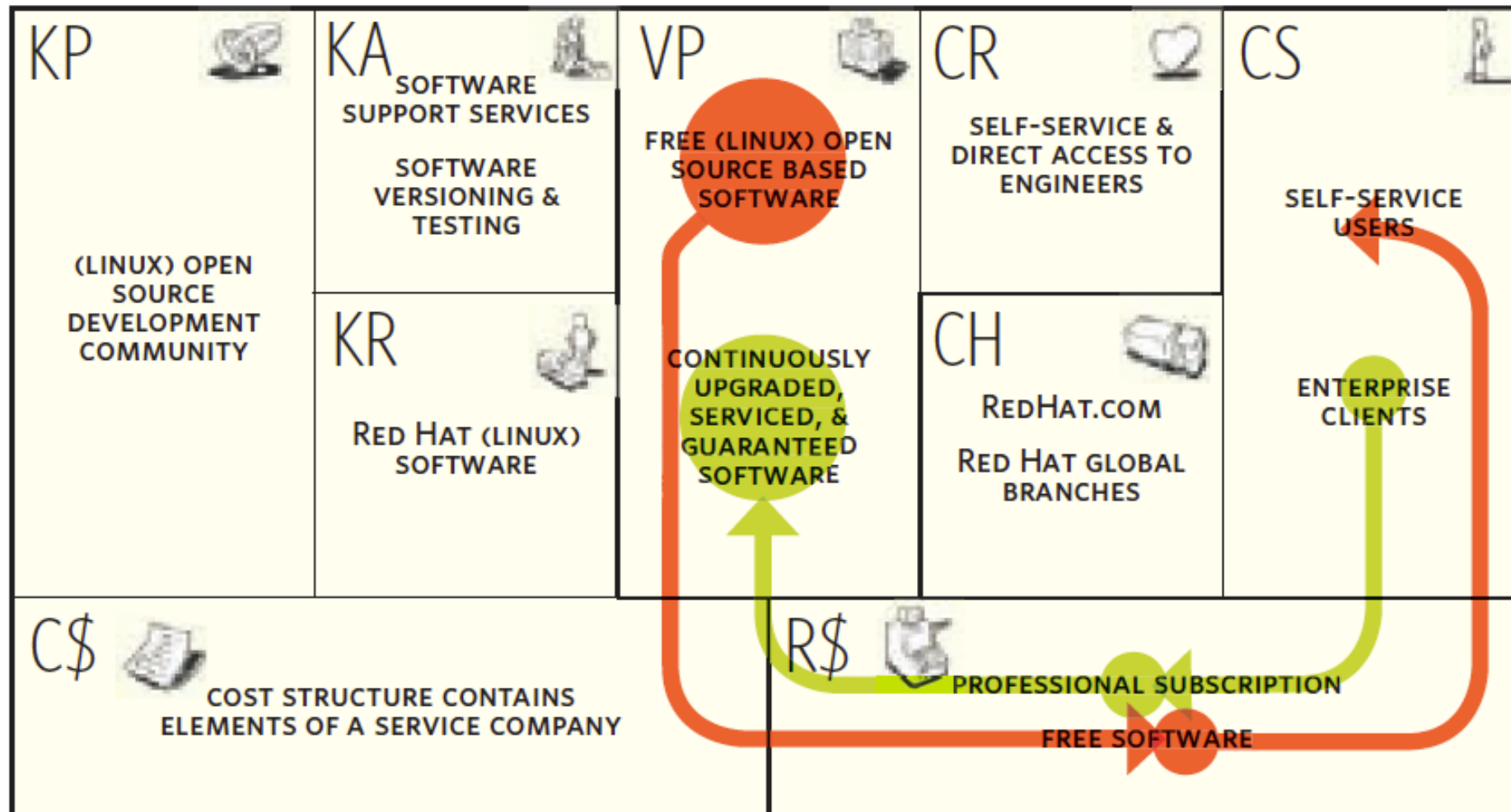
Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

- Red Hat, a U.S. software company, builds its product on top of open source software.
- Red Hat understood that companies were **interested in robust, licensing fee-free open source software**, but were reluctant to adopt it due to **concerns that no single entity was legally responsible for providing and maintaining it**.
- Red Hat filled this gap by offering stable, tested, service-ready versions of freely available open source software, particularly Linux. Each Red Hat release is **supported for seven years**.
- Benefits:
 - Customers enjoy the **cost and stability advantages of open source software**, while protecting them from the uncertainties surrounding a product not officially “owned” by anyone.
 - Red Hat software kernel is continuously improved by the open source community free of charge. This substantially reduces Red Hat’s development costs.
- Revenue Model: For an annual fee, each client enjoys continuous access to the latest Red Hat release, unlimited service support, and the security of interacting with the legal owner of the product.
 - Companies are willing to pay for these benefits despite the free availability of many versions of Linux and other open source software.

Red Hat Case Study



Master Programs in
Artificial Intelligence for
Careers in EU
(MAI4CAREU)

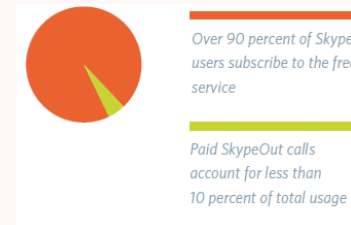
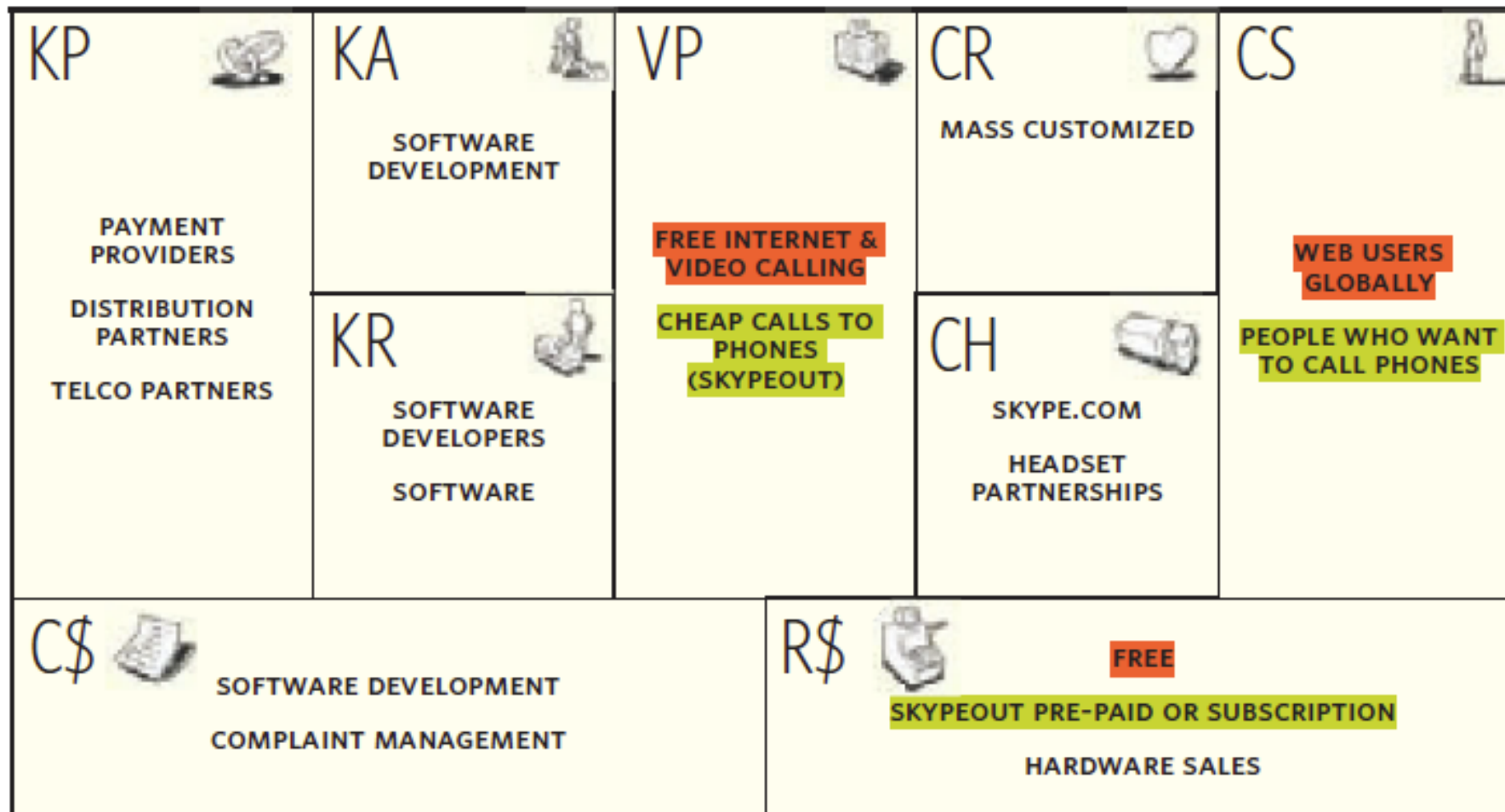


Skype Case Study



- Skype disrupted the telecommunications sector by enabling **free calling services via the Internet** through software developed that, when installed on computers or smartphones, enables users to make calls from one device to another **free of charge**.
- How is this possible?
 - Skype can offer this because its Cost Structure is completely different from that of a telecom carrier.
 - Free calls are fully routed through the Internet based on so-called peer-to-peer technology that employs user hardware and the Internet as communications infrastructure.
 - Hence, **Skype does not have to manage its own network like a telco** and incurs only **minor costs to support additional users**. Skype requires very little of its own infrastructure besides backend software and the servers hosting user accounts.
- Users pay only for calling landlines and mobile phones through a premium service called SkypeOut, which offers very low rates.
- In fact, users are charged only slightly more than the termination costs that Skype itself incurs for calls routed through wholesale carriers such as iBasis and Level 3, which handle the company's network traffic.










Skype Business Model



Skype vs traditional telcos

- Skype disrupted the telecommunications industry and helped drive voice communication costs close to zero.
- Telecom operators initially didn't understand why Skype would offer calls for free and didn't take the company seriously.
- Initially, only a tiny fraction of the traditional carriers' customers used Skype.
- But over time more and more customers decided to make their international calls with Skype, eating into one of the most lucrative carrier revenue sources.
- This pattern, typical of a disruptive business model, severely affected the traditional voice communication business, and in 2010 Skype was the world's largest provider of cross-border voice communication services, according to telecommunications research firm Telegeography.

Skype vs traditional telcos

<p>KP </p> <p>MAXIMUM OUTSOURCING</p>	<p>KA </p> <p>SOFTWARE DEVELOPMENT AND NO NETWORK MAINTENANCE</p>	<p>VP </p> <p>ROUGHLY SIMILAR VOICE OFFER</p>	<p>CR </p> <p>AUTOMATED MASS CUSTOMIZATION</p>	<p>CS </p> <p>GLOBAL REACH WITHOUT THE LIMITATIONS OF A NETWORK</p>
<p>KR </p> <p>NO INFRASTRUCTURE</p>	<p>CH </p> <p>SOFTWARE DISTRIBUTION 100% LOW COST CHANNELS</p>	<p>C\$ </p> <p>COST STRUCTURE OF A SOFTWARE COMPANY</p>		<p>R\$ </p> <p>90% FREE USAGE 10% PAYING</p>

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SHARE



TEXT

Microsoft Near Deal to Acquire Skype

Software Giant Could Pay Nearly \$8 Billion for Company

By Anupreeta Das And Nick Wingfield

Updated May 10, 2011 12:01 am ET

Microsoft Corp. is close to a deal to buy Internet phone company Skype Technologies SA for between \$7 billion and \$8 billion—the most aggressive move yet by Microsoft to play in the increasingly-converged worlds of communication, information and entertainment.

A deal could be announced as early as Tuesday, people familiar with the matter...

MOST POPU

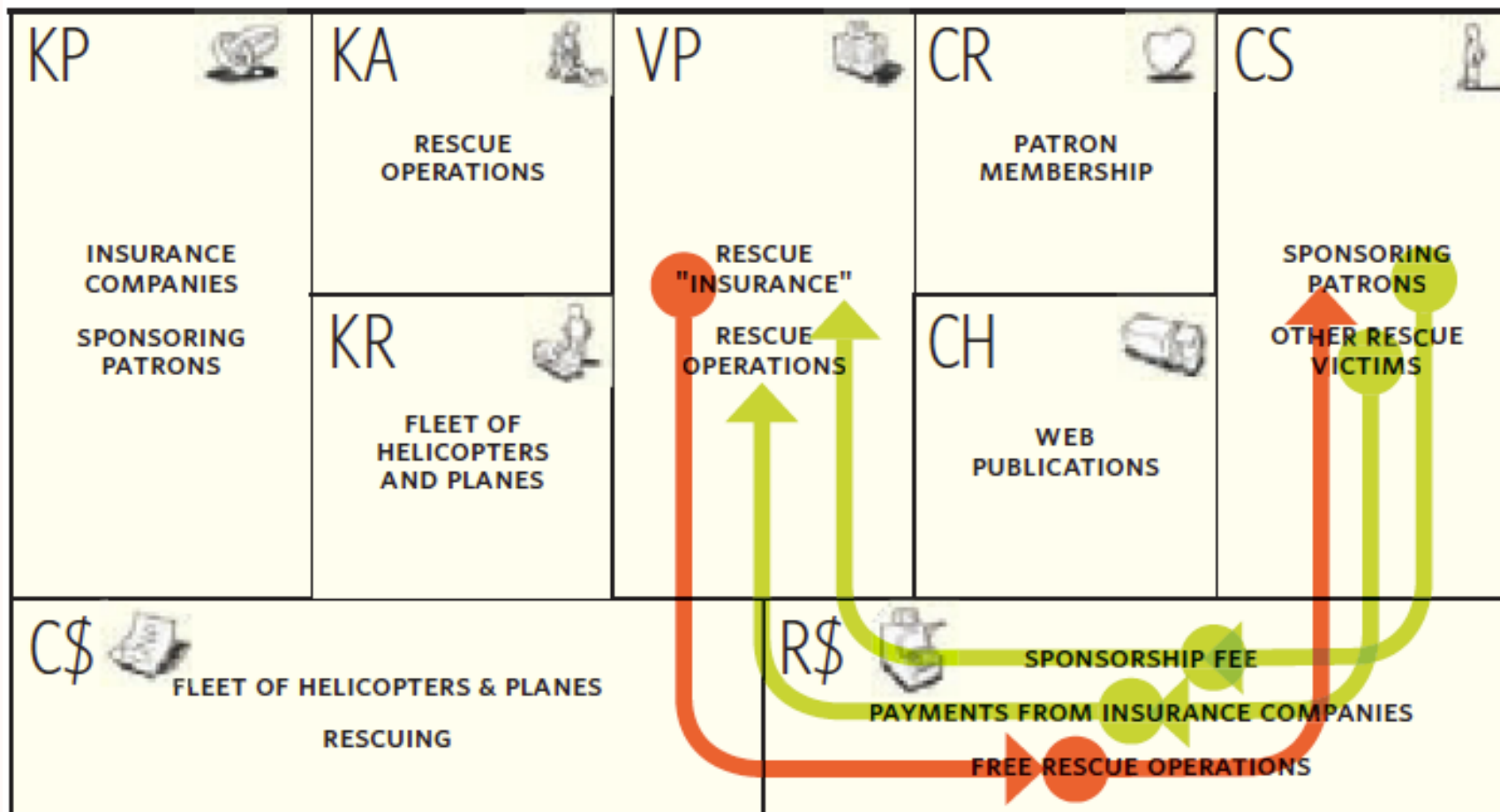
1. AirPods
Test: Hc
They St:
2. Biden: U
Securin



The Insurance Model: Freemium Upside Down

- A large base of paying customers subsidizes a small group of people with actual claims—but any one of the paying customers could at any time become part of the beneficiary group.
- REGA is a Swiss non-profit organization that uses helicopters and airplanes to transport medical staff to the scene of accidents, notably in the mountainous areas of Switzerland.
- Over two million so-called “patrons” finance the organization.
- In return, patrons are exempt from paying any costs arising from being rescued by REGA.
- Mountain rescue operations can be extremely expensive, so REGA patrons find the service attractive in protecting them against the high cost of accidents during skiing vacations, summer hikes, or mountain drives.

REGA



Business Model Patterns



- Unbundled
- Long Tail
- Multi-sided
- Free Advertising
- **Feemium** (RedHat, Skype)
- Open Business Models

Freemium Business Model



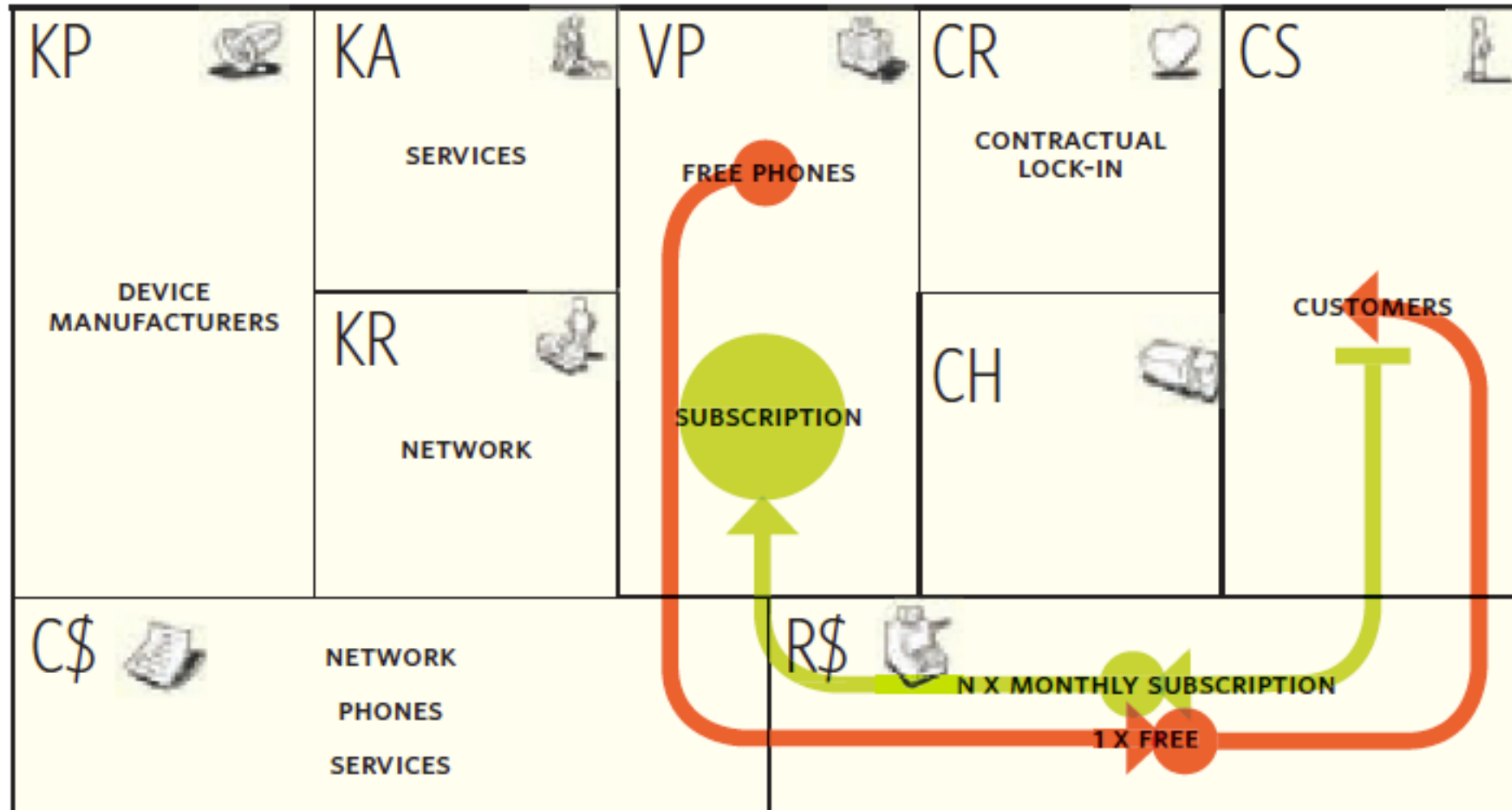
Key Metrics and Terminology

- **Cost of service** indicates the average cost the company incurs to deliver a free or premium service to a free or premium user.
- **Price of premium service** indicates the average cost the company incurs to deliver a premium service to a premium paying user.
- **Growth & churn rate** specifies how many users join/respectively defect the user base.
- **Customer acquisition costs:** total expenses a company incurs to acquire new users.
- **Percent of premium & free users** specifies how many of all users are premium paying users or free users.

Bait & Hook Business Model Pattern

- Characterized by an **attractive, inexpensive, or free initial** offer that **encourages continuing future purchases** of **related products or services**. Also known as:
 - **“Loss leader”** - refers to a subsidized, even money-losing initial offer with the intention of generating profits from subsequent purchases.
 - **“Razor & blades”** refers to a business model popularized by an American businessman, King C. Gillette, inventor of the disposable razor blade (see p. 105).
- The term bait & hook pattern describes the general idea of **luring customers with an initial offering, while earning from follow-up sales**.

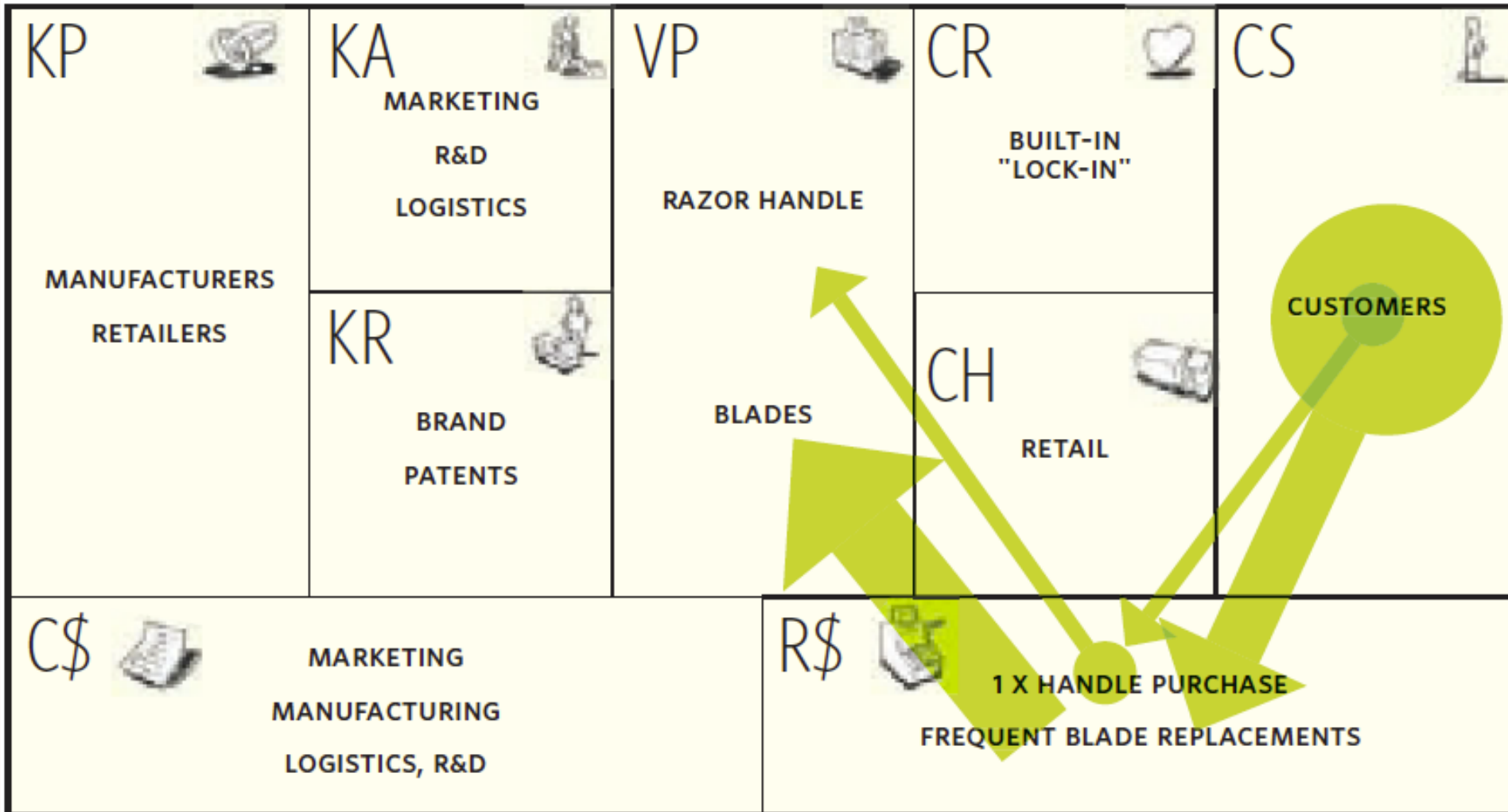
Bait & Hook in Mobile Telecoms



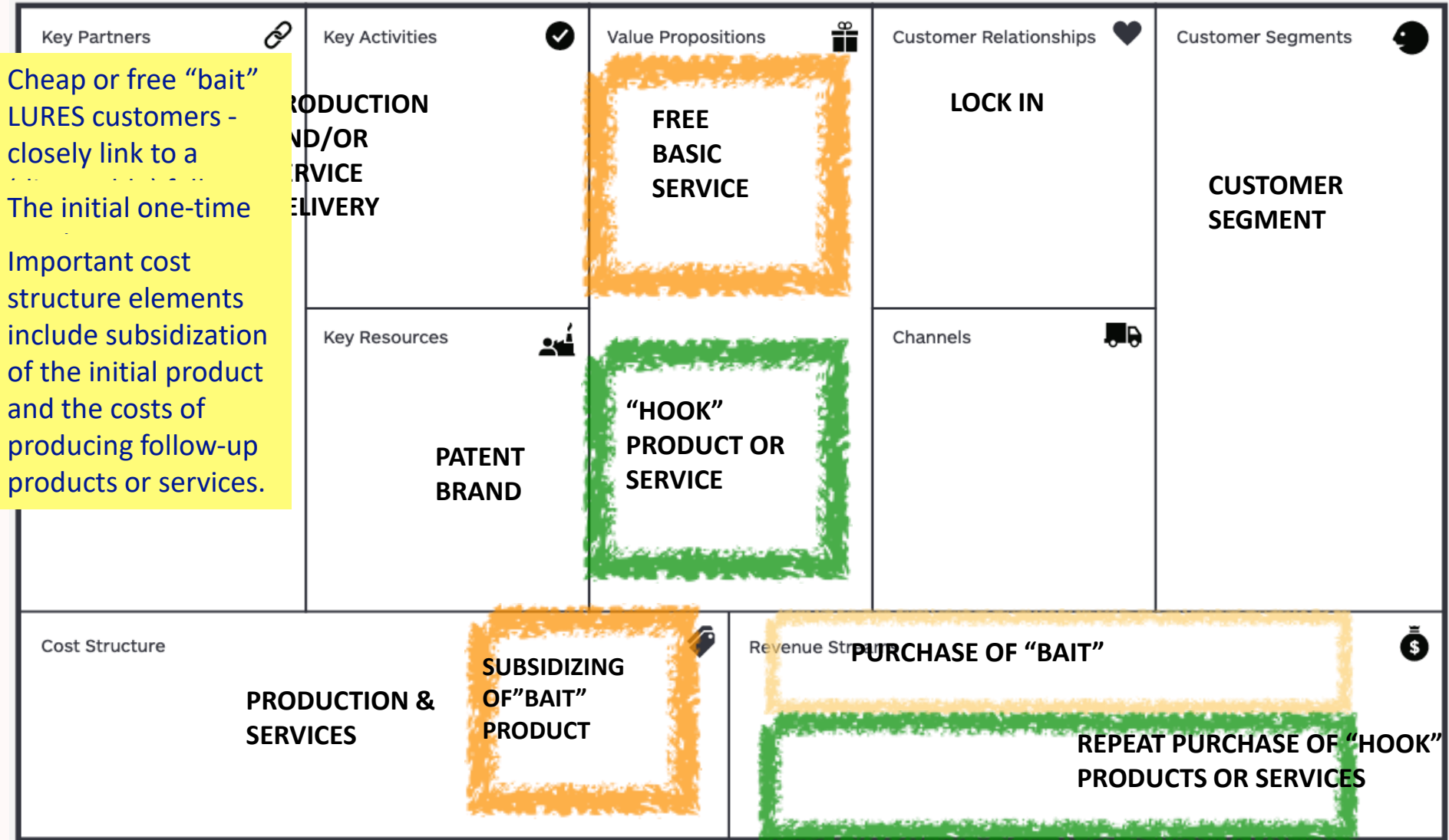
Razor & Blades : Gillette

- Gillette is the preeminent brand in shaving products.
- The key to this model is the close link between the inexpensive or free initial product and the follow-up item—usually disposable—on which the company earns a **high margin**.
- Controlling the “**lock-in**” is crucial to this pattern’s success.
- Through **blocking patents**, Gillette ensured that competitors couldn’t offer cheaper blades for the Gillette razor handles. In fact, today razors are among the world’s most heavily patented consumer products, with **more than 1,000 patents** covering everything from lubricating strips to cartridge-loading systems.

Razor & Blades : Gillette



Bait & Hook Pattern



Cheap or free "bait" LURES customers - closely link to a ...
The initial one-time ...
Important cost structure elements include subsidization of the initial product and the costs of producing follow-up products or services.

Business Model Patterns



- Unbundled
- Long Tail
- Multi-sided
- Free Advertising
- Freemium (RedHat, Skype)
- **Open Business Models**



Open Business Models

- Used by companies to create and capture value by **systematically collaborating** with **outside** partners.
- This may happen from the “**outside-in**” by exploiting external ideas within the firm, or from the “**inside-out**” by providing external parties with ideas or assets lying idle within the firm.

Open Innovation & Open Business

- In a world characterized by distributed knowledge, organizations can create more value and better exploit their own research by integrating outside knowledge, intellectual property, and products into their innovation processes (Chesbrough, 2003).
- Products, technologies, knowledge, and intellectual property lying idle inside a company can be monetized by making them available to outside parties through **licensing**, **joint ventures**, or **spin-offs**.
- **Open innovation** and **open business models** refer to **opening up a company's research process to outside parties**.
- **“Outside-in” innovation** occurs when an organization brings external ideas, technology, or intellectual property into its development and commercialization processes
- **“Inside-out” innovation** occurs when organizations license or sell their intellectual property or technologies, particularly unused assets.

Principles of Innovation

Closed	Open
The smart people in our field work for us.	We need to work with smart people both inside and outside our company.

Principles of Innovation

Closed	Open
The smart people in our field work for us.	We need to work with smart people both inside and outside our company.
To profit from research and development (R&D), we must discover it, develop it, and ship it ourselves.	External R&D can create significant value; internal R&D is needed to claim some portion of that value.

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If we create the most or the best ideas in the industry, we will win.	If we make the best use of internal and external ideas, we will win.
We should control our innovation process, so that competitors don't profit from our ideas.	We should profit from others' use of our innovations, and we should buy others' intellectual property (IP) whenever it advances our own interests.

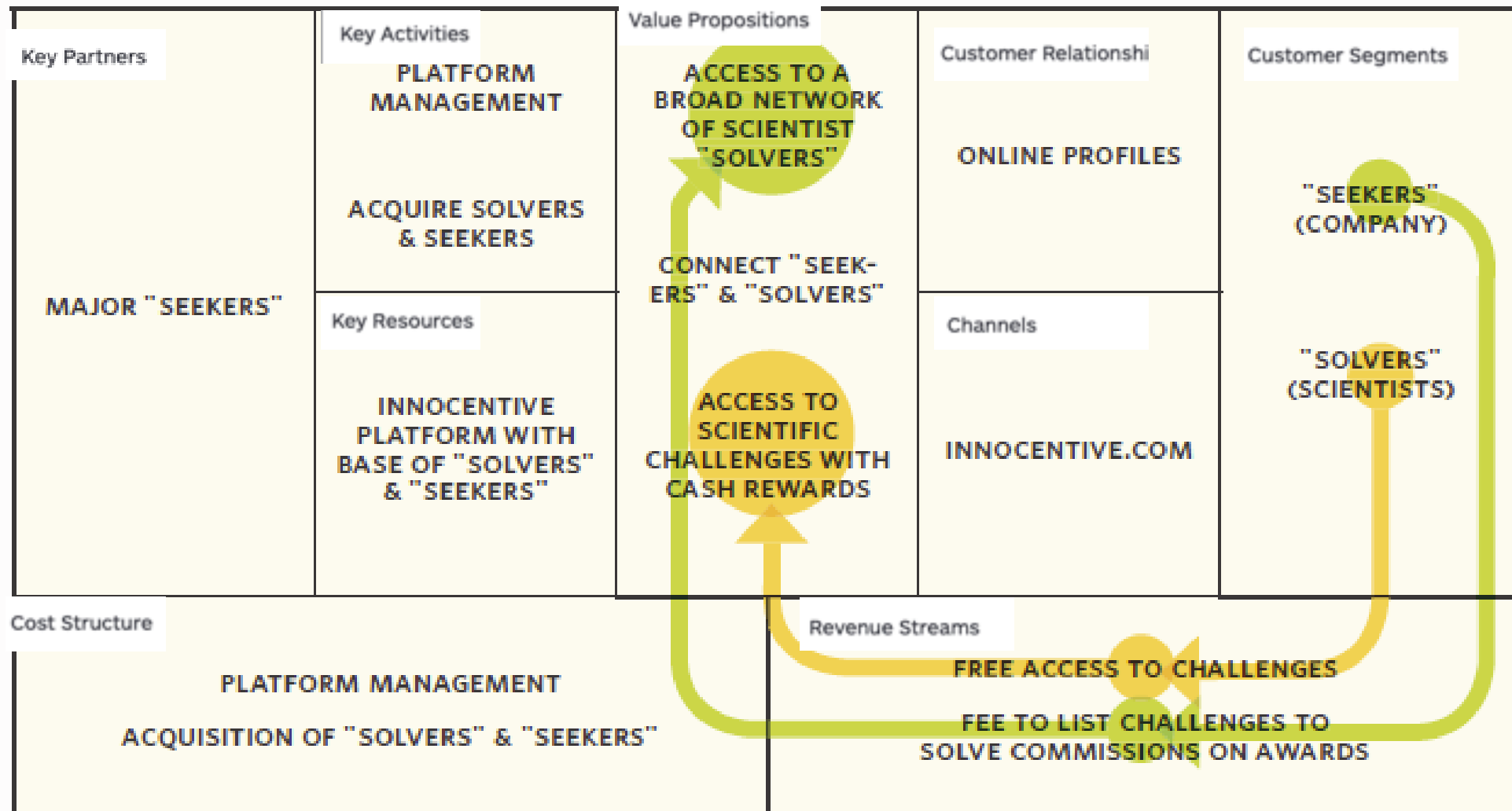
The Connector Business Model

- **Problem:** Companies seeking insights from external researchers incur substantial costs when trying to attract people or organizations with knowledge that could solve their problems.
 - On the other hand, researchers who want to apply their knowledge outside their own organizations also incur search costs when seeking attractive opportunities.
- <https://www.innocentive.com/>

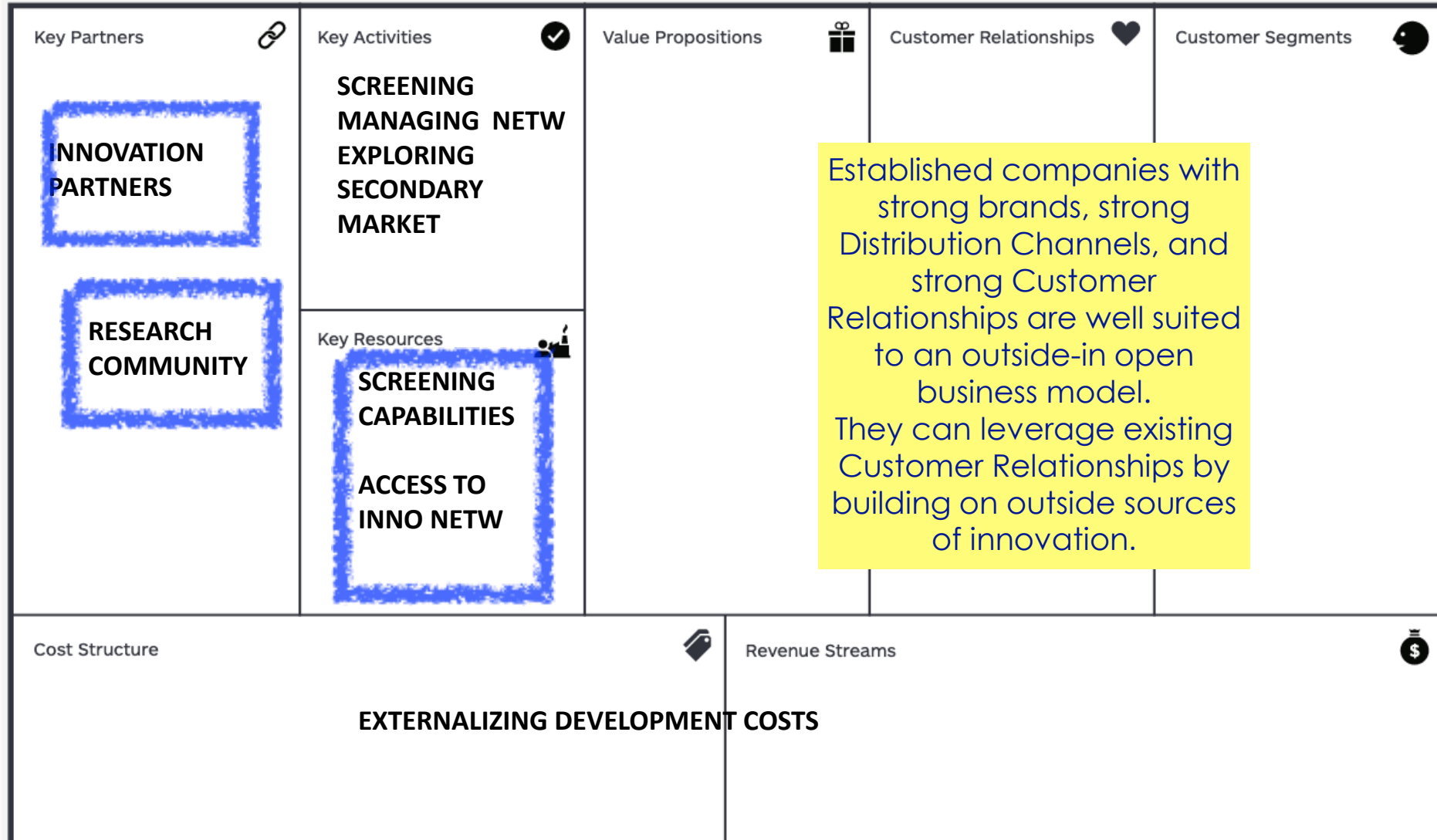
InnoCentive Case Study

- InnoCentive provides connections between organizations with research problems to solve and researchers from around the world who are eager to solve challenging problems.
- Functions as an **independent intermediary** listing non-profits, government agencies, and commercial organizations such as Procter & Gamble, Solvay, and the Rockefeller Foundation.
 - **“Seekers:”** companies who post their innovation challenges on InnoCentive’s Web site. They reward successful problem solvers with cash prizes that can range from \$5,000 to \$1,000,000.
 - **“Solvers:”** Scientists who attempt to find solutions to listed problems.
- InnoCentive’s Value Proposition lies in aggregating and connecting “seekers” and “solvers.”

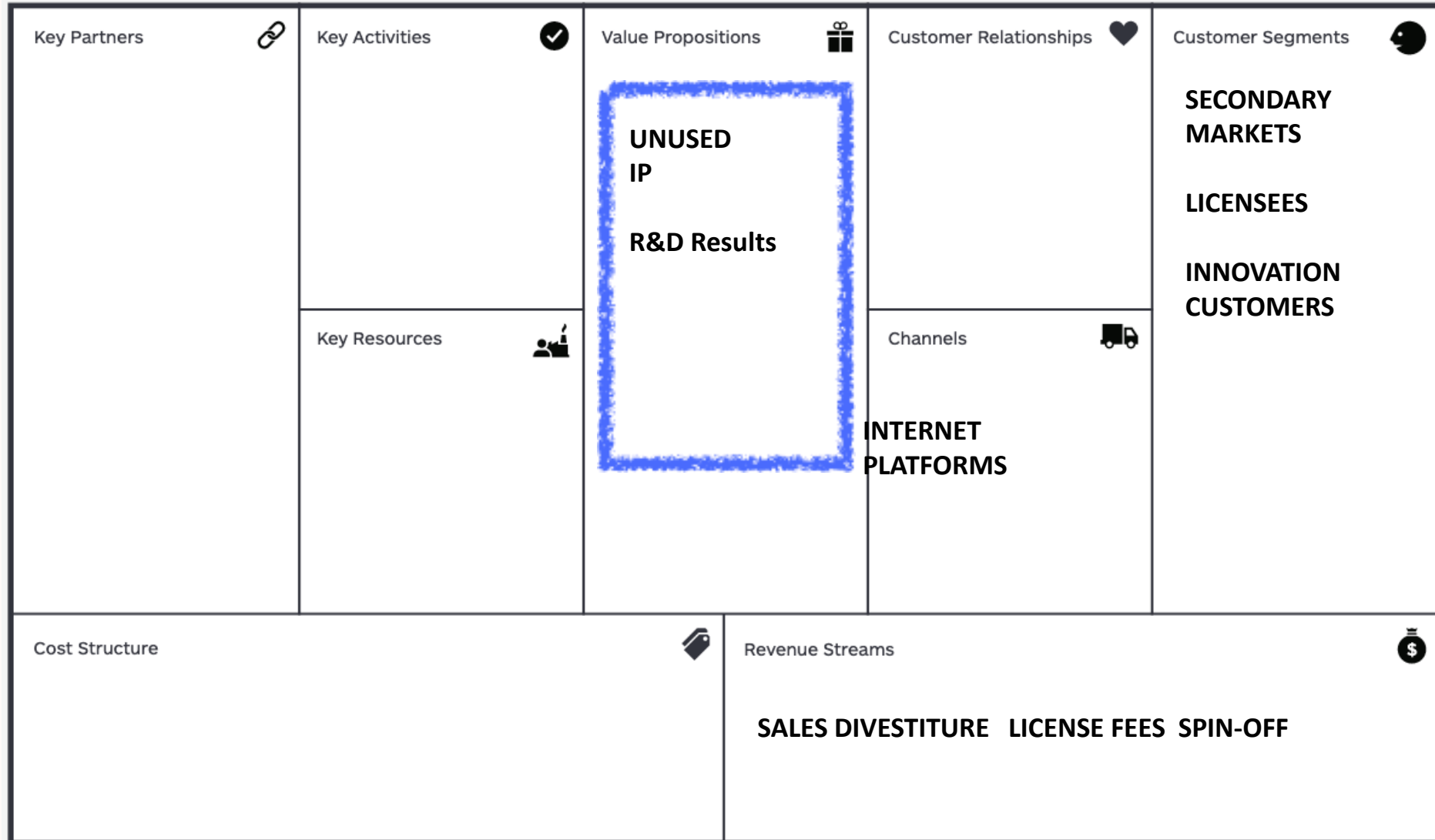




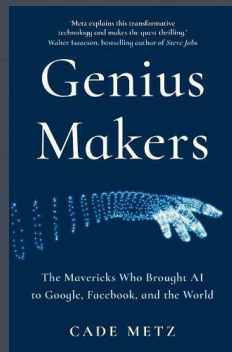
Outside-in Pattern



Inside-out Pattern



Reading Assignment



Read the book “Genious Makers” by Cade Metz.

- The chapter discusses among others the establishment and evolution of the OpenAI company.
- Discuss and answer the following question:
 - What was the mission and business model of OpenAI and how it evolved until today?



Discussion



Discuss Business Models that are suitable for AI startups



Module 3: Disciplined Entrepreneurship

Section 7: Pricing, LTV and COCA



Section 7

Contents



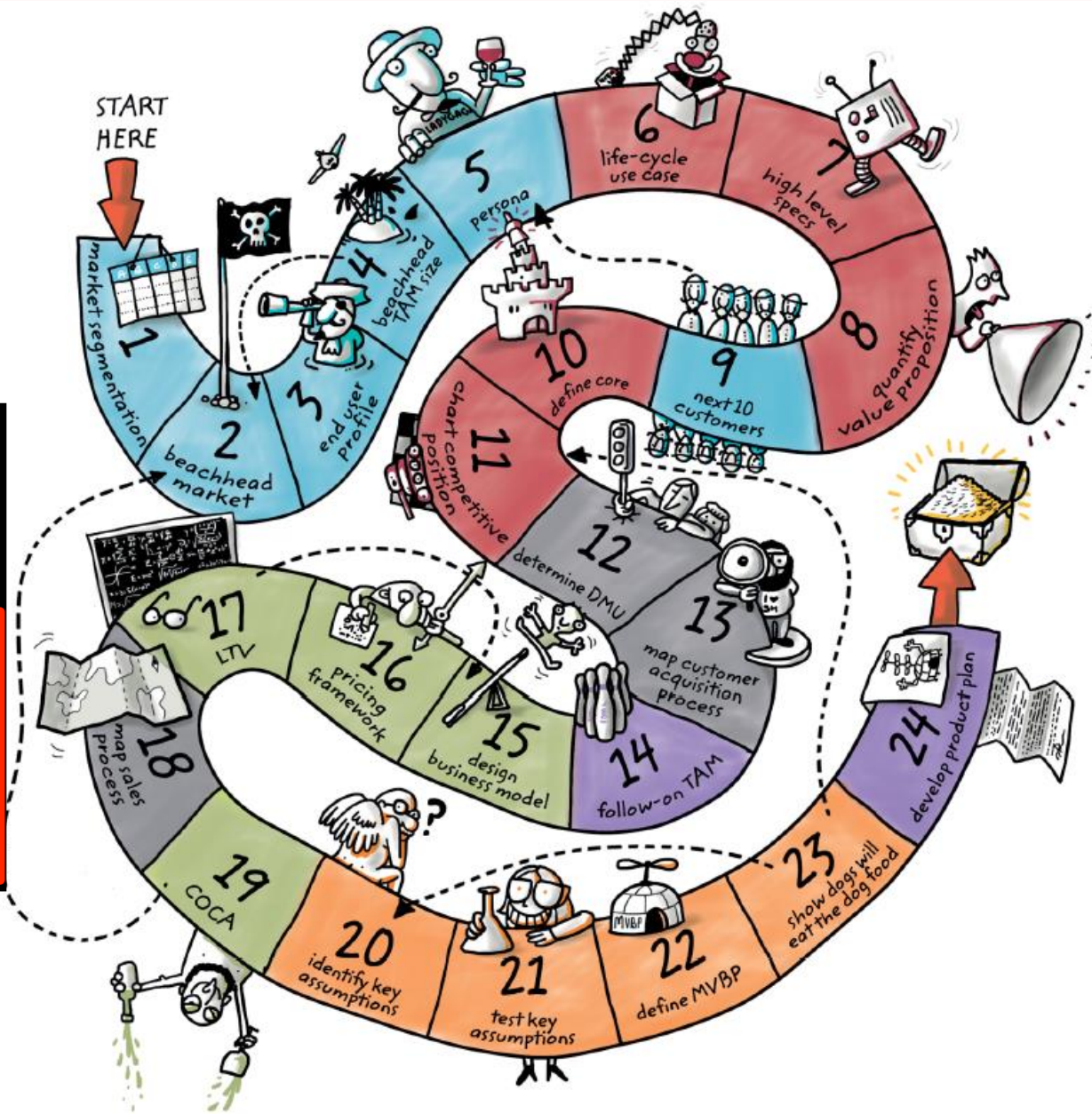
- DH Step 16: Pricing Framework
- DH Step 17: Lifetime Value of an Acquired Customer
- DH Step 19: Cost of Customer Acquisition (COCA)

Outline



HOW DO YOU MAKE MONEY OFF YOUR PRODUCT?

- 15 Design a business model
- 16 Set your pricing framework
- 17 Calculate the lifetime value of an acquired customer (LTV)
- 19 Calculate the cost of customer acquisition (COCA)



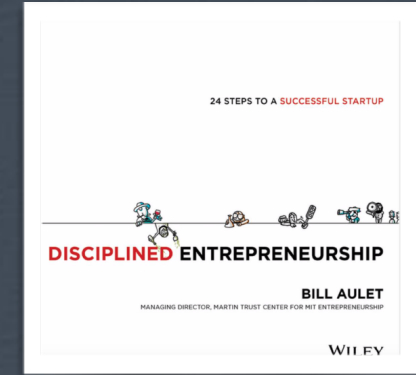
Section 7

Learning Objectives



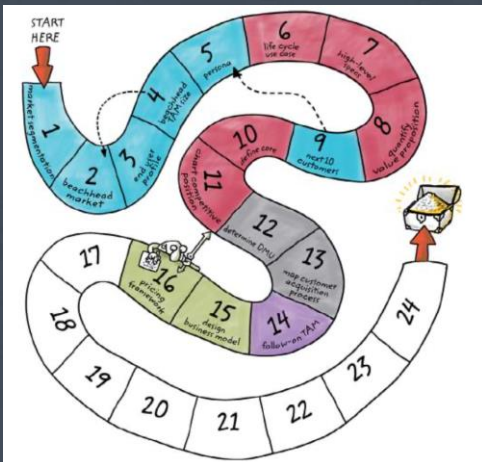
After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Understand and explain the concepts and challenges of pricing your product.
- Explore and develop Pricing Frameworks (Step 16).
- Describe, analyze and evaluate the Lifetime Value of an Acquired Customer (Step 17).
- Understand the significance of Customer Acquisition (COCA), analyze and calculate COCA.



Section 7: Pricing, LTV and COCA

Step 16: Pricing Framework



Pricing Framework

- **What?**

- Determine a framework to **test pricing for your new product** and make a decision on what the **initial price** will be.
- Create a first-pass strategy that will allow you to calculate the **Lifetime Value of an Acquired Customer**, which along with the **Cost of Customer Acquisition** is an important variable that indicates the **profitability** of your business.

- **Why?**

- Small changes in pricing can have a huge impact on your profitability.

- **More...**

*Now that you have a business model, it is time for initial **Pricing** decisions. Again, always look at this from the customer's perspective as well and not just yours. Consider competition as well when determining your pricing strategy.*

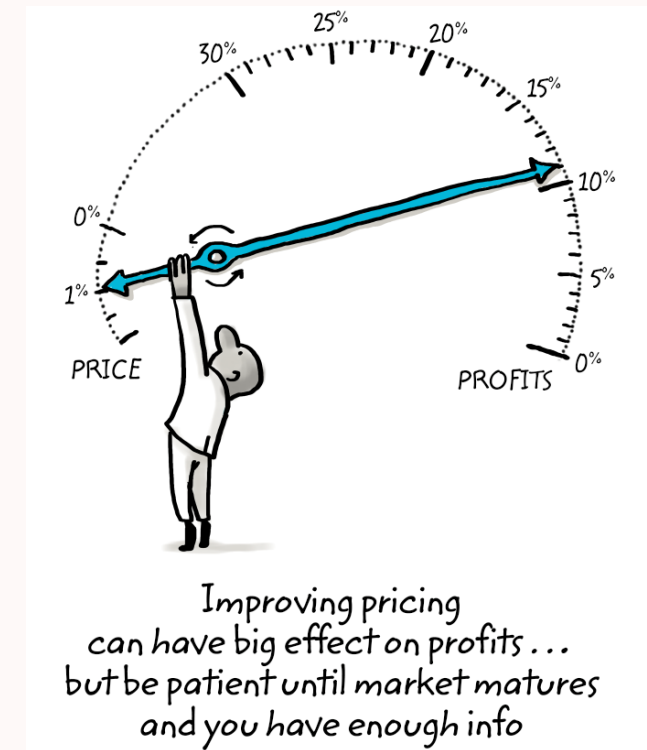
Step #16: Pricing Framework

• How?

- Use your Quantified Value Proposition and Business Model to determine an appropriate first-pass framework for pricing your product.
- An iterative and ongoing process where you start at some point that is the best guess for that moment and then you spiral closer and closer to a better answer.

Importance

- The Pricing Framework is extremely important in influencing your profitability, so it is important you price your product correctly.
- For companies in the Global 1200, a price that is 1% higher would lead to an 11% increase in overall profits, because:
once costs have been paid, the remaining revenue is all profit ["The 1% Windfall", citing McKinsey study.]
- Of course, there is always an upper limit to your price due to the dynamics of the Decision-Making Unit, Process to Acquire a Paying Customer, and sales cycle.
- The Pricing Framework is your attempt to strike a balance between attracting as much revenue as possible and attracting as many customers as possible.



Basic Pricing Concepts

- Costs Shouldn't Be a Factor in Deciding Price.
- Use the DMU and the Process to Acquire a Paying Customer to Identify Key Price Points.
- Understand the Prices of the Customer's Alternatives.
- Different Types of Customers Will Pay Different Prices.
- Be Flexible with Pricing for Early Testers and “Lighthouse Customers.”
- It Is Always Easier to Drop the Price Than to Raise the Price.

Cost vs Price

- Set your pricing based on the value the customer gets from your product, rather than on your costs.
- Cost-based strategies almost always leave money on the table.
 - In software, for instance, the marginal cost (the cost of producing one more copy of the software) is virtually zero, so pricing based on cost would make it extremely difficult to make any money.
- Instead, use your [Quantified Value Proposition](#), determine how much value your customer receives from your product, and [charge some fraction of that](#). The exact fraction depends on the competition and the industry, but:
- [20% tends to be a reasonable starting point](#), leaving 80% of the value for the customer, who is taking a risk by incorporating your product into their infrastructure.
- Some companies, like Microsoft and Intel, have been able to take advantage of monopolistic positions to price even higher, but short-term gains through this strategy may create long-term problems for your business if your customers think you are gouging them and other companies emerge with different or lower-priced products.

Cost vs Price: Remarks

- The percentage of customer value that you can capture with your pricing depends on your **business model** and how much **risk you are pushing onto your customer**.
 - A monthly subscription model, where a customer is paying over time, but can also cancel at any time, will allow you to **price higher** than an up-front charge model, where the customer is taking **additional risk** by paying for the product in full before knowing how beneficial the product will be for them.
- If costs come up in conversations about your product, make it clear that your price is not based on cost. Immediately turn the discussion around to how much value you create for the customer.
 - **“My business is very simple. My customers give me two dollars and they get back ten. That is why we are so successful.”** [Steve Walske]
- **Don't give out your cost numbers to anyone** who does not have a real need to know. Definitely do not tell your sales group!
 - Any good salesperson will use any and all of their resources to make a sale, even if it means driving the price down to costs. This mentality is in fact why you hired them, love them, and what makes them effective.
 - If you open yourself up to conversations about costs it can lead back to inappropriate conversations about your pricing, which will lead to decreased morale, productivity, and potentially profitability.

Identifying Key Price Points

- The **Decision-Making Unit** and **Process to Acquire a Paying Customer** provide information about [how your customer's budget works](#).
- Knowing an individual's purchasing authority limits can help reduce friction in the sales process.



about

- One example of using this information to inform your pricing comes from Kinova of Montreal, Quebec.
 - Kinova sells the Jaco assistive robotic arm for disabled people in wheelchairs.
 - When Kinova entered the market in the Netherlands, primary market research found that consumers could get reimbursed up to [28,000 euros](#) from their health insurance for purchasing the product.
 - If the price went above 28,000 euros, Kinova would need the consumer to pay the extra amount out of pocket, creating friction in the sales process.
 - Despite an extremely strong value proposition that could have supported a higher price, Kinova priced its product at 28,000 euros, which [dramatically decreased the company's sales cycle length](#) and [Cost of Customer Acquisition](#).
 - As a result, the company quickly ramped up sales and enjoyed a much larger market share than it would if it had priced the product at a higher amount.

Prices of Customer's Alternatives

- It is imperative to understand, from the customer's perspective, the **alternative products available**, and **how much the customer would pay for each**, including the customer's **status quo**.
- Carefully **research what other alternatives** would achieve similar benefits for the customer, what the **prices** of those alternatives are, and **how much better** your solution is.
- Data collection and analysis is very critical in this step.

Different Prices for Pay Different Customer Types

“The bad news is you will sell half as many units as you think you will. But the good news is you will be able to sell to the first group of buyers at twice the price you think you will.” [Mitch Kapor.]

- Different types of customers will pay different amounts, depending on how early or late they are buying relative to other customers.
- A differentiated pricing strategy and structure for these distinct customer segments will mean substantially higher profits for your business.

Customer waves

- **Technological enthusiasts** are the first people to buy a product. They love technology and will buy one of anything. Some are consumers, while others work in university R&D labs, national labs, or companies like General Electric.
 - They will only buy one (hence half the number you expect) but since they want to have it right away, before anyone else, they are willing to pay a much higher price (hence twice the price).
- **Early adopters** are also price-inelastic but are very interested in feeling like they got a special deal and will require lots of attention and extra service; so make sure to build that into your pricing model.
- **The early majority (pragmatists)** is where you will make yourself a great and truly scalable company. That is the price point that most of us think about when we are talking about and planning for a pricing strategy.
- **The late majority (conservatives)** are later in the process and your pricing strategy will be very clear by then; they like well-defined, conservative plans.
- **Laggards/skeptics** come so late in the process that you may have already sold your company at this point.

Early Testers and “Lighthouse Customers.”

- Early testers will **collaborate with you to improve** your product
- Lighthouse customers strongly **influence the purchasing decisions** of others in the industry.
 - These customers may help you create case studies or do on-site seminars where you can promote your product, or otherwise be strong references in the market.
- Allow for **flexibility on pricing** with these two groups of customers. **How?**
 - **Discounting** an up-front charge or through a **free or low-cost trial** period.
- However, **do not give your product away** to them, and **do not discount any ongoing revenue streams. Why?**
 - That would signal that your product has a very low value, setting a dangerous precedent.
- Have early customers sign an agreement where their **pricing terms be kept confidential**, and be firm with other, later customers who try to secure the same pricing terms.
 - You do not want your early one-time-only deals to define your general pricing strategy.
- Additionally, if you have the option to discount hardware or software, **prefer to discount the hardware** and **hold the line on software pricing**.
 - Customers can more easily understand hardware value versus software value, and it will be easier to reestablish higher hardware pricing as opposed to reestablishing software pricing.

Price: Easier to Drop than Raise

- It is best to **price high and offer discounts** initially, rather than **price too low and find you need to raise** the price later.
- Usually, **first customers have larger budgets than later customers** who are more likely to accept less-than-cutting-edge technology in exchange for a lower price.
- Also, you will find it difficult to convince customers to accept a higher price when they are used to paying a lower price.
- Sometimes, a price increase is necessary as you learn more about the market, but **successful price increases do not happen frequently**.

Case Study:

Helios

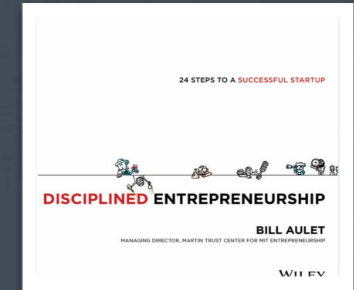


- Developing an exciting **new thin-film technology that captured solar energy and could release the energy on demand.**
- **Beachhead market:** remotely deicing windows on corporate and government fleets of automobiles.
- Primary alternatives: drivers manually deicing their individual cars, or maintenance employees manually deicing a fleet.
 - Union rules and desires also had to be included. To get to a good educated guess on pricing, the team had to clearly understand its **Quantified Value Proposition**, as well as the rational and emotional qualities of the Decision-Making Unit.
- The team created a first-pass Pricing Framework, and then once they calculated their Lifetime Value of an Acquired Customer and Cost of Customer Acquisition in later steps, they went back and revised their Pricing Framework based on those calculations.
- In the revised pricing framework, they set the price at **\$100 per unit**, which would provide \$100K in the first year of sales (based on the target customer's average vehicle fleet size of 1,000). With average 20 percent fleet turnover, they would net \$20K per year afterward.
- They compared their technology to window tinting, concluding that customers would judge their pricing against what they were used to paying for tinting. The strategy also discussed a discounting strategy for pilot customers to jump-start positive word of mouth.

Summary

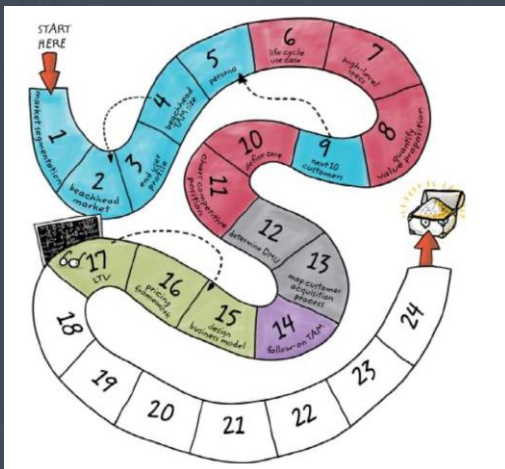


- Pricing is primarily about determining how much value your customer gets from your product, and capturing a fraction of that value back for your business.
- Costs are irrelevant to determining your pricing structure.
- You will be able to charge a higher price to early customers as opposed to later customers, but be flexible in offering special, one-time-only discounts to select early testers and lighthouse customers, as they will be far more beneficial to your product's success than the average early customer.
- Unlike your business model, pricing will continually change, both as a result of information you gather and as you progress throughout the 24 Steps, as well as in response to market conditions.

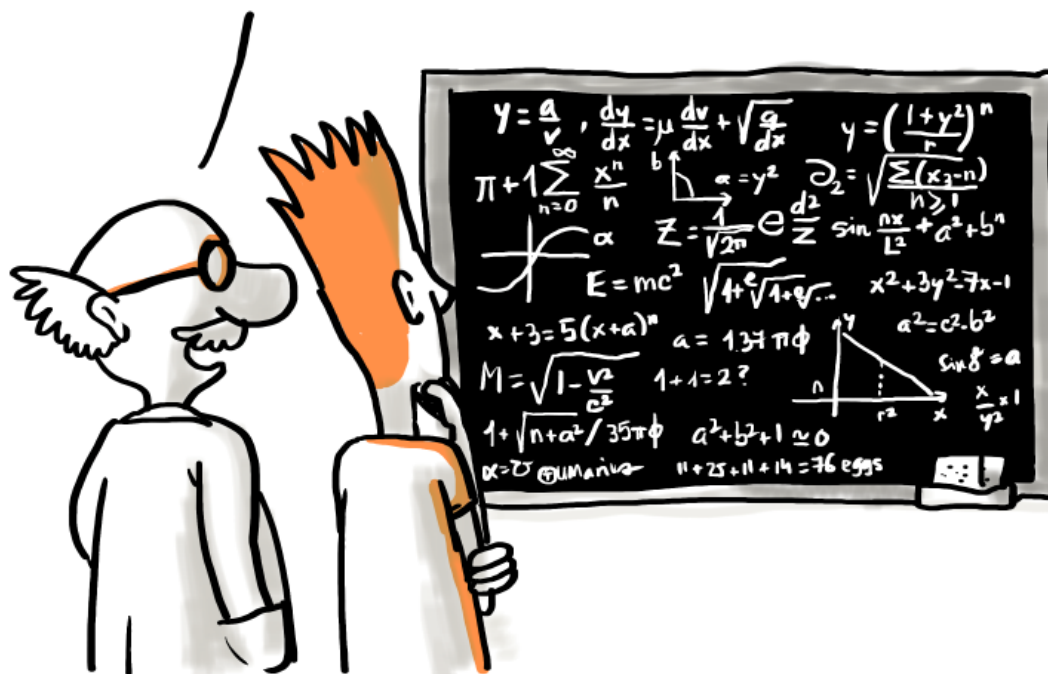


Section 7: Pricing, LTV and COCA

Step 17: Calculate the Lifetime Value (LTV) of an Acquired Customer



Don't worry,
entrepreneurial math
is much simpler.
If the LTV does not equal
3 times the COCA,
none of this matters!



Step #17: LTV Calculation

• What?

- Add up the revenue that you can expect to receive from an individual customer.
- Discount the revenue based on how much it will cost you to repay investors over time.
- Can you acquire customers at a cost that is substantially less than their value will be to your new venture over the customer's lifetime?

• Why?

- Determine how profitable your business will be in the beachhead market.
- The LTV serves as the most fundamental checkpoint both to determine how viable the business is, and to make sure you clearly understand what will drive the sustainability and profitability of the business so that you stay focused going forward.

Case Study: pets.com



- Company founded in August 1998 to sell products over the Internet to consumers for their pets.
- Concept: people spent a lot of money on their pets; the company could capture those sales and become very large and profitable with a new business model that did not involve the costs of maintaining brick-and-mortar retail stores.
- Raised millions of dollars from investors, aggressively advertised website, acquired customers.
- No rigorous analysis of unit economics done:
 - Because of the low margin on the products they were selling and the very high costs of customer acquisition, the company was losing money with each new customer it captured.
 - The company was bleeding cash but management said it was simply a matter of volume, that when the customer base was large enough, the company would be cash-flow positive.
 - This was wishful thinking rather than genuine economic analysis because management had not developed a clear path to increase the LTV, nor had they developed a clear path to significantly reduce the COCA.
 - So the bleeding of cash just increased as they got more customers.
- Soon the investors realized that the math for Pets.com did not work. In November 2000, the company was shut down and assets were liquidated.
- \$300 million dollars of investor money had been lost.

Case study: Groupon



- Groupon is an American worldwide e-commerce marketplace connecting subscribers with local merchants by offering activities, travel, goods and services in 15 countries.
- Business Model:
 - Originally, Groupon offered a single deal per day. In order to activate the deal, a certain number of people would have to buy in. These daily deals were available for 24 hours, and early offers included two-for-one pizzas and 50% off at local retailers. Once a deal was activated, anyone who purchased it would receive a voucher that could be redeemed later.
 - This reduced risk for retailers, who can treat the coupons as quantity discounts as well as sales promotion tools.
 - In the early years before revenue splits began to adjust as necessary, Groupon made money by keeping approximately half the money the customer pays for the coupon. More recently that split could vary depending on many factors.

Case study: Groupon



- The company leveraged word-of-mouth advertising through social media to become a fast-growing company—in terms of revenue.
- By October 2010, Groupon was available in 150 cities in North America and 100 cities in Europe, Asia and South America, and had 35 million registered users.
- By the end of March 2015, Groupon served more than 500 cities worldwide, nearly 48.1 million active customers and featured more than 425,000 active deals globally in 48 countries.
- However:
 - Groupon had not established a viable Core, so as competition increased, its LTV would likely go down and its COCA would go up as it fought in a crowded marketplace to find more customers.

Case study: Groupon



recode

Groupon all-time stock chart



Source: [Yahoo Finance](#)

recode



University of Cyprus
Department of Computer Science



LTV Importance

- It is very important to understand **what drives** the value of LTV:
 - the underlying factors so you can understand your risks
 - how you can increase LTV over time.
- This will also help you when you get real paying customers and you need to analyze what their LTV is and how it is trending.

Key Inputs for LTV calculation

- One-time Revenue Stream, If Any.
 - Typically, if there is an up-front charge for your product, it is a one-time source of revenue.
- Recurring Revenue Streams, If Any.
 - Subscription and maintenance fees, as well as repeated purchases of consumables, are all recurring revenues.
- Additional Revenue Opportunities.
 - If there are opportunities to “upsell” the customer, where the customer purchases additional products with minimal additional effort from your sales team, include these as revenue streams.
 - Remember to consider the DMU and the sales cycle you calculated earlier. Underestimating either of these could lead you to a distorted view.

Key Inputs for LTV calculation

- **Gross Margin for Each Of Your Revenue Streams.**

- This is the **price of your product minus the production cost of making an individual product**. Cost does not include sales and marketing costs or overhead costs like R&D or administrative expenses.

- **Retention Rate.**

- For each recurring revenue stream, this is the percentage of customers who continue to pay the recurring fee for the product. Usually expressed as a monthly rate or a yearly rate. (The opposite is "**churn rate**," which is the % of customers you lose.)
- Assume, for simplicity, that once the customer has stopped paying a recurring fee, the customer will no longer be receptive to up-selling. Do not assume that on a multiyear or multimonh contract customers will make all of their payments. Early termination of a contract by the customer should be incorporated into the retention rate.

- **Life of Product.**

- For each one-time revenue stream, this is the length of time you expect the product to last before the customer will need to either purchase a replacement or discontinue use of the product.

Key Inputs for LTV calculation

- Next Product Purchase Rate.
 - For each one-time revenue stream, this is the **percentage of customers who will buy a replacement product from you** when the current product has reached the end of its life.
- Cost of Capital Rate For Your Business.
 - Expressed as a yearly rate, this is **how much it costs you, in debt or equity, to get money from investors for your business.**
 - For a new entrepreneur who lacks a track record and is just getting started, the appropriate number is most likely **between 35 and 75 percent per year.**
 - This number is so high because an investor gives you money he cannot get back for years at a time (an illiquid investment). The investor is also taking a great risk because you are a brand-new business. These two factors mean that investors will charge you quite a premium for capital.

LTV calculation considerations

- The LTV is the **Net Present Value** of your profits from year 0 through year 5.
- As a brand-new business, you will **calculate the LTV over a five-year period**.
 - When projecting more than five years out, the compounded cost of capital for a startup is so high that it negates what value your customer provides you beyond five years.
 - The customer still has value to you beyond five years, but you also have to factor your cost of capital rate into the calculation.

Net present value

- **Net present value** is the present value of the cash flows at the required rate of return of your project compared to your initial investment.
- By looking at all of the money you expect to make from the investment and translating those **returns into today's dollars**, you can decide whether the project is worthwhile.

$$\text{Net Present Value} = \sum \frac{\text{Year } n \text{ Total Cash Flow}}{(1 + \text{Discount Rate})^n}$$

Where “n” is the year whose cash flow is being discounted.

- The **discount rate** will be company-specific as it's related to how the company gets its funds.
- It's the rate of return that the investors expect or the cost of borrowing money. If shareholders expect a 12% return, that is the discount rate the company will use to calculate NPV. If the firm pays 4% interest on its debt, then it may use that figure as the discount rate.

LTV calculation considerations

- For each revenue stream, use the **gross margin** and the **retention rate** to calculate your **profit** for the first year your customer buys the product from you (“Year 0”), as well as the subsequent five years.
- Then, **total the profit across all revenue streams** for each year.
- Calculate the **Present Value at Above Cost of Capital**, which discounts the profit to take into account that your investors will need to recoup with interest their investment in your business.
- The present value for year 0 is equal to that year’s profits. To calculate the present value for each year’s profits beyond year 0, use the following formula:

$$\text{Present Value} = \text{Profit} \times (1 - \text{Cost of Capital Rate})^t$$

where t = number of years after year 0.

LTV calculation considerations

- The LTV only will not tell you how attractive your business is; you also need to calculate the COCA.
- An LTV of \$10,000 per customer is great if your COCA is \$1,000 per customer, but is poor if your COCA is \$50,000 per customer.
 - Check VC capitalist's David Skok blog www.forentrepreneurs.com for more information.
- For software as a service (SaaS) companies, Skok believes a sound rule of thumb for **the ratio of LTV to COCA should be 3 to 1**:
 - COCA does not include many other costs in your business such as research and development, finance and administration, and other overhead (not to mention profit). Therefore, there needs to be a significant allowance for these factors.
 - There is also usually at least some over-optimism built into the LTV and COCA calculations despite your greatest efforts to make it real, so a 3:1 ratio ensures there is plenty of room for error.
 - A new venture is a highly variable system, so having a high ratio of 3:1 or greater will ensure that you have the ability to manage through the tough times when the unexpected happens (e.g., product delays, competitive reaction, recession).

Example of LTV calculation



- Calculate the LTV based on a hypothetical company that makes a “widget.”
- In the business model, there is a one-time charge for the widget, with an annual recurring charge for maintenance.

Assumptions



- One-time revenue: The widget is priced at \$10,000.
- Recurring revenue: Yearly maintenance fee of 15 percent of the widget's price after a six-month warranty period. The fee would therefore be \$750 in year 0 and \$1,500 in subsequent years.
- Additional revenue opportunities: None.
- Gross margin for each revenue stream:
 - Widget: 65 %.
 - Maintenance: 85 %.
- Retention rate:
 - Maintenance: 100 % per year in the first year;
 - 90 % per year in subsequent years.
- Life of product: Five years.
- Next product purchase rate: 75 % of those customers who are still paying the maintenance fee at the time of next product purchase.
- Cost of capital rate: 50 %.

Key drivers of LTV



- **Very high cost of capital** that new companies have because their limited ability to attract investments gets very expensive.
 - This means that *profits tomorrow are much less valuable than today's profits*.
 - This makes the subscription and consumables business models not as clear a winner as one would think.
- **Gross profit margin** for your various streams of revenue
- **Customer retention rate**. It is typically cheaper to keep an existing customer than to find a new one, making this a big leverage point.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000
Next product purchase rate (beyond year 0)						75%
Gross margin for widget	65%					65%
Profit from widget	\$6,500					\$4,875
Revenue time series: Maintenance						
Price of yearly maintenance contract	\$750	\$1,500	\$1,500	\$1,500	\$1,500	\$750
Retention rate	100%	90%	90%	90%	90%	<i>n/a (see next product purchase rate)</i>
Cumulative retention rate	100%	90%	81%	72.9%	65.6%	65.6%
Cumulative retention rate = r^t where r = retention rate and t = no. of years after year 0						
Next product purchase rate						75%
Gross margin for maintenance	85%	85%	85%	85%	85%	85%
Profit from maintenance	\$637.50	\$1,147.50	\$1,032.75	\$929.48	\$836.40	\$313.65
Sum of profits	\$7,137.50	\$1,147.50	\$1,032.75	\$929.48	\$836.40	\$5,188.65
Cost of capital rate	50%	50%	50%	50%	50%	50%
Net present value factor	100%	50%	25%	12.5%	6.25%	3.125%
Net present value factor = $(1 - r)^t$ where r = cost of capital rate and t = no. of years after year 0						
Present value above cost of capital	\$7,137.50	\$573.75	\$258.19	\$116.19	\$52.28	\$162.15
Net present value of profits (LTV)	\$8,300.06					

Notes



- The biggest factor that entrepreneurs initially overlook in determining the Lifetime Value of their customers, is the **cost of capital**.
 - If you have access to low-cost capital, it can make a huge difference.
- When entrepreneurs do this calculation, they are usually surprised at **how low the Lifetime Value of a customer** is for their business.
- Besides LTV, you need to know the absolute number of the revenue stream and users in the out years.
- This will be a key determinant in the value of the asset you have created, which will make it much easier for you to get lower-cost money and potentially make you an attractive and valuable acquisition target.
- Operate with real numbers and understand what drives those numbers!

Important considerations



- **The Business Model Decision.** Your choice can greatly affect your LTV and the amount of revenue you earn.
 - Recurring revenue models such as subscription models often increase revenue but require additional capital from investors up front, and thus have a very high cost of capital.
 - A one-time charge up front can reduce the amount of capital you need to get started, but is not as lucrative on an ongoing basis.
- **LTV Is about Profit, not Revenue.** Your gross margin and cost of capital rates are integral to determining an accurate LTV. The most common mistake entrepreneurs make on LTV calculations is they simply tally up the revenue streams; but **it is the profit that matters.**
- **Overhead Costs Aren't Negligible.** To simplify the LTV calculation, **overhead** costs (R&D and administrative expenses) are not included when determining the gross margin of a product; but to account for this, the LTV must be substantially higher than the COCA.
 - Overhead costs can be spread out over the total units of a product sold; so as volume sold goes up, the overhead cost per item goes down.

Case study:

Helios



- They determined the price should be \$100 per unit. This price (the expected net price after discounts) included the window cover and the software to remotely control the deicer on a smartphone for one year.
- Based on their business model, pricing decisions, and research on how much the average customer would buy in a typical transaction, the team determined that the yearly revenue per customer in the first year would be \$100,000.
- The typical customer fleet they targeted had 1,000 vehicles (some had more and some had less, but 1,000 was the average fleet size of their target market) and hence the \$100K net revenue per new customer estimate for the first year.
- In subsequent years, an average of 20 percent of the fleet would be replaced, so the new vehicles would need coating to be applied as well, providing a recurring revenue stream.

LTV assumptions



- 5% price increase each year
- 90% customer renewal rate (an aggressive assumption)
- 97% gross margin because there will be additional marginal service and maintenance costs for each fleet
- 40% cost of capital, as the business happens to have access to some lower-costs funds to get started

Table 17.2 Lifetime Value Calculations for Helios
Numbers may not add up exactly to LTV per Fleet due to rounding.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue per Year (Assumes 5% Yearly Price Increase) =	\$ 100,000	\$18,900	\$17,861	\$16,878	\$15,950	\$15,073
Gross Margin Profits from Revenues =	\$ 97,000	\$18,333	\$17,325	\$16,372	\$15,471	\$14,620
Net Present Value at Above Cost of Capital =	\$ 97,000	\$11,000	\$ 6,237	\$ 3,536	\$ 2,005	\$ 1,137
NPV of Profit Stream or LTV per Fleet =	\$120,915					
Pricing (Unit Price)	\$100	Business Model is a one-time charge with no recurring revenue				
Average Yearly Revenue per Fleet in Yr 1	\$100K					
Gross Margin	97%					
Price Increase per Year	5%					
Life of Product	5 years					
Retention Rate	90%					
Cost of Capital for Company (est.)	40%					



Helios Case

Study: Remarks



- Make a big initial sale to a fleet and move on, rather than building a “sticky” product that leveraged happy existing customers to gain additional sales.
- Collect largest payment in the first year ==> weak incentives to continue to work with customers and gain follow-on orders for the 20 percent annual turnover of vehicles.
- 90% retention rate figure, seems aggressive based on other companies' experiences.
- Surprising that the LTV was not higher; but the choice of the business model and pricing left the company with these economics for LTV.
- To sell a new fleet would take a lot of time, effort, and ultimately cost. The COCA would be in excess of \$30K and probably in excess of \$50K because of the high number of sales calls required.
- After Helios did their LTV calculation, they saw they would need to revisit their business model and pricing to find if there was a better way to monetize, as well as potentially expand their value proposition by adding more functionality and thinking about new ways to leverage the smartphone app that would activate the deicing system on vehicles.

Case study: Pet Rocks



- In 1975, advertising executive Gary Dahl invented the idea of a Pet Rock.
- It was a pet that required no maintenance and no cost after the initial purchase.
- It sold for \$3.95 each.



Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.

LTV calculation



- One-time revenue: The widget is priced at \$3.95.
- Recurring revenue: None.
- Additional revenue opportunities: None.
- Gross margin for one-time revenue (which is the only revenue): 25 percent.
- Retention rate: Doesn't matter because there is no revenue stream and they won't buy more.
- Life of product: Infinite.
- Next product purchase rate: 0% (they would not buy more—the joke doesn't scale).
- Cost of capital rate: 50 percent.
- Gary Dahl got \$1 per rock sold and the company (really just Gary Dahl) made \$1 million.

Summary



- **Lifetime Value of an Acquired Customer (LTV)**: the profit that a new customer will provide on average, discounted to reflect the high cost of acquiring capital that a startup faces.
- It is important to be **realistic**, not **optimistic**, when calculating LTV, and to know the **underlying drivers** behind LTV so you can work to increase it.
- You will be comparing the LTV to COCA.
- An LTV:COCA ratio of 3:1 or higher is what you will be aiming for.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000

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cial Intelligence for
Careers in EU
(MAI4CAREU)

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000
Next product purchase rate (beyond year 0)						75%

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	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000
Next product purchase rate (beyond year 0)						75%
Gross margin for widget	65%					65%
Profit from widget	\$6,500					\$4,875

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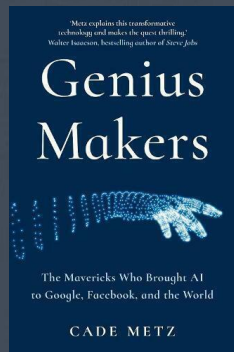
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000
Next product purchase rate (beyond year 0)						75%
Gross margin for widget	65%					65%
Profit from widget	\$6,500					\$4,875
Revenue time series: Maintenance						
Price of yearly maintenance contract	\$750	\$1,500	\$1,500	\$1,500	\$1,500	\$750
Retention rate	100%	90%	90%	90%	90%	<i>n/a (see next product purchase rate)</i>
Cumulative retention rate	100%	90%	81%	72.9%	65.6%	65.6%
Cumulative retention rate = r^t where r = retention rate and t = no. of years after year 0						
Next product purchase rate						75%
Gross margin for maintenance	85%	85%	85%	85%	85%	85%
Profit from maintenance	\$637.50	\$1,147.50	\$1,032.75	\$929.48	\$836.40	\$313.65

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue Time Series: Widget						
Price of widget	\$10,000					\$10,000
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Sum of profits	\$7,137.50	\$1,147.50	\$1,032.75	\$929.48	\$836.40	\$5,188.65

Master Programs in
Artificial Intelligence for
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Sum of profits	\$7,137.50	\$1,147.50	\$1,032.75	\$929.48	\$836.40	\$5,188.65
Cost of capital rate	50%	50%	50%	50%	50%	50%
Net present value factor	100%	50%	25%	12.5%	6.25%	3.125%
Net present value factor = $(1 - r)^t$ where r = cost of capital rate and t = no. of years after year 0						
Present value above cost of capital	\$7,137.50	\$573.75	\$258.19	\$116.19	\$52.28	\$162.15
Net present value of profits (LTV)	\$8,300.06					

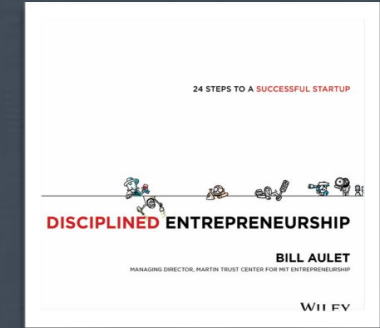
Reading Assignment



Read the book “Genious Makers” by Cade Metz.

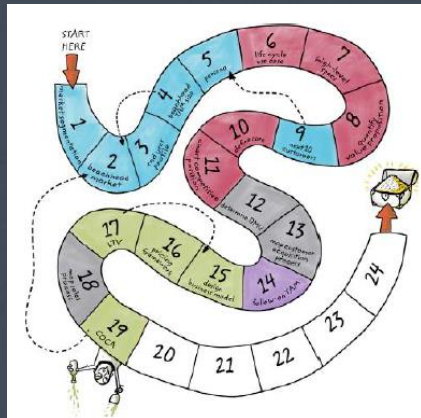
- The chapter discusses among others the establishment and evolution of the OpenAI company.
- Discuss and answer the following questions:
 - How was the market price of DNNResearch established?
 - What was the value reflected in that price?
 - What was the mission and business model of OpenAI and how it evolved until today?





Section 7: Pricing, LTV and COCA

Step 19: Calculate the Cost of Customer Acquisition (COCA)





We love the entrepreneurs and their optimism but it almost always blinds them to the real costs of customer acquisition.

It is essential that you do realistic calculations and then make appropriate adjustments over time.

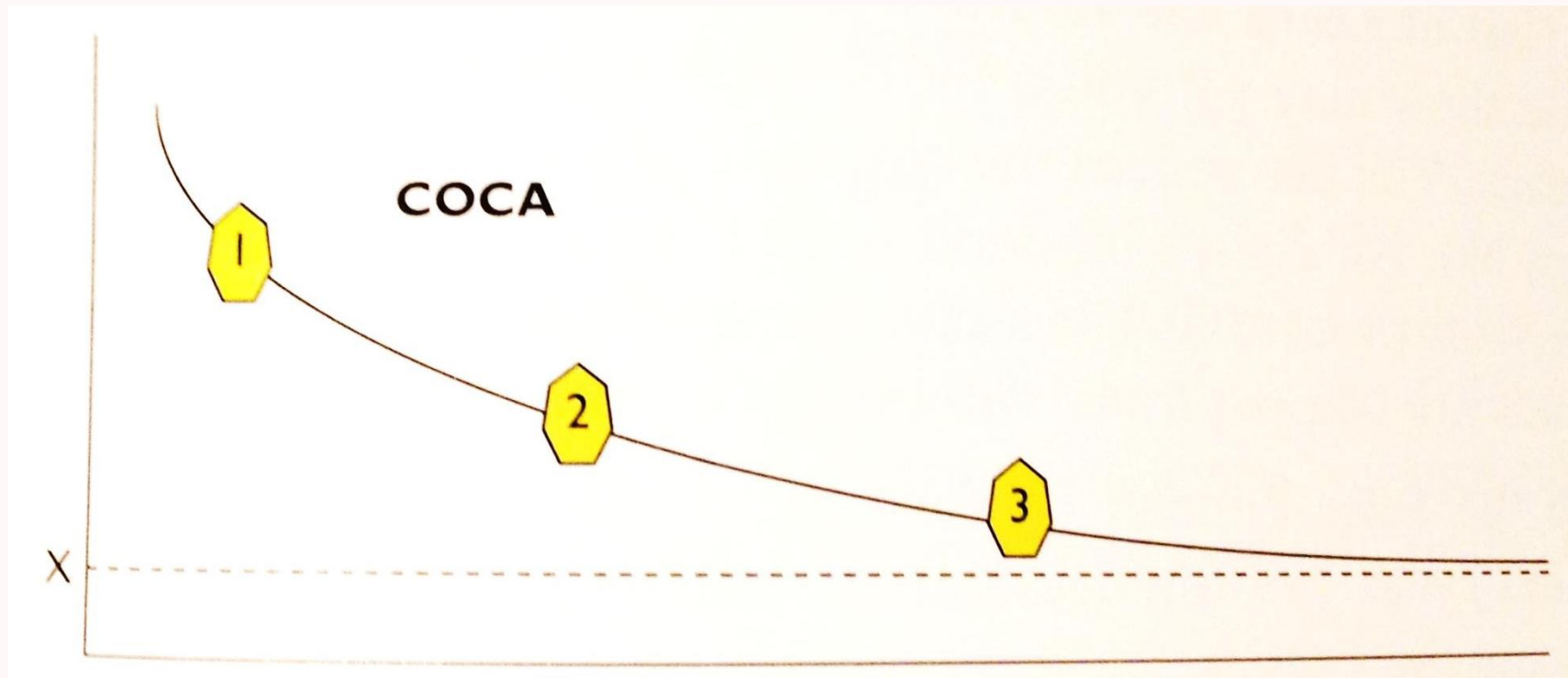
COCA Calculation

• Why?

- The Cost of Customer Acquisition (COCA) is an extremely important metric and can be difficult at first to understand and calculate.
- Pay close attention to the details to calculate it correctly. It requires a significant amount of effort and systematic thought.
- Typically, in the early stages of the sales process, the COCA exceeds the Lifetime Value of an Acquired Customer. In sustainable businesses, the COCA decreases over time until it is significantly less than the LTV.
- One of the key questions for your business is how long it will take for the COCA to drop below the LTV of a customer, because until you reach that point, your business is spending more money than it is taking in.

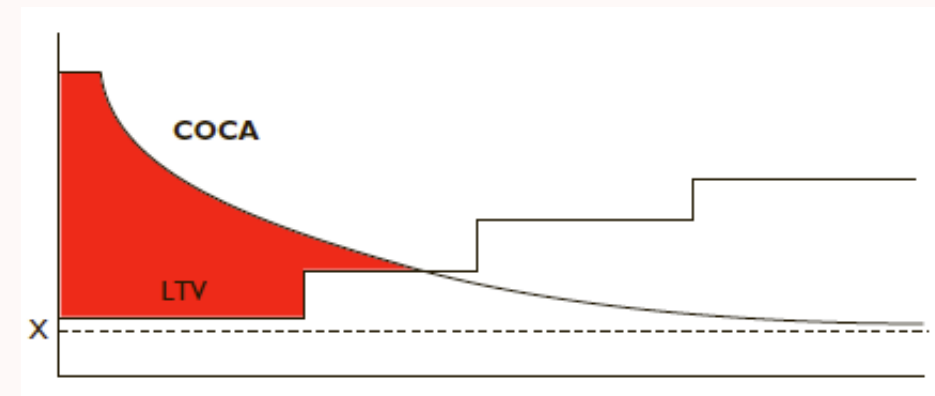
It Is Very Important to View COCA Over Time

- It will start out very high and then it should go down over time



COCA vs LTV

- In a sustainable business, the cost of customer acquisition (COCA) will **eventually drop below** the lifetime value of an acquired customer (LTV).
- During the long-term stage of the sales process **the COCA will level off**, and will continue to require an ongoing investment, but costing less than the LTV of the customer.
- The LTV will often **increase** over time as well, due to **up-selling** opportunities with existing customers (“negative churn”).
- Pricing power will sometimes increase as well, if your product becomes a standard with little forceful competition.
- This graphic representation has a particularly aggressive LTV increase, which is usually not the case but it does add some drama to the chart. The red area indicates your cash burn before reaching cash-flow positive.



COCA Calculation

• What?

- COCA includes all the sales and marketing costs involved in acquiring a single average customer in steady state, even when a potential customer chooses not to purchase your product.
- Your COCA does **not** include any fixed production costs or expenses outside of the sales and marketing department, such as research and development, finance and administration, or overhead.
- In this step, you will calculate your COCA for three contiguous time periods, where the first time period begins with your initial sales costs.
- You will refine the COCA calculation as you get farther along in the sales process.

• How?

- Identify what factors influence your COCA
- Assign realistic values to the various factors, and
- Understand what actions you can take to ensure your COCA decreases over time.

COCA Calculation

- Example:
 - You are selling a widget with a sales cycle of **half a year**;
 - It takes **one twentieth of your salesperson's work time** to identify, engage, track, support, close, and collect payment for selling to one customer;
 - Salesperson payment: **\$150,000 per year** if they make 100 percent of their quota (often called on-target earnings).
 - Assume the salesperson meets their quota.
- **How much does it cost to pay one salesperson to acquire one customer?**

Sales Cycle

- The process that companies undertake when selling a product to a customer.
- Encompasses all activities associated with closing sale.
- Many companies have different steps and activities in their sales cycle, depending on how they define it.



COCA Calculation

- Example:

- Selling a widget with a **sales cycle of half a year**, and it takes **one twentieth of our salesperson's work time** to identify, engage, track, support, close, and collect payment for selling to one customer.
- Salesperson payment: **\$150,000 per year** if they make **100%** of their quota (often called on-target earnings).
- Assume the salesperson devotes **1/20** of their time to closing one sale.
- Assume the salesperson meets their quota.

- **How much does it cost to pay one salesperson to acquire one customer?**

\$3,750.

- **Is this the COCA?**

How NOT to calculate COCA?

- The calculation above **does not take into consideration all the other costs** associated with closing this deal.
 - The salesperson's benefits package (health care, vacation time, 401 (k), etc.) typically costs you the equivalent of **25 to 30 percent of their salary**.
 - There are costs for travel and entertainment, demo units, tech support, mobile phone bills, trade show expenses, marketing campaigns to generate leads, Internet data charges, and more.
- We could do a bottom-up analysis, painstakingly scrutinizing the receipts and invoices and assigning expenses to each customer.
- We also have to take into account the other expenses associated with having a salesperson: the office furniture, computer, Internet and phone charges, the cost to rent or purchase the building the salesperson works from, and more.
- Let's say that all these costs, added up and divided by the number of new customers equals another **\$2,500 per customer**.
- **So is our COCA actually $\$3,750 + \$2,500 = \$6,250$?**
- **No!**

How NOT to calculate COCA?

- If the salesperson closes **100%** of the sales they work on, and need 1/20 of their time to close one sale with a 6-month sales cycle, this totals **20 sales per six month sales cycle**.
- This assumption is extremely unlikely because **no salesperson closes every deal**.
- If a salesperson is closing even **50%** of the customers he engages, the person is probably getting paid much more than \$150,000 per year and therefore would not be working at your company.
- Even assuming a salesperson closes **25%** of sales, which is very aggressive, meaning the salesperson is actually selling **five units during each sales cycle**, rather than 20.
- So for every 1/4 of a salesperson's time spent on a customer who makes a purchase, another 3/4 of the salesperson's time is spent with potential customers who do not buy.
- These costs have to be factored into the COCA as well.
- A bottom-up analysis that factors in all these other expenses tends to get messy very quickly and can create a false sense of accuracy.
 - This method does not work.

How NOT to calculate COCA?

- A completely accurate estimate of the cost to acquire one new customer is hard to project.
- What we can be sure of is that estimating a COCA of \$6,250 would be dramatically understated, and merely the tip of the iceberg of the COCA cost.
- Realistically, the COCA in this example is probably closer to **10–20 times that number**.



Top-down calculation of COCA

- Tabulate your **aggregate sales and marketing expenses over a period of time**; then divide that by the total number of new customers you acquire within that time period.
- When aggregating, include costs for all the key items in sales and marketing plan:
 - sales reps,
 - auto, travel and entertainment, phone, Internet,
 - demo units, technical sales support, website development,
 - consultants,
 - trade shows, real estate, administrative support, computers, and so on.
 - Also calculate the **cost in time that the executives on the team spend on sales** as these are very real and expensive costs.
- This calculation requires that you **understand your sales process well**. Do not worry if your calculation is not exactly right; but be sure to:
 - **enlist an experienced person to help develop budget projections**, and
 - understand how **adjusting costs affects profitability**.

Time periods in COCA estimation

- Since your **COCA(t) will vary over time** as your sales process changes and your organization is in the learning curve and you develop strong positive word of mouth within your target customer group, **you should calculate it over time**.
- **Three time periods are recommended** in order to show how the COCA is trending.
 - Appropriate time periods depend on the life cycle of your product, which is directly related to the amount of time it takes for your customer to realize the value proposition from your product.
 - A typical way to define the first three time periods for a COCA calculation is by taking your **first year of sales**, your **second and third year or sales**, and your **fourth and fifth year of sales**.
 - Depending on your new venture, these time periods could be different.

COCA calculation

- Dividing the cost of your sales and marketing expenses by the defined time period will yield the **Total Marketing and Sales Expenses over Time** or **TMSE(t)** where t is the first, second, or third time period.
- If a sizeable portion of your TMSE(t) is the **cost of retention of existing customers**, rather than acquiring new customers, **subtract this from the TMSE(t)**.
 - Refer to the cost of retention as the **Install Base Support Expense over Time** or **IBSE(t)**.
 - Then, determine the number of new customers you will close during that time period (which means delivering the product and collecting their money), referred to as **New Customers over Time** or **NC(t)**.
- Given these definitions the COCA for any given period is:

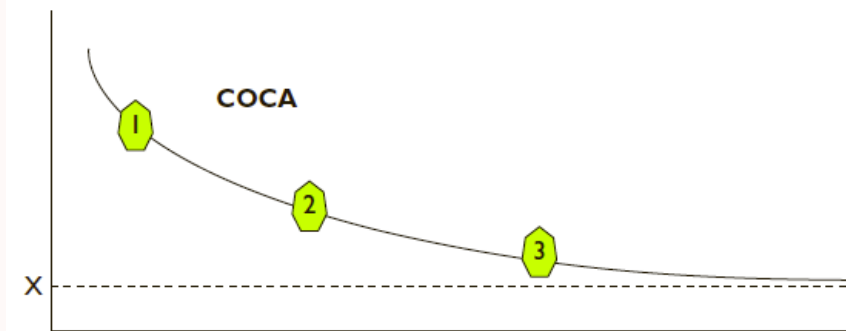
$$\text{COCA}(t) = (\text{TMSE}(t) - \text{IBSE}(t)) / \text{NC}(t)$$

COCA calculation

- Once you have numbers for each of your first three time periods, plot them on a graph where the **x-axis is time** and the **y-axis is COCA** for that period. You can also draw a best-fit curve.

$$\text{Cost of Customer Acquisition} = \frac{\text{Total Marketing and Sales Expenses}(t) - \text{Install Base Support Expense}(t)}{\text{Number of New Customers}(t)}$$

- The horizontal line at X represents the COCA's steady state, once sales volume ramps up and the product, company, and market mature, typically achieved during the longer-term stage of your sales process.



How to reduce COCA?

- COCA will almost always start at a very high point (i.e., well above the final COCA and likely higher than the LTV) because you need to first create the market.
- Your organization will seek ways to reduce these costs to make the business much more attractive.

How to reduce COCA?

- Use Direct Sales Judiciously as It Is Very Expensive although Very Powerful:
 - Hiring a team to do direct sales may be necessary to start, but it is very expensive.
 - As an alternative, consider investing instead in technological enablers, from telemarketing to having an effective web presence to engaging through social media in order to decrease costs as much as possible.
- Automate as Much as Possible:
 - Whenever possible, try to automate the customer acquisition process even if it requires significant investments.
 - If you can promote your product through sites where there are big networks and opportunities to make your message go viral, from Facebook's and LinkedIn's network effects to Amazon.com's preference engine, these are great channels through which details about your product can be shared.
 - You might also automate your marketing by creating incentive schemes for your users similar to the ones made famous by Avon, or the one Groupon used to reach a multibillion-dollar valuation.

How to reduce COCA?

- Improve Conversion Rates in Sales:

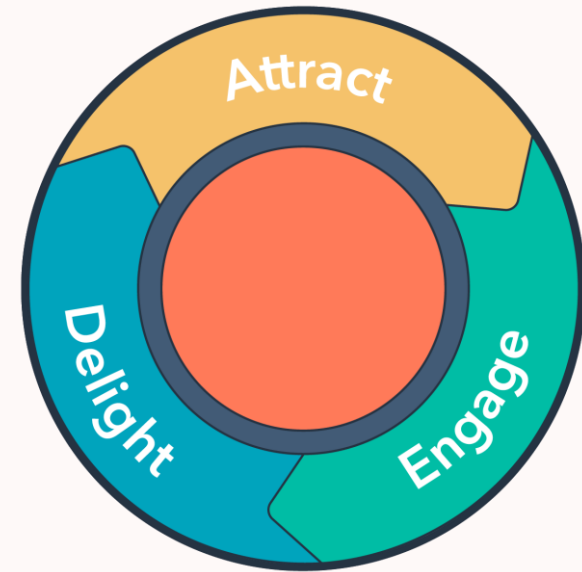
- Always focus on improving the conversion rates from your leads. As you see in the bottom-up calculations, **there is a huge cost associated with chasing deals that you don't close**. Getting higher conversion rates on leads opens up the funnel so more deals get through, increasing your revenue and decreasing your COCA.

- Decrease the Cost of Leads and Improve the Quality of Leads:

- Getting a bunch of business cards at a trade show may get you a lot of leads (less cost per lead), but they are probably poor-quality leads.
- You can reduce the cost of leads without sacrificing the quality of the lead with techniques like [HubSpot's inbound marketing strategy](#).
- Incorporating tools and techniques into your sales process that increase the quality of your leads, and paying attention to where your leads are coming from, will improve your conversion rate.

Inbound Marketing

- A business methodology that attracts customers by creating valuable content and experiences tailored to them.
- While outbound marketing interrupts your audience with content they don't want, inbound marketing forms connections they're looking for and solves problems they already have.



How to reduce COCA?

•Speed through the Sales Funnel:

- By focusing on the speed at which prospects are moving through the sales cycle, you can decrease the sales cycle, which will have a dramatic positive effect on reducing the COCA.

•Choose Your Business Model with COCA in Mind:

- The design of your Business Model can dramatically affect your COCA.
- Example: IntraLinks, the company providing a secure online space for investment bankers and lawyers to share documents with their clients.
 - When business model was based on usage, but it was hard to sell to customers because they could not easily plan how much they would spend on the product.
 - When switched to a “cell phone” type of model, where customers paid a fixed amount each month for an agreed-upon type of service, with the flexibility to buy additional service on a usage basis, it became much easier to sell the product to customers, and the sales cycle length decreased dramatically.

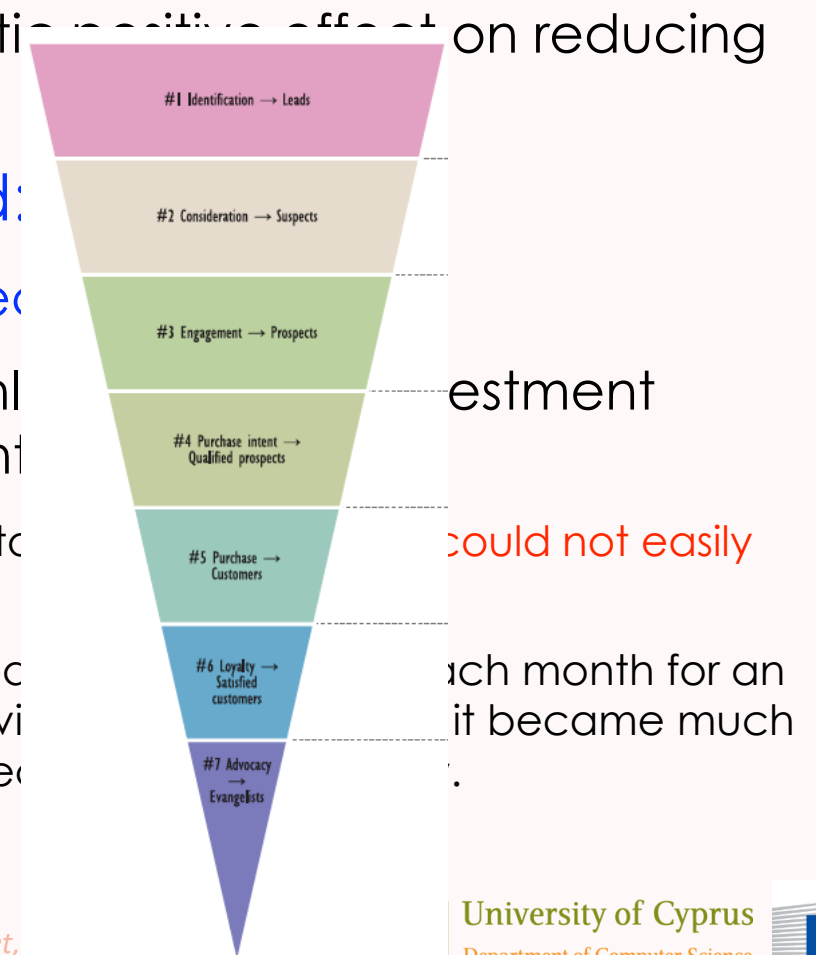
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How to reduce COCA?

- **Word of Mouth:**

- The **biggest driver of reducing COCA** is positive word of mouth about a company and its product. This tends to dramatically decrease the sales cycle, decrease the customer's desire to push you for discounts, and bring in well-qualified customers who already are good fits for the product, so salespeople can be much more productive in dealing with them.
- Many companies today, large and small, attempt to drive this by measuring it using the [Net Promoter Score index and system](#). They carefully track this and report it in their operations, executive, and even board meetings. Bonuses are tied to it with the belief, validated in real life, that this is a good proxy for the strength of word of mouth from your customers.

- **Stay Focused on the Target Market:**

- Staying focused on your beachhead market from the earliest steps of this process, and not getting distracted by customers outside of your chosen market, will help improve word of mouth and also make your sales reps much more productive.
- Your sale reps will become experts in their industry and the sales cycle length will decrease (repetitive selling to the same DMU and Process to Acquire a Paying Customer makes the sales rep much more productive), thereby decreasing the COCA.

Net Promoter Score



- **Net Promoter** or **Net Promoter Score (NPS)** is a management tool that can be used to gauge the loyalty of a firm's customer relationships.
- The Net Promoter Score is calculated based on responses to a single question: **How likely is it that you would recommend our company/product/service to a friend or colleague?** The scoring for this answer is most often based on a 0 to 10 scale.
 - Those who respond with a score of **9 to 10** are called **Promoters**, and are considered likely to exhibit value-creating behaviors, such as buying more, remaining customers for longer, and making more positive referrals to other potential customers.
 - Those who respond with a score of **0 to 6** are labeled **Detractors**, and they are believed to be less likely to exhibit the value-creating behaviors.
 - Responses of **7 and 8** are labeled **Passives**, and their behavior falls between Promoters and Detractors.
- The Net Promoter Score is calculated by **subtracting the percentage of customers who are Detractors from the percentage of customers who are Promoters**.
- For purposes of calculating a Net Promoter Score, Passives count toward the total number of respondents, thus decreasing the percentage of detractors and promoters and pushing the net score toward 0

Case study: Associated Gas Energy



- Oil drilling typically produces “associated gas” as well, and dealing with its disposal is costly and problematic for the environment.
- Often, no infrastructure exists at the drilling site to transport the gas to where it could be sold. Associated Gas Energy was a new venture plan developed by MIT students to enable oil producers to transform this operating cost into profit.
- Using GTL (Gas To Liquids) technology, associated gas is converted into crude oil at a cost to the customer of \$70/barrel.
 - The customer can sell this oil at market prices. If market prices are around \$100/barrel, the customer gains \$30/barrel.
 - Reinjection cost savings yields approximately \$10/barrel extra for the customer.
- This was a very clever idea with seemingly compelling financials.

Associated Gas Energy COCA estimation



- The target customer was a very conservative buyer who had to be sold to with old-fashioned direct sales methods. The new venture would require a lot of missionary work to get off the ground.
- It was believed that the sales cycle for this expensive product (**\$300K for the initial installation plus annual maintenance fees**) would be about one year even though it had a compelling value proposition.
- The company needed to hire:
 - an **experienced salesperson** as well as a **tech sales support person** who had credibility and understood the sales dynamics;
 - a **consultant** the first year to help them break through the initial customer inertia to be the first to have this system (remember, this is a conservative market!) and to get all the regulatory issues taken care of that come along with energy and environmental projects like this.
- They anticipated a ramp-up time for the sales rep to become effective in selling the product, and so in the first year they were **realistically projecting one system would be sold**.
- The first sale would be the hardest; after that one, they would not need the consultant again.
- After they had gone up the learning curve, the new venture's team would have the capability to do the selling themselves. In addition, with a successful installation as a reference, the sales cycle could be dramatically reduced.
- In year two, they would be able to hire a second salesperson as well as a tech support person to increase their sales.

Table 19.1 Associated Gas Energy COCA Calculation (a direct sales example)

Items from Marketing & Sales Budget	Year		
	1	2	3
Number of Salespeople = Number of Tech Support People	1	2	3
Sales Salary (\$175K/year fully burdened)	\$ 175,000	\$ 350,000	\$ 525,000
Tech Support Salary (\$125K/year fully burdened)	\$ 125,000	\$ 250,000	\$ 375,000
Travel	\$ 24,000	\$ 40,000	\$ 52,500
Entertainment	\$ 15,000	\$ 24,000	\$ 30,000
Events	\$ 30,000	\$ 35,000	\$ 40,000
Website Cost	\$ 10,000	\$ 10,000	\$ 10,000
Consultant	\$ 15,000	\$ —	\$ —
Total	\$ 394,000	\$ 709,000	\$ 1,032,500
Number of Customers	1	3	7
COCA for Year	\$ 394,000	\$ 236,333	\$ 147,500

COCA Key Factors



- Direct Sales vs. Telesales
- High Touch vs. Automated
- Conversion Rate
- Cost of Leads
- Quality of Leads
- WOM
- Moving them Down through the Sales Funnel
- Design of Your Business Model
- Focus => Decrease Sales Cycle



Common COCA Oversights...



- Underestimates headcount required to sell and market
- Overestimates sales productivity
- Does not consider her/his own cost in the calculation
- Underestimates cost of personnel (fully burdened)

Module 3: Disciplined Entrepreneurship

Section 8: How do you Design and Build your Product?

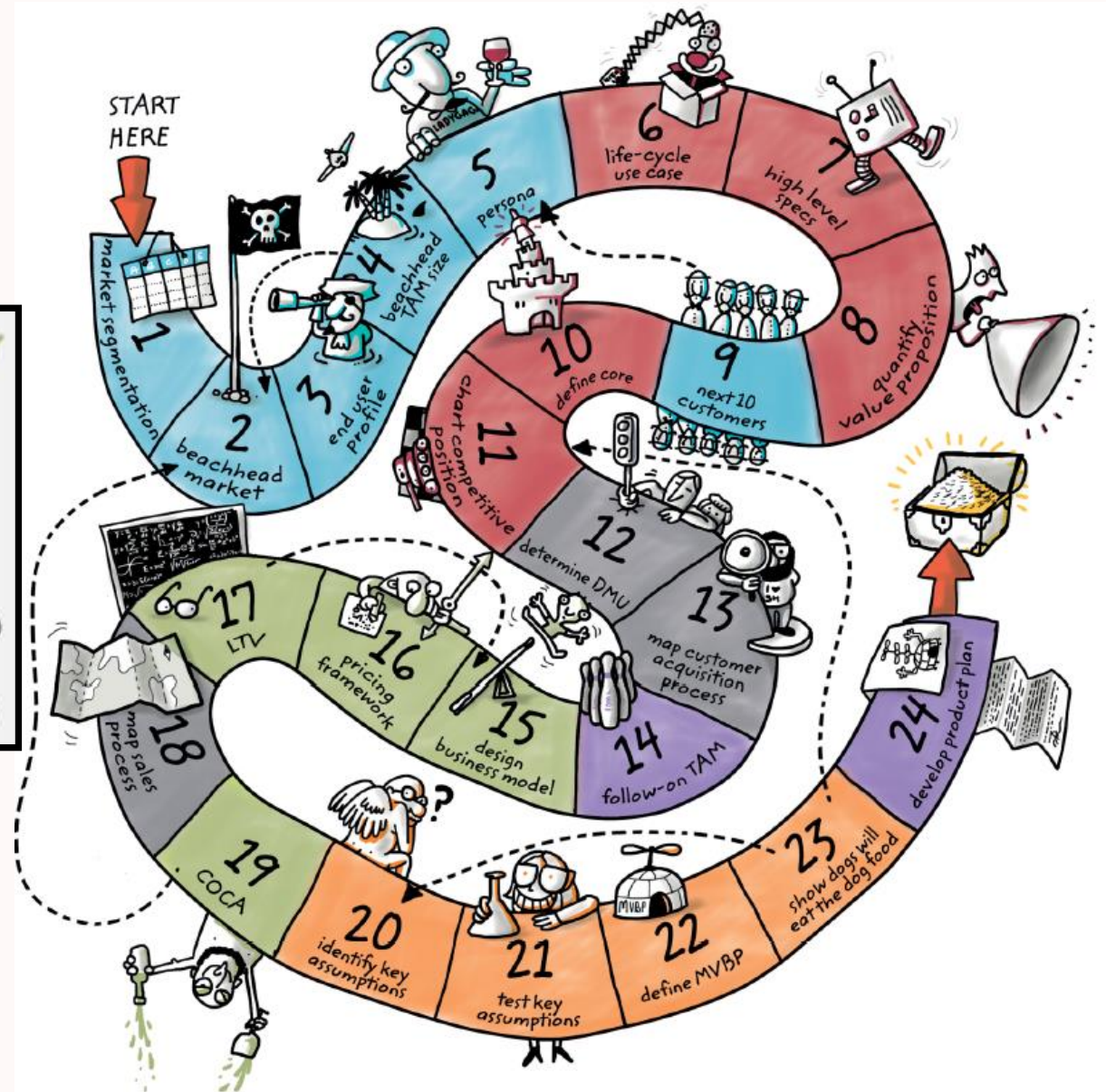


Recap



HOW DO YOU MAKE MONEY OFF YOUR PRODUCT?

- 15 Design a business model
- 16 Set your pricing framework
- 17 Calculate the lifetime value of an acquired customer (LTV)
- 19 Calculate the cost of customer acquisition (COCA)



What did you achieve?



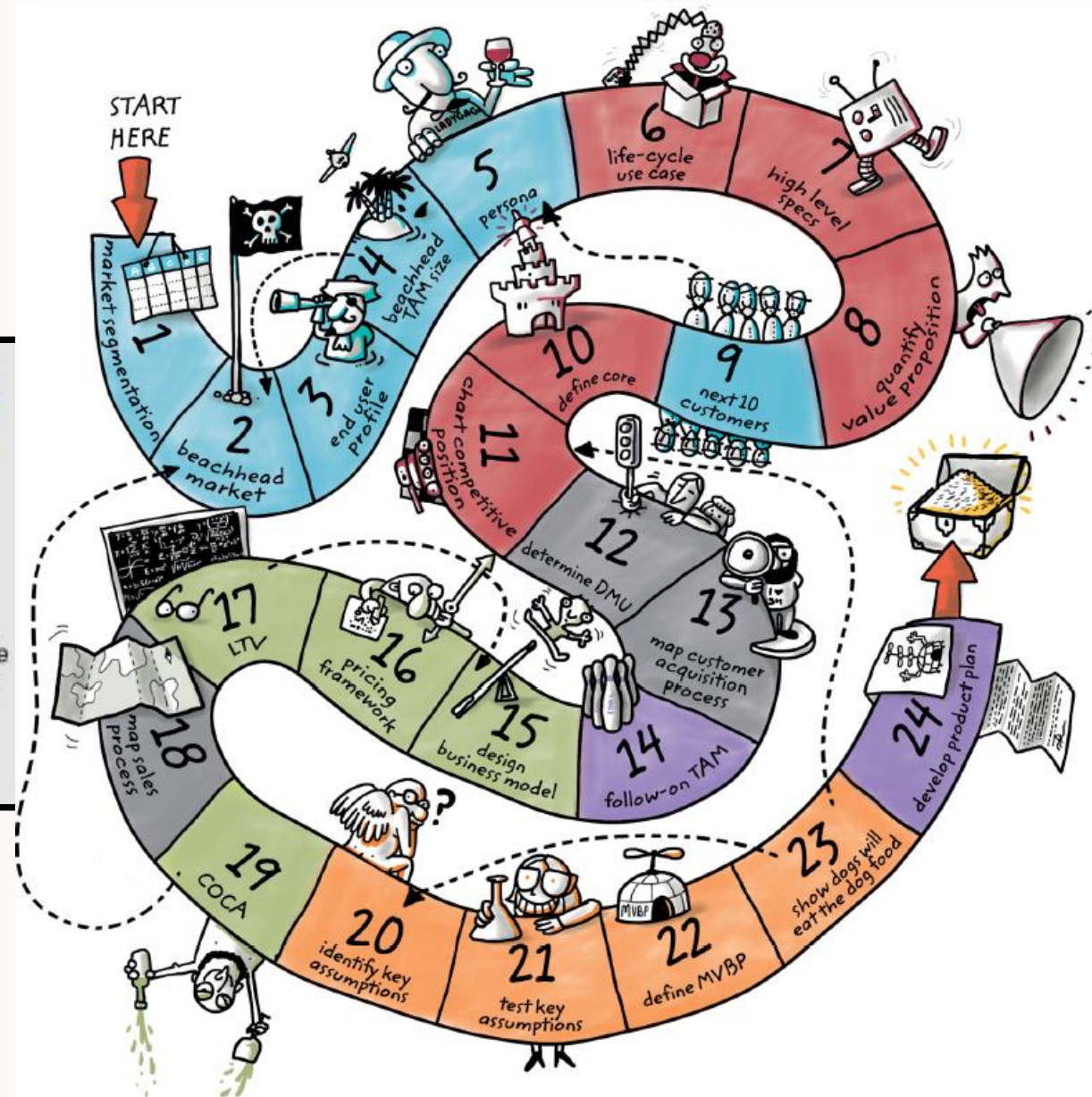
- You have **spoken** to customers, you have **observed** them at work, you have **queried** them on each step along the way by talking to them and seeing if they find your plan consistent with their **needs**.
- You have an understanding of:
 - who the **customer** is
 - what **value** you bring to them
 - how they will **acquire** your product
 - how much it **costs** to acquire a customer, and
 - how much **profit** the customer will bring to you.

What's next?



HOW DO YOU DESIGN & BUILD YOUR PRODUCT?

- 20** Identify key assumptions
- 21** Test key assumptions
- 22** Define the minimum viable business product (MVBP)
- 23** Show that "the dogs will eat the dog food"



Section 8

Contents



- DH Step 20: Key Assumptions
- DH Step 21: Test Key Assumptions
- DH Step 22: Define the MVBP
- DH Step 23: “The Dogs will Eat the Dog Food”

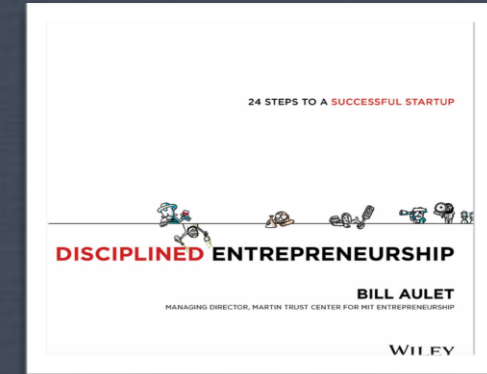
Section 8

Learning Objectives



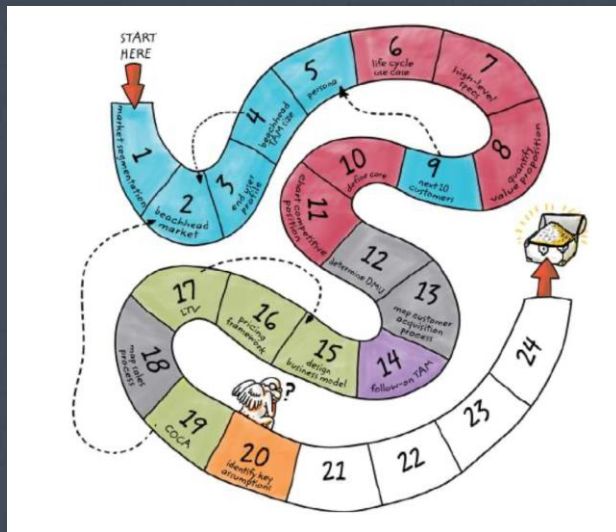
After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Identify and test key assumptions driving your product design.
- Understand and explain the key concepts of the Lean Startup Methodology.
- Produce specifications of your Minimum Viable Product (MVP).
- Plan the development of your Minimum Viable Product (MVP) prototype.



Section 8: How do you Design and Build your Product?

Step 20: Identify Key Assumptions

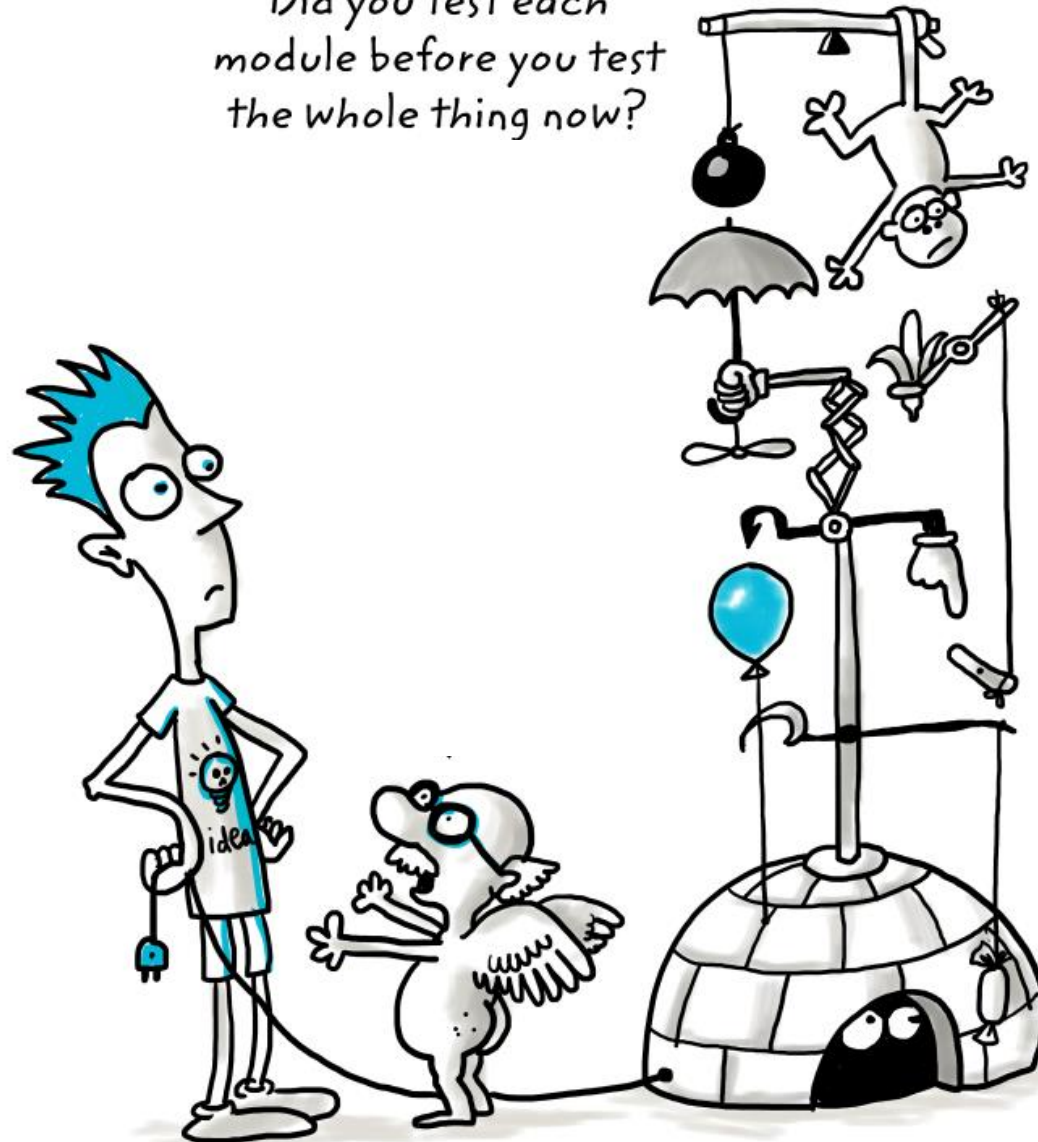


I can't wait to see
how this works!



I can't wait to see
how this works!

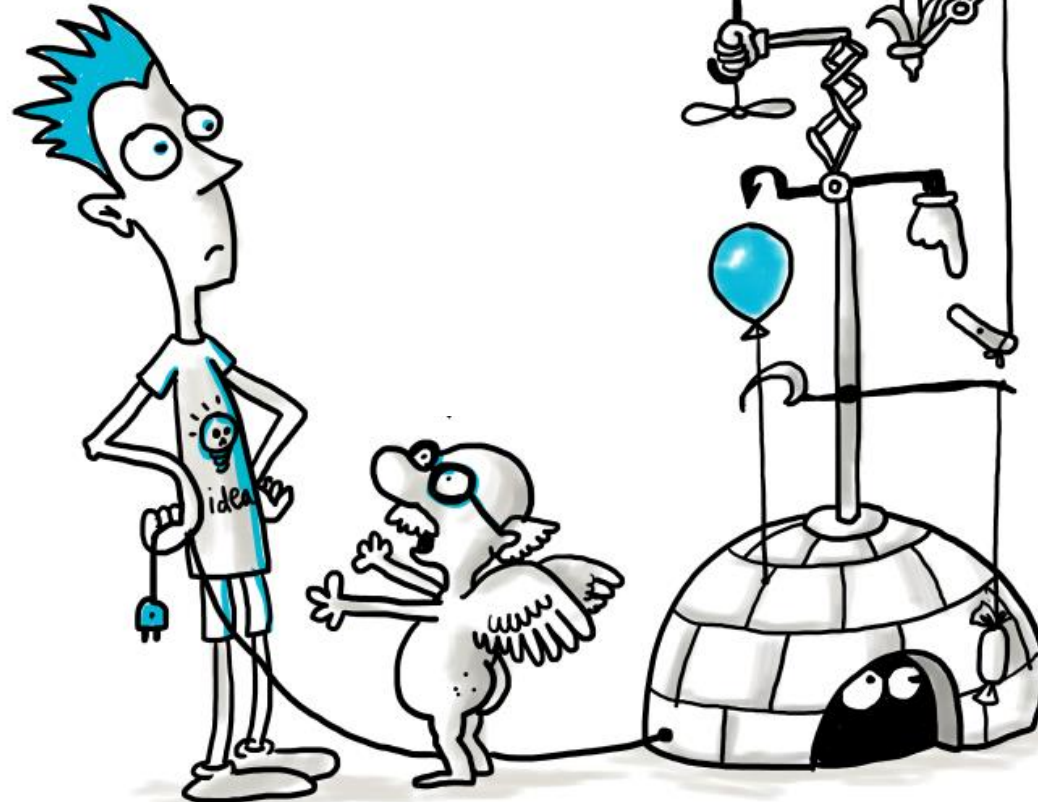
Did you test each
module before you test
the whole thing now?



I can't wait to see
how this works!

Did you test each
module before you test
the whole thing now?

No, but maybe
that would have been
a good idea

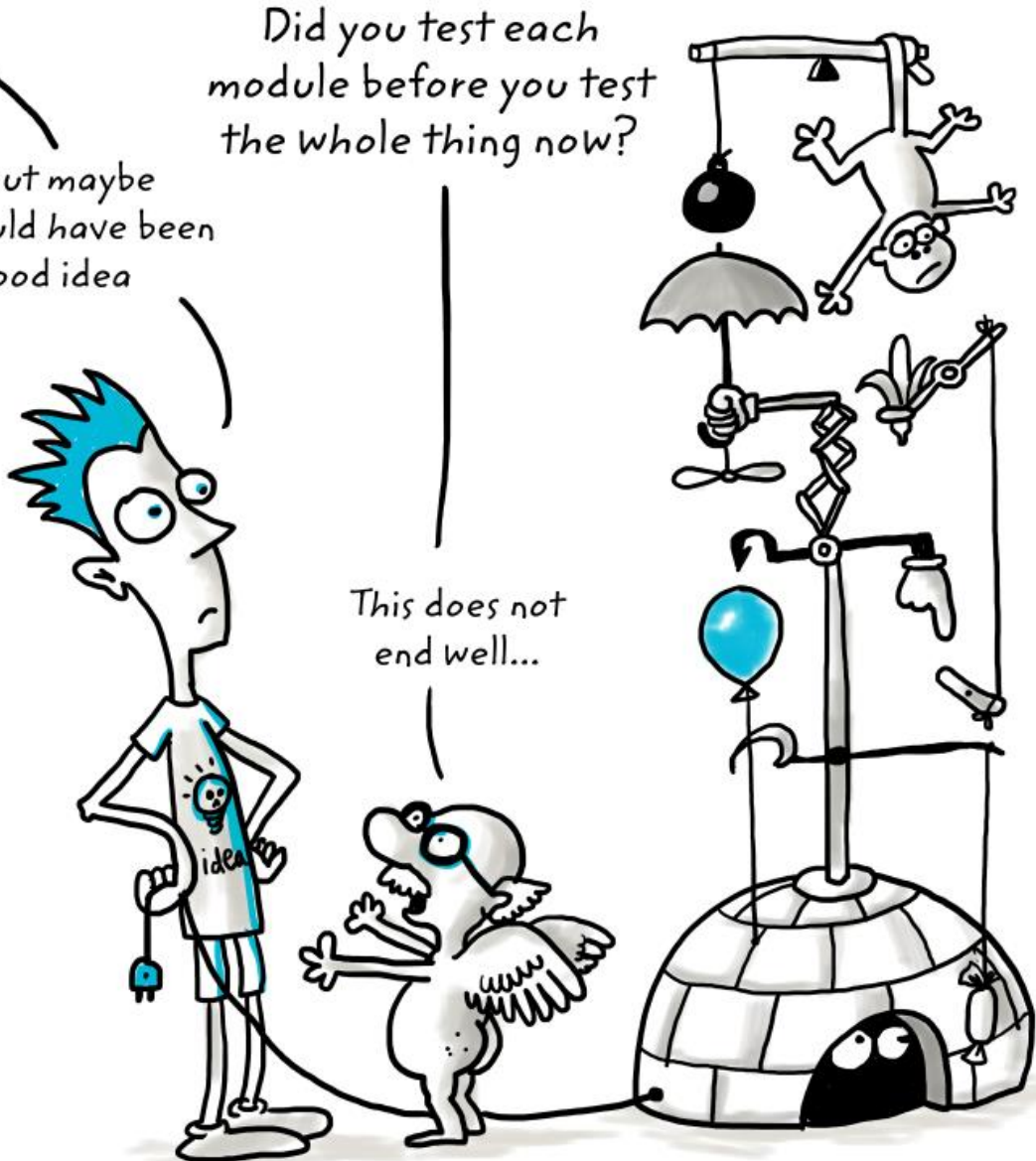


I can't wait to see
how this works!

No, but maybe
that would have been
a good idea

Did you test each
module before you test
the whole thing now?

This does not
end well...



Step #20: Goals

- Determine which assumptions about your business have not been thoroughly tested.
- Rank your top 5 to 10 assumptions in order of importance.

Why?

- Yours is a new business with a product that has not previously existed.
- You are making certain assumptions based on logic and research, but but **are they valid?**
 - You have to identify and rigorously test your key assumptions.

How?

- Step back and think about your big assumptions and test whether they are consistent with how the world works, not how you think or your customer says the world works.
- Identifying and breaking down your key assumptions is not difficult, but entrepreneurs tend to skip over this step, trusting intuition or research to substitute for actual testing of business and customer behavior assumptions.

What Makes a Good Assumption?

What Makes a Good Assumption?

- **Specific** – define your terms
- **Important** – It really matters!
- **Unitary** – Only one variable in the equation
- **Measurable** – It is quantifiable in an agreeable upon metric.
- **Testable** – We can run an experiment on it.
- **Small But Big** – Small changes that make big difference.

Examples of key assumptions

- List of areas where you made logical assumptions from PMR....specific, narrow so it can be tested, for example
 - Your value proposition
 - Features
 - Time to market
 - Channel
 - Cost
- Are you solving the right problem, is this the right customer, will your customer buy it?

How to Identify Key Assumption?

- Review each step of the framework and [make a list of the areas in which you have made logical conclusions based on your primary market research](#).
- Have you correctly identified your Persona's priorities?
- Will your customer find the value proposition attractive when they make a purchase?
- Will the customer make the time and effort to integrate your product into their workflow?
- Are your cost targets accurate?
 - If product is hardware, review the bill of material and carefully analyze the cost of the most important items in the bill of material.
 - If it is software, list key development challenges, assumptions, and cost items.
- Out of the customers you have already identified, are any of them "lighthouse"?
- Are any "linchpin" customers, where if they don't buy, others will not?
- Are there other linchpin customers who you have not yet identified?
- Are the lighthouse and linchpin customers interested in purchasing your product?

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Methodically Identifying Key Assumptions

- Go through the full canvas for your company now and discuss how you rate yourself on each box and each line item
 - **Give a Green dot to areas of strength**
 - **Give a Yellow dot to areas that are not strong but you don't see as good enough to not be life threatening**
 - **Give a Red dot to the areas that you see as weaknesses and could be fatal**
- Why do you give these ratings? What assumptions are fundamental?
 - The quality of this dialogue is critical
- Looking at the big picture now, which are the most important assumptions? (i.e., the **highest exposure** and **upside**)
- Make those assumptions very clear so you can test them

<p><u>Raison d'Être</u> ① <i>Why are you in business?</i></p> <p>Mission:</p> <p>Passions:</p> <p>Values:</p> <p>Initial Assets:</p> <p>Initial Idea:</p>	<p><u>Competitive Advantage</u> ④ <i>Why you?</i></p> <p>Moats:</p> <p>Core:</p> <p>Competitive Positioning:</p>	<p><u>Customer Acquisition</u> ⑤ <i>How does your customer acquire your product?</i></p> <p>DMU:</p> <p>Process to Acquire Customer:</p> <p>Windows of Opportunity:</p> <p>Possible Triggers:</p>	<p><u>Overall Economics</u> ⑧ <i>Does your product make money at a company level?</i></p> <p>Est. R&D Exp.:</p> <p>Est. G&A Exp.:</p> <p>LTV/COCA Ratio High Enough:</p>	<p><u>Design & Build</u> ⑨ <i>How do you produce the product?</i></p> <p>ID Key Assumptions:</p> <p>Test Key Assumptions:</p> <p>MVBP:</p> <p>Tracking Metrics:</p>
<p><u>Initial Market</u> ② <i>Who is your customer?</i></p> <p>Beachhead:</p> <p>End User Profile:</p> <p>TAM:</p> <p>Persona:</p> <p>1st 10 Customers:</p>	<p><u>Value Creation</u> ③ <i>What can you do for you customer?</i></p> <p>Use Case:</p> <p>Prod Description:</p> <p>Problem Being Solved:</p> <p>Quant. Value Prop.:</p>	<p><u>Product Unit Economics</u> ⑥ <i>Can you make money at the product level?</i></p> <p>Biz Model:</p> <p>Est. Pricing:</p> <p>Short Term - LTV:</p> <p>Short Term - COCA:</p> <p>Medium Term - LTV:</p> <p>Medium Term - COCA:</p> <p>Long Term - LTV:</p> <p>Long Term - COCA:</p>	<p><u>Sales</u> ⑦ <i>How do you sell your product?</i></p> <p>Preferred Sales Channel:</p> <p>Sales Funnel:</p> <p>Short Term Mix:</p> <p>Medium Term Mix:</p> <p>Long Term Mix:</p>	<p><u>Scaling</u> ⑩ <i>How do you scale your business?</i></p> <p>Prod. Plan for Beachhead:</p> <p>Next Market:</p> <p>Prod. Plan beyond Beachhead:</p> <p>Follow-on TAM:</p>

What are examples of key assumptions?

- List of areas where you made logical assumptions from PMR....specific, narrow so it can be tested, for example:
 - Your value proposition
 - Features
 - Time to market
 - Channel
 - Cost
- Are you solving the right problem, is this the right customer, will your customer buy it?

Example: Morphlab (Now Ori)



Robotic furniture to increase functionality of your apartment. Identified 3 things to test based on PMR observations .

- Lack of storage
- Lack of division of space is a problem for people living in studios
- No proper living and dining area

Example: Morphlab Continued



- Initial interviews lacked the specifics they needed
- The persona—Renter? Developer? Both?
- Team drew some 3D models of potential solutions and showed it to the personas for validation which addressed the areas for discussion but also more detail on how it would work.
- The renter would be a good alpha/beta site but concerns about portability were raised. Developer would put one in the model site for his new building for feedback.
- Lesson: Kept moving & now time to revisit persona, etc. Iterating is fine. Not moving is not. But moving forward now without validation is very expensive.

Example:Genesis

DNA



- Assumption: Turnaround time was more important than cost, and to test that assumption kept the interview questions as open-ended as possible so there was no guiding them toward an answer the team wanted to hear.
- Experiment: Letter of Intent
 - “LOIs have been incredibly helpful for us so far. There are a number of other DNA synthesis companies out there and when asked by investors how we can be sure that the customers are unhappy with the status quo - showing them the 9 LOIs (from some major companies) they were able to get during delta v always does the trick. It's very concrete and is preferred over surveys.”
 - Learned pain points that really resonated with customers in later interviews, which helped us get more LOIs when they felt we were really on their side.
- Lesson: Answer you get (in this case value proposition but could be many other steps like DMU), not really tested until you push to get the LOI. That will clarify things. Words are cheap; cash is not.

Case Study:

Sasa



- A for-profit social venture empowering women in Africa by allowing them to sell their art worldwide using mobile phones.
- As the team looked to launch and grow their business in a capital-constrained situation, they were very careful to identify their assumptions and test them so as not to waste any precious money or time.

Producers Assumptions

1. Craftswomen (i.e., Producers) want to be economically empowered.
2. Craftswomen will adopt the Sasa platform into their market practices.
3. The vendors will earn a sustainable income.
4. Vendors will trust the Sasa technology and services.
5. Existing infrastructures will be consistent and expand with demand.
6. Vendors will earn more using Sasa than by selling in the open-air markets.
7. A vendor can afford to buy a simple feature phone, which is camera-enabled.
8. A vendor is familiar with using SMS.
9. A vendor is able to leverage their knowledge of SMS to quickly adopt the use of MMS.

sasa

Customer—Assumptions about the producers

Case Study

- Note that some of the assumptions for the consumer side are not specific enough and will need to be decoupled into multiple assumptions.

Web Consumer Assumptions

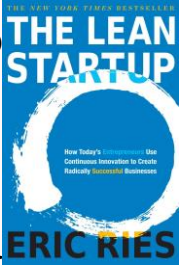
1. Consumers not only value, but prefer handmade goods.
2. Consumers want to know who made their products and how.
3. International consumers will trust the Sasa technology and services.
4. International consumers will be compelled to buy products on the Sasa platform.
5. Sasa customers will return to Sasa to buy more products.
6. International consumers will happily wait for up to three weeks to receive products from Africa.
7. Sasa can profit greatly just from selling jewelry to start.
8. The necessary infrastructure and policy will be consistent and expand with demand.

sasa

Customer—Assumptions about the web consumer

Lean Startup Basics

- A Startup is a human institution designed to create a new product or service under conditions of extreme uncertainty.
- Startups have a destination in mind (*vision*): to create a thriving and world-changing business.
- To achieve that vision, startups employ a *strategy*, which includes a business model, a product road map, a point of view about partners and competitors, and ideas about who the customer will be.
- The *product* is the end result of this strategy.
- Products change constantly through the process of optimisation (*tuning the engine*).
- Less frequently, the strategy may have to change (*pivot*).
- Learning is the essential unit of progress for startups. The effort that is not absolutely necessary for learning what customers want, can be *eliminated* (*validated learning* - learning that is demonstrated by positive improvements in the startup's core metrics).
- A startup's efforts are *experiments* that test its strategy to see which parts are brilliant and which are garbage.
- The products a startup builds are *experiments*.

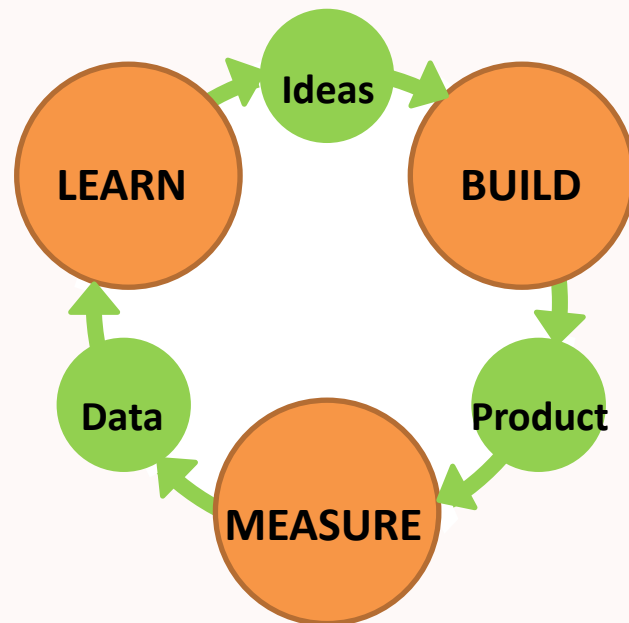


Lean Startup Basics

- The **Build-Measure-Learn** feedback loop is at the core of the Lean Startup model.
- The **Minimum Viable Product (MVP)** is that version of the product that enables a full turn of the Build-Measure-Learn loop with a minimum amount of effort and the least amount of development time.

“MVP”

- “M”: Minimum
- “V”: Viable
- “P”: Product



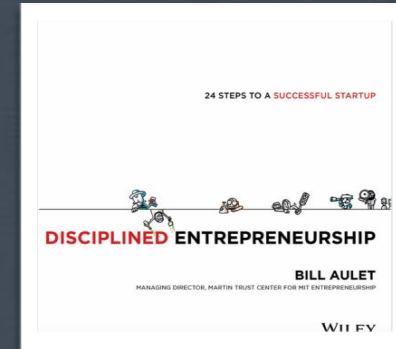
“The MVP is that version of the product that enables a full turn of the **Build-Measure-Learn loop** with a minimum amount of effort and the least amount of development time.

- Ries, Eric (2011-09-13). *The Lean Startup* (p. 77), Random House, Inc.. Kindle Edition.



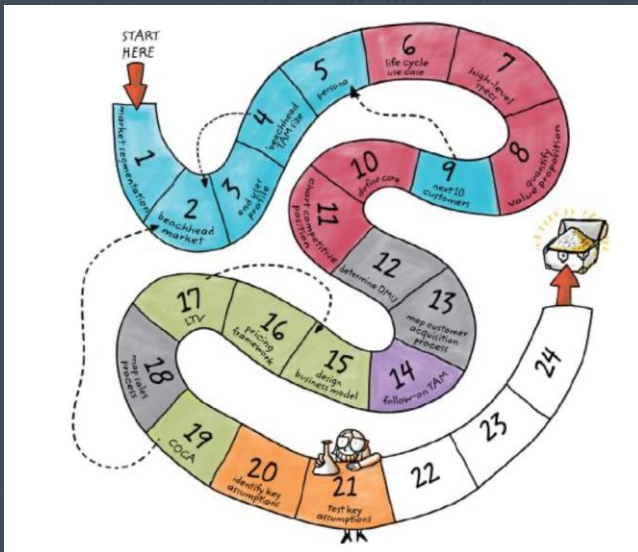
24S vs Lean

- Similarity between the concept of a “**minimum viable product**” or MVP and **MVBP**.
- However, in the 24 Steps framework, a “product” should always be complete enough that a customer can gain value from it.
 - The MVP framework, by comparison, includes in its definition of “products” actions that merely test individual assumptions about the new venture idea.
 - The process of establishing an MVBP provides a “systems test” of whether your customer will pay money for what you are offering, *not just a channel through which to test an assumption*.
 - Much as **you do not have a meaningful business** until you have a **paying customer**, your **business does not have a product** until someone **purchases it, gets value from it, and can provide meaningful feedback to you about it**.
- Over the next two steps, you will unpack your assumptions, breaking them down into a prioritized list to test empirically before you launch your MVBP.



Section 8: How do you Design and Build your Product?

Step 21: Test Key Assumptions



Section 8

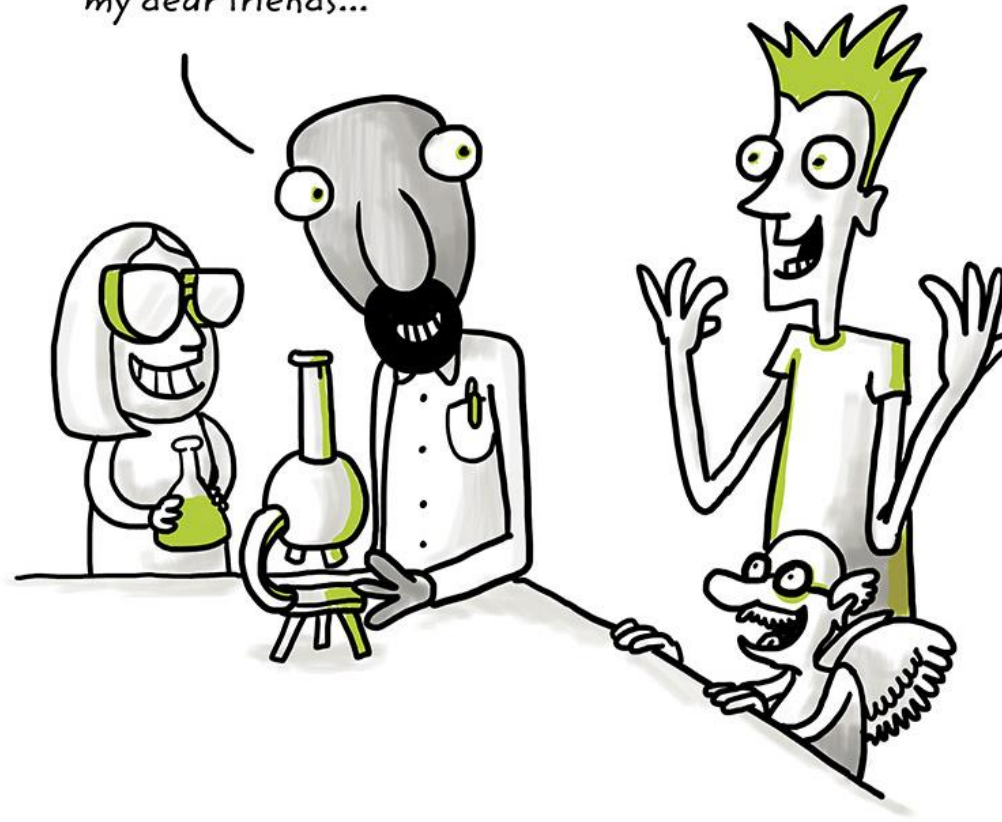
Contents



- DH Step 20: Key Assumptions
- DH Step 21: Test Key Assumptions
- DH Step 22: Define the MVBP
- DH Step 23: “The Dogs will Eat the Dog Food”



While trying to find
that entrepreneurship gene
was a waste of time,
this seems very doable
and productive
my dear friends...



Now that we have identified those key assumptions, let's use a scientific approach to test

Step #21: Goals

- Take your list of key assumptions and design empirical tests to validate or refute them.
- Perform the empirical tests, moving quickly and efficiently to decrease the risk of your startup.
- Gather empirical data that either support or disprove your assumptions.

Test Key Assumptions

- Once we have identified the key assumptions, it is often not hard to test them.
- Design experiments to test these assumptions in the cheapest, quickest, and easiest ways possible.
- These experiments will not require much, if any, in the way of building physical goods or writing code, but rather logical thinking to design simple yet effective tests.

Testing Assumptions (e.g.)

- To test cost targets, send **informal request for quotation (RFQ) or spec** to vendors to see if your cost projections are accurate at the volume you need.
- To test interest of lighthouse & linchpin customers, see if they do any of the following:
 - Prepay for your solution (best)
 - Put down a deposit (good)
 - Provide a letter of intent (okay)
 - Agree to a pilot (acceptable)
 - Express a strong interest in purchasing if certain conditions are met (not too reassuring but may be acceptable)
- If you are meeting customers in person, bring along an experienced outsider to help you determine whether the customer **is really excited about your product and will buy it**, or is **just being polite or collecting information**.
- To test whether certain customers are lighthouse or linchpin customers, repeat the above process but with other customers; see if they will attribute any of their purchasing decisions to certain other customers, and look for patterns.

Examples of testable assumptions

- Assumption: **“Neohippies” Aged 25–35 Use Their Smartphones to Help Them Shop in the Grocery Store**
- This team wanted to offer a smartphone-based personal shopping assistant to young people who shop at health food stores like Whole Foods Market.
 - The students on the team used their smartphones when they shopped, so they assumed that others did so as well. This was a key assumption that needed to be tested.
- To test the assumption, the team went to a Whole Foods and observed shoppers who fit the description of their demographic. **Virtually none of the shoppers used a smartphone while in the store.**
- The team was incredulous, but confirmed the result at a different Whole Foods location.
- The team interviewed shoppers and found that while many of them owned iPhones, they were not interested in using them while shopping because they already had a way of shopping that worked well for them and did not want to change.
- As a result, the team changed its focus completely and worked on a different mobile app for a different target customer.

Examples of testable assumptions

- **Conducting Opinion Polls Is Much Better on Facebook Than with Traditional Telephone-Based Methods**
- One student, a political science major, was concerned about political opinion polls and the possibility that the accuracy of polls would be affected by the growing number of people who were canceling landlines in favor of cell phones.
 - American laws prohibit contacting cell phone users with autodialing machines, so pollsters who want to call cell phones have to individually dial each number, making it much more expensive to contact cell phone users versus landline users.
 - Polls risked being skewed because certain demographics were more likely to be cell phone-only users than others.
- The student assumed that since Facebook allows you to target ads at certain demographics and access the demographic data for clicked ads, he could **use Facebook ads to quickly and cheaply conduct polls that are more accurate and less labor-intensive than telephone-based polls.**

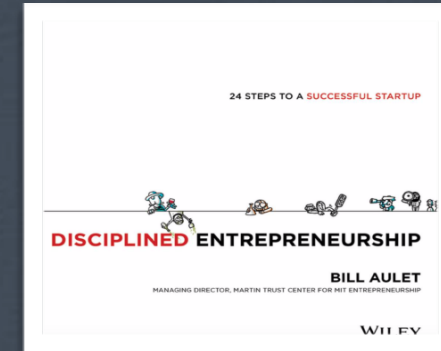
Examples of testable assumptions

- The student was able to test his hypothesis overnight with [less than \\$100 in Facebook ads](#).
- His initial experiment compared his ad click-through rates against the 2012 New Hampshire presidential primary and the aggregate of the professional polls done of the primary.
- His click-through rates did not accurately predict the outcome of the primary, so he hypothesized that if he changed the design of the ads, he would achieve more accurate results.
- Less than a week later, with another [\\$50 in ads](#), he tried a different format for the headlines of the ads.
- This second attempt was compared to a different state's presidential primary, and [achieved results similar to the professional polls that cost \\$100,000 and several days to produce](#).
- Interestingly, while validating his hypothesis, he found an even more interesting use for his idea—pollsters were interested in using Facebook's demographic targeting of ads to organize hypertargeted focus groups, a market opportunity with much broader application than simply predicting the results of an election.

Testing key assumptions

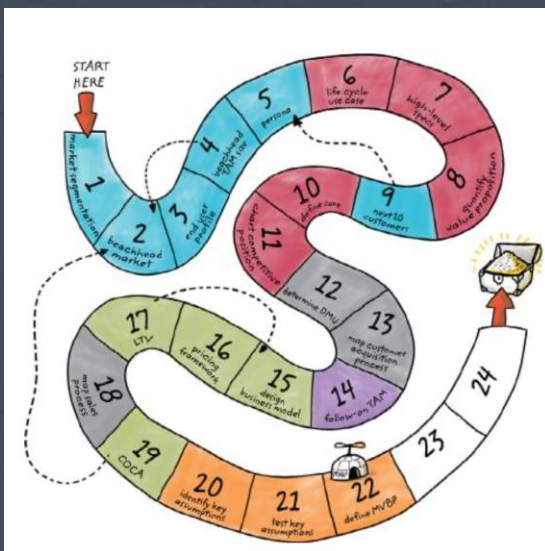


- Determine Best Experiment Methodology
- Always trying to do Smallest Effective Experiment Possible
- Options:
 - More refined PMR
 - LOIs, Paid Beta, Prepays (Test their wallet)
 - Validate Costs
 - Validate Value Prop with Pilot/Concierge Service
 - Benchmarks
 - A/B Testing
- Creative methods as suggested in literature



Section 8: How do you Design and Build your Product?

Step 22: Define the Minimum Viable Business Product (MVBPP)



Section 8

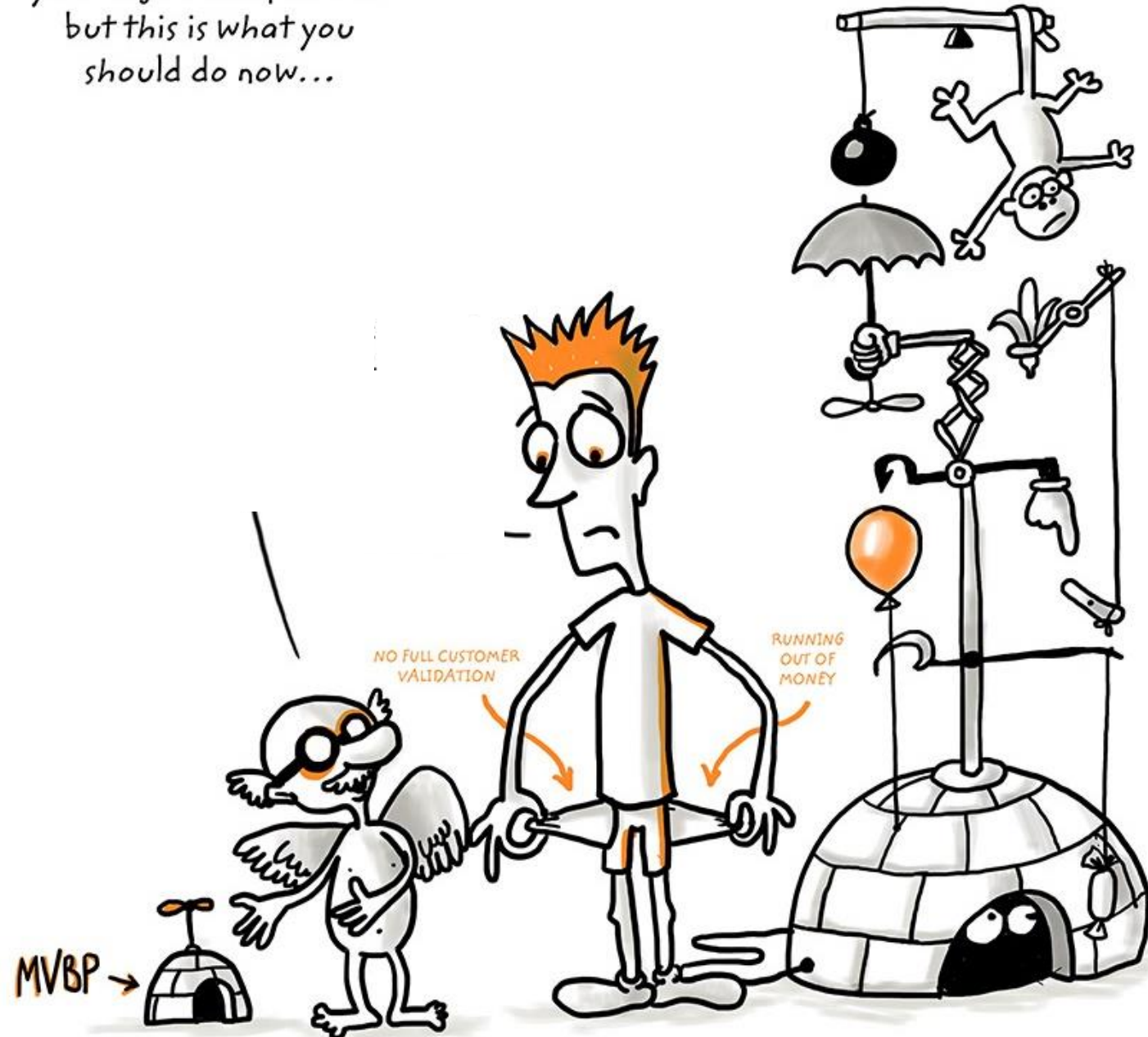
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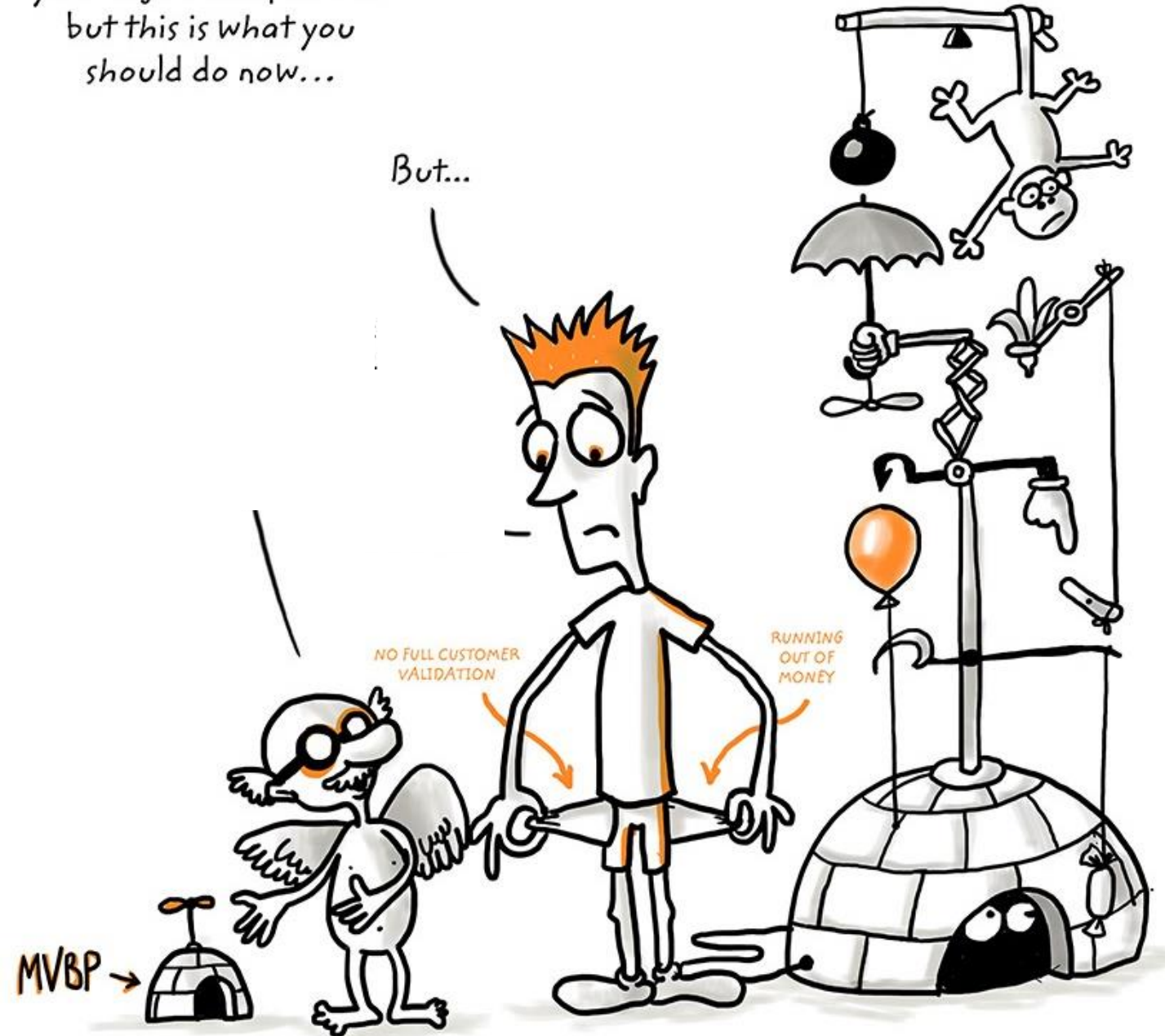
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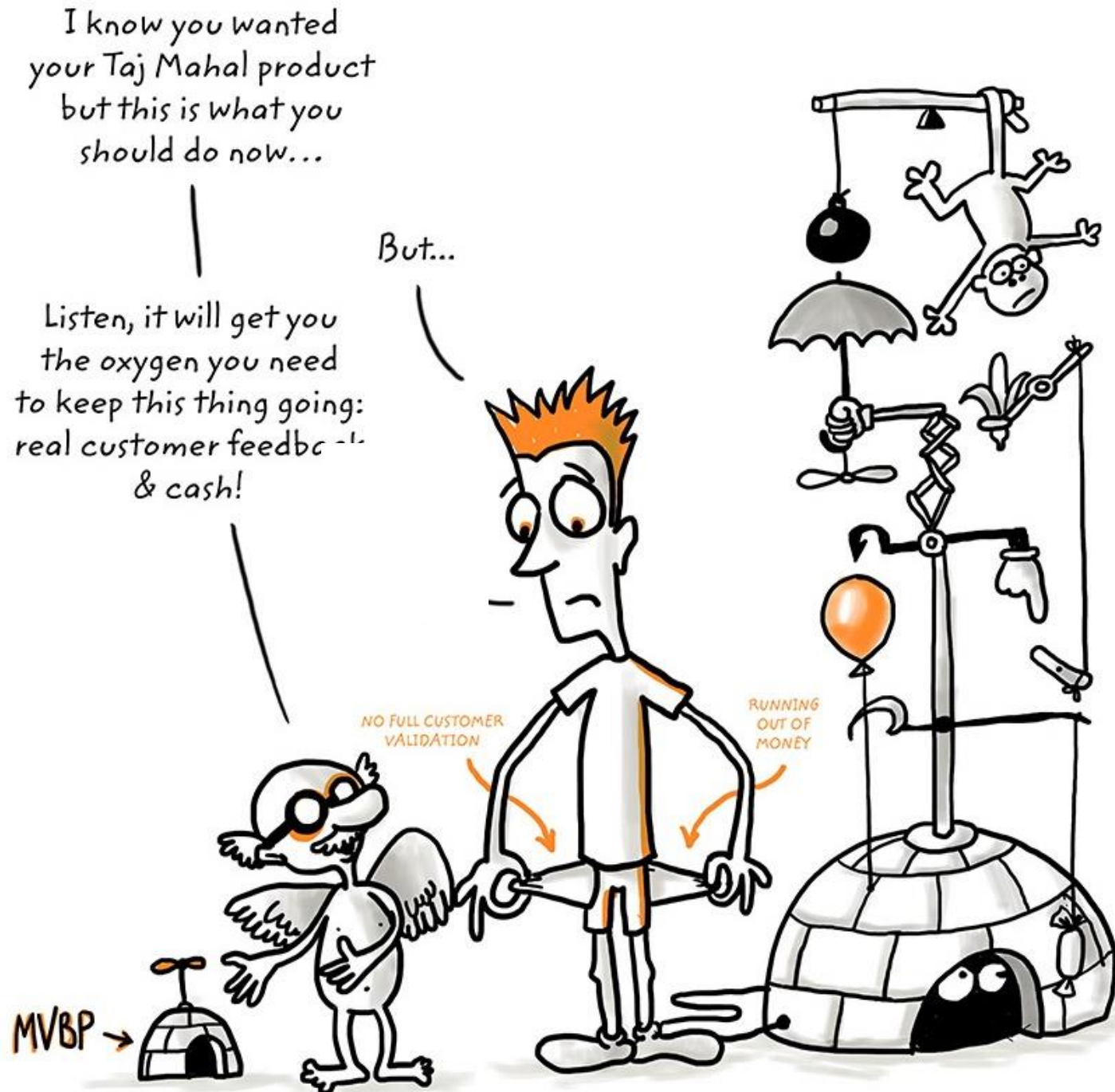


I know you wanted
your Taj Mahal product
but this is what you
should do now...



I know you wanted
your Taj Mahal product
but this is what you
should do now...





Now we are feeling good about our product but we must show restraint; we will now cross the Rubicon and launch a minimally viable product that a customer will pay for, but keep the functionality as simple as possible so we can minimize risks and also continue to test the assumptions in a scientific manner.

Step #22: Goals

- In this step and the next, you will develop and test the **Minimum Viable Business Product (MVB^P)**.
- The MVB^P combines the most important key individual assumptions into one integrated product that can be sold.
- The MVB^P sets you up to test the most important assumption that integrates the rest: **that customers will pay for your product**.
- The product you will build in this step will meet the three conditions of an MVB^P.

3 Key Conditions



- With the least amount of investment achieve the following three conditions:
- **Value**: Customer gets **value** from your product (i.e., validate Step #8, QVP)
- **Pays**: Economic Buyer **pays** something for the product (i.e., validate some level of WTP)
- **Feedback**: Start meaningful **feedback** loop with end user

MVBP requirements

- Your MVBP should **balance simplicity** with **sufficiency**.
 - Odds of success are higher if you **limit the number of variables in your initial product**, getting something that works into the customer's hands **quickly**, even if it does not have all the functionality you would like to include.

MVBP: How?

- Make a list of all of your key assumptions
- Narrow your assumptions to the most important
- Put it/them into a product the customer can use
- See if they will buy it

“Concierge” MVBP

- It doesn't really have to work
- You just need to simulate the result like if the product did work
- Then see if your assumptions are proven true
- Not a sustainable model but helps you test and better allocate resources

Concierge MVPB example

- Automatic couponing program.
- Let's say you want a software program that will automatically send a user coupons based on the food they buy each week and **help them decide which grocery store they will shop at to save more money**.
- Instead of building software, first you would allow a user to tell you what they buy each week, maybe through an email or face to face, and then take the coupons and best grocery store to them each week.
- Soon, you'll find out if/when the user doesn't go to the grocery store, if savings really affects which grocery store they choose, and if they care about certain brands, and if so, in which food categories.
- You would learn a lot more by using this **concierge mvp** technique than by taking **the enormous effort of building the web application**. This will allow you to decide which ideas work from your initial hypothesis, and which ideas need to be scrapped.

Summary



- Define your MVBP very carefully before building it
 - Software
 - Hardware
- Test the “B” in the MVBP as early as you can
 - If you can: sell it outright
 - If you can't: presell, do paid beta – involve \$
- Building the MVBP
 - Know what you don't know
 - Get help if necessary

Case Study: Home Team Therapy



- **Problem:** improve physical therapy is delivered during recovery.
- **Idea:** Use Microsoft Kinect to monitor patients and provide them with real-time automated feedback when they do their therapy exercises at home.
- Doctors could also see the home sessions and provide feedback of their own.



Case Study: Home Team Therapy



- Implementing the whole idea was complicated, in part because of lack of resources.
- **Minimum Viable Business Product definition** based on whether doctors and patients would use and pay for his MVBP online system that assists them in physical therapy.
- Initially, Kinect was supposed to be part of the product, as a real attention-grabber.

Case Study: Home Team Therapy



Home Team Therapy - Welcome Client

http://www.hometeamtherapy.com/client/myworkout.php

JOIN US! HOME | PATIENTS | PHYSICIANS | ABOUT US | CAREERS | CONTACT US

home team therapy

My Home Team | **My Workout** | Progress Report | Schedule | My Profile

My Workout

Kinect Stick Figure Feed

PT Video

⏪ ⏩ 🔊

Squats (10 reps)

Lunges (10 lunges)

One-Leg Balance (10 reps, 3 sec)

Two-Legged Jumps (10 jumps)

Ouch! Feels Great! Help/FAQ

facebook | twitter | linkedin

© 2011 Home Team Therapy

Home Team Therapy MVBP



- After asking serious questions about what was **required to minimally launch to test core assumptions** and **get into a feedback cycle** with customer, the MVBP was simplified.
- Elements of the old design that **included the Kinect system** are **gone**.
 - However, they could just use an online video for physical therapy and a very simple connection to the physical therapist in the MVBP.
 - This **eliminated the technological risk** and many other **risks** such as **how the patient would get the hardware**, whether it would be **compatible with a computer** the patient already had, whether the **user would be comfortable** using the Kinect, and many other questions.

Home Team Therapy MVBP



JOIN US! HOME | PATIENTS | PHYSICIANS | ABOUT US | CAREERS | CONTACT US

home team therapy

Home Team | **Workout** | Progress | Schedule

My Workout

Squats

Lunges

Balance

Jumps

**Physical Therapy
Exercise Video**

⏮ ⏪ ⏩ ⏭ 🔊

facebook | twitter | linkedin © 2011 | Home Team Therapy

Testing Assumptions

- Determining the Minimum Viable Business Product tested the most important assumptions possible to get the iterative learning feedback loop started:
 1. Can we get patients to sign up?
 2. Will they use the system?
 3. Can we get doctors to sign up?
 4. Can we get paid for this in general?
 5. We've done customer research, but how can we determine if these are the features that customers really want?
 6. Are these the features that customers will pay for?
 7. Are these the features that customers will always want, or does it appear that their preferences will change over time?

Case Study: StyleUp

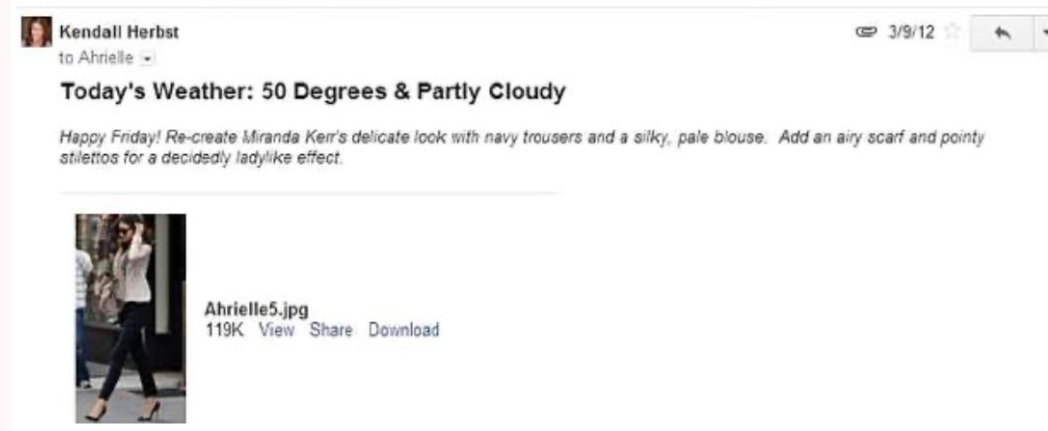


- **Problem:** gap between traditional fashion advice channels and what actually helped a woman decide what to wear or to buy.
- **Idea:** send women fashion advice that was tailored to each person's taste and to the local weather that day.
- **Assumption:** women would love a dose of fashion inspiration when they need it most—when they are getting dressed—and that a condensed, personalized dose would be more effective than a cumbersome 600-page fashion magazine.

StyleUp Testing Assumption



- Send individual daily e-mails to a handful of female friends with an outfit each woman could re-create, as well as the weather forecast for that day.



Lessons learnt



- Women loved this idea.
- Initial group soon grew to almost 40 people.
 - Many of these were Kendall's friends, and she could talk to them about what they liked and what she could improve.
 - Kendall also looped in women she did not know, and these women consistently opened the e-mails. This hinted the idea could scale.
- Key products insights:
 - Some women preferred the inspiration the night before and others wanted to receive the e-mails first thing in the morning.
 - Women wanted to shop these looks, if they did not own similar items already.

StyleUp Next step

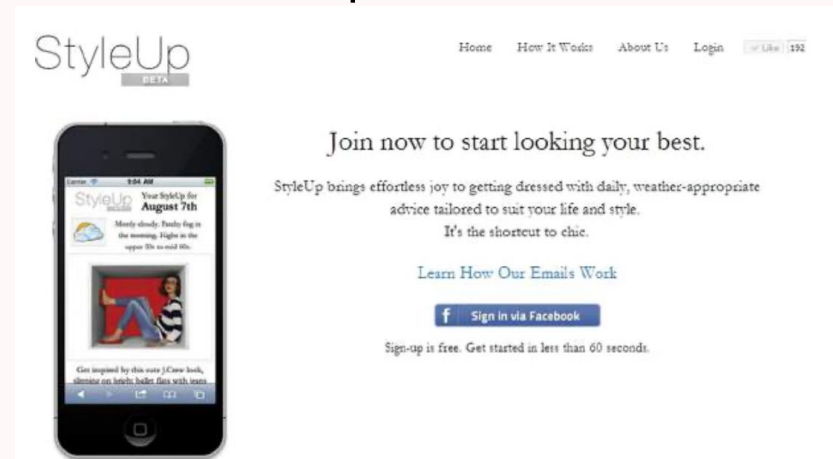


- Teamed with an engineer to built a system for Kendall to:
 - **categorize images** and
 - **deliver** them to **many women** at a time vs. one-to-one
 - incorporated many of the early findings like **customized time delivery** and **click-to-purchase links**.
- In this business idea:
 - the **primary customer** was the woman who received the free daily e-mail;
 - the **secondary customer** would be a company related to fashion, such as a retailer, who would want access to the primary customer so they could convince the primary customer to buy their products.

StyleUp MVBP



- A backend system that could categorize images based on weather and style.
- An easy delivery mechanism to dispense these images every day.



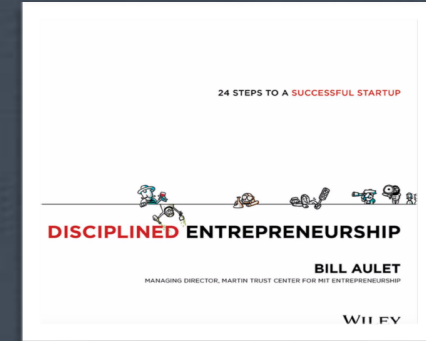
- A database of beautiful images the targeted customer (busy, professional women) would be inspired to see, which included a source link (for copyright issues).
- Analytics to measure how deeply women were engaging with and sharing the service.

StyleUp MVBP

Conclusions

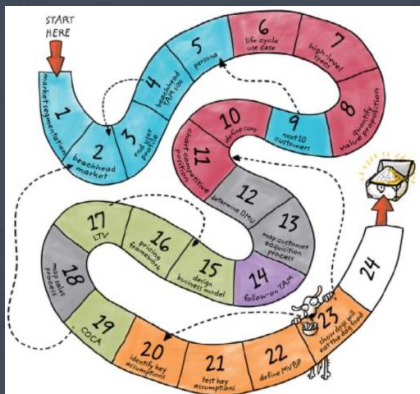


- Without investing much money or going too far down a single path, Kendall and Ryan's goal was to show that women would like the value proposition enough to sign up, open the e-mails and tell their friends.
- They were very confident they could add more features later; but they wanted to **get more guidance** after these original foundational features were implemented and used to know which ones to add and in what priority. They wanted to **start the feedback loop with their target customers** as soon as possible.
- This MVBP also set them up well to **test whether the secondary customer got value** from the product and was willing to pay for access to the primary customer, since the MVBP has links that allow women to click to websites on which clothing items are sold.



Section 8: How do you Design and Build your Product?

Step 23: Show That “The Dogs Will Eat the Dog Food”



Section 8

Contents



- DH Step 20: Key Assumptions
- DH Step 21: Test Key Assumptions
- DH Step 22: Define the MVBP
- DH Step 23: “The Dogs will Eat the Dog Food”



Once upon a time in a land called Ivory Tower, not so far away from here, there was a chemist who wanted to make better dog food.

He studied to see what kind of food would improve the health, happiness, and financial and spiritual well-being of the dog.

He came up with a breakthrough formula that was better for everyone and cost one-tenth the price of the cheapest dog food on the market.

Dogs would sleep better at night, have a better demeanour, shed less hair, have whiter teeth, be friendlier to strangers, obey their owners more, and so on.

They had tested in the lab from a chemical standpoint and were told that it would even taste better. Everything made logical sense. It was a business opportunity that was almost too good to be true.

He sprang into action, raising a large sum of money and spending \$3 million to build a plant to produce the dog food.

He signed up distributors and kicked off a huge marketing campaign. To quote Jackie Gleason from The Honeymooners, “This thing is going to the moon, Alice!”

The product shipped. Owners put the food in front of their dogs. And the dogs refused to eat the dog food. The company crashed and burned in a spectacular

But they have to eat it.
This doesn't make sense.
All my logical data and research
shows that it is good for them ...
plus they told me
they would eat it.



*Now that we have launched our product,
show **measurable proof** that the
customers are adopting the product;
no rose-colored glasses—data is required.*

Step #23: Goals

- Demonstrate quantitatively that customers will pay for your Minimum Viable Business Product (MVBP).
- Develop **metrics** that indicate the level of word of mouth your MVBP is creating among customers.

Simple Metrics

- Initial interest – click through rates
- Conversion rates
- Purchase and pay
- Maintenance contract
- Retention rates
- Customer advocacy
- COCA and LTV
- Gross Margin

Step #23: Why?

- Based on every detail you've uncovered about your product and your customer, it might make sense that your product would be viable.
- But ultimately a person is going to have to accept your new innovative product and humans are not always rational.
- So after you have made your logical plans with individual experiments along the way, and **before you invest large amounts of time and money**, make sure:
 - the **dogs** will **eat** the **dog food**!
 - the **dog's owners** (or friends) will **pay** for the dog food too.

Step #23: What

- See if the target customer will **buy** and **accept** the product.
- Learn a tremendous amount from the real data on the MVBP: **customer preferences**.
- Start to measure how much customers will **advocate** to others in the TAM about the benefits of your product.
 - What is the magnitude of the positive word of mouth your product is generating? (**virality coefficient**).

Case Study: StyleUp



- Once MVBP was released, the company measured **engagement** and **adoption** of their target customers.
- Target metrics to value the progress and validate a business opportunity, seeing if women would respond to the service and encourage their friends to sign up:
 - **Consistent engagement:** includes both whether women **opened the e-mails** and whether **women clicked through to webpages** where they could **purchase** the merchandise they saw in the e-mails, which was a potential way to monetise the product.
 - **Growth:** are women telling their friends to sign up for StyleUp; easy to track this quantitatively via referral link.

StyleUp observations



- Despite not spending money on marketing in the first few months, word spread to 1,500 people based on pure word-of-mouth traction and minimal press coverage.
- Even when they reached nearly 8,000 members, StyleUp had committed minimal capital and time to marketing and yet continued to see **20 percent month-over-month growth**.
- Of course additional customer satisfaction metrics, like **Net Promoter Score®**, would be a valuable additional piece of data to gauge the long-term viability.

More metrics



- Second dimension to be explored is to prove that the **dogs would pay for the dog food.**

“Can StyleUp can get paid for this customer engagement?”

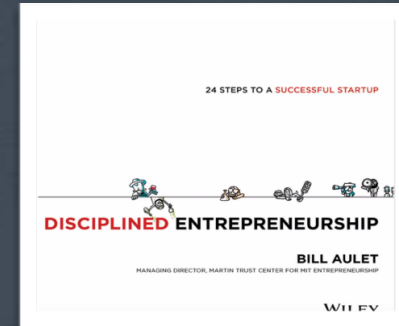
Can StyleUp monetize the situation it has created?”

- Three important metrics to measure:
 - **click-through rates** on the e-mails that were opened,
 - the amount of **money in sales that affiliates realized** from the click- throughs, and
 - the **payments made to StyleUp** for these sales.

Summary

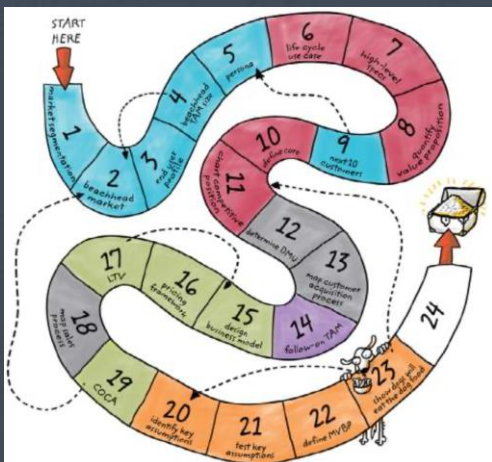


- Take your Minimum Viable Business Product to the customers to see if they will actually use and pay for the product.
- Collect data to see if they are really using it and how engaged they are as users.
- Determine if they, or someone associated with them, will pay for it and also if they are advocating for your product with word of mouth.
- After you collect data over time, analyze it and especially look for trends and understand underlying drivers.
- Make sure you are intellectually honest and rely on real-world data and not abstract logic.



Section 5: Design and Build Product

Step 24: Develop a Product Plan



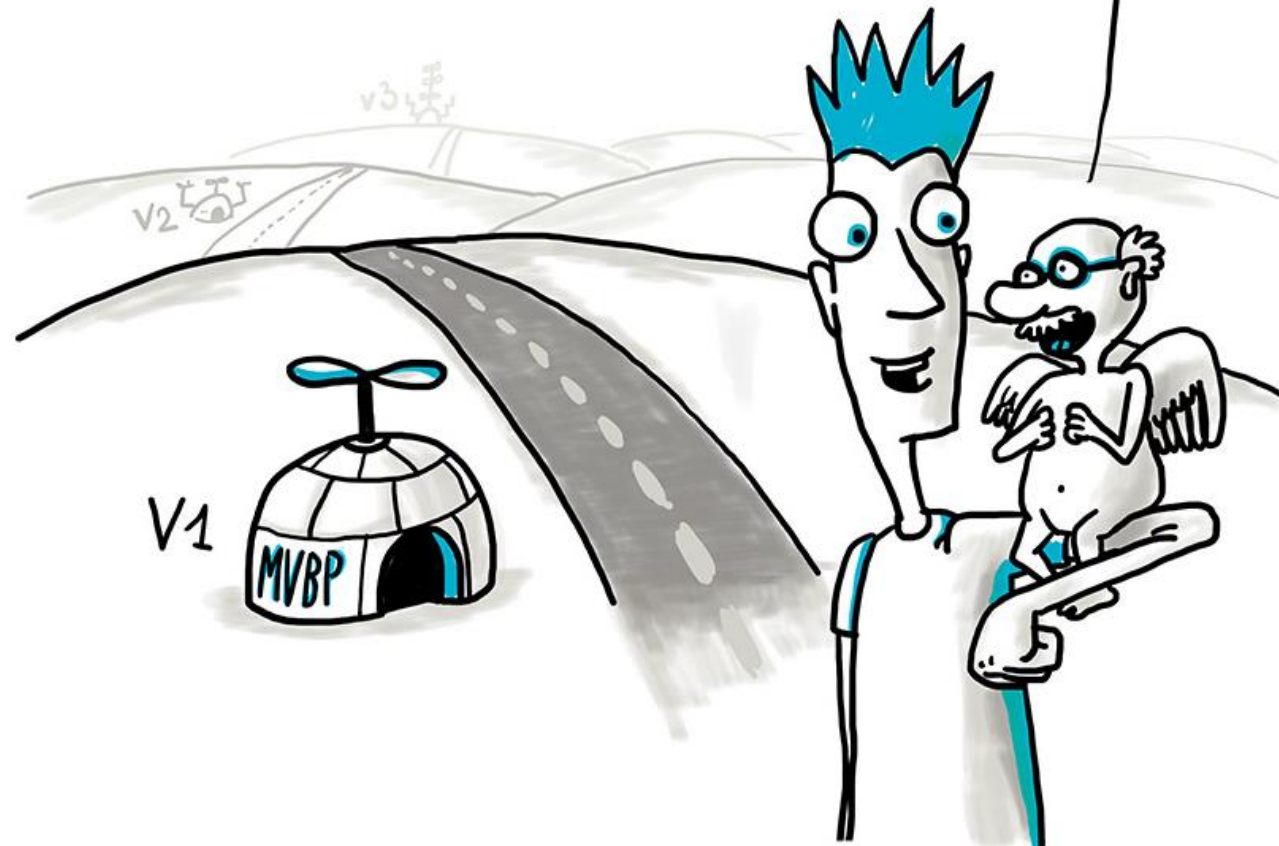
Section 5

Contents



- DH Step 14: Calculate the Total Addressable Market Size for Follow-on Markets
- **DH Step 24: Develop a Product Plan**

Let's get started with the MVBP
but let's also have a plan here.
Things will change but we are playing chess
and not checkers in that we need
to think a few moves ahead.
That is our flexible plan!



It is time to revisit your Follow-on Market TAM and develop a product plan so that your product is not just an island that leads nowhere.

Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Step #24: Goals

- Go beyond the Minimum Viable Business Product (MVBPP) to determine which features you will **build out for the beachhead market**.
- Determine which **adjacent markets you will sell to** after dominating the beachhead market, and how your product will have to **change** for each new market.

Step #24: Develop a Product Plan

What?

- Develop a longer term plan to add functionality so you can address additional markets.

Why?

- It is important to think ahead & have a plan so people are ready to keep moving forward after the MVBP.

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Source: Disciplined Entrepreneurship: 24 Steps to a Successful Startup, Bill Aulet, Wiley 2013.



Step #24: Product Plan

- Develop a longer term **Product Plan** to evolve your product/service and markets over time so that the MVP is the first step on a plan for much broader success.
- This plan is subject to change as new information comes in so don't sweat the details too much or spend too much time on it but do have at least a general vision of how you will make this a great company.

A Business is More than 24 Steps

The 24 Steps gives you a framework to get a rock-solid product-market fit at initial launch. But as your business grows out beyond its MVBP, you will also need to learn about the following, which we unfortunately do not have space in this book to cover:

- **Culture**
- **Team & HR Processes**
- **Development**
- **Sales Execution**
- **Customer Service**
- **Financials & Financing**
- **Leadership & Scaling the Business**
- **Governance**
- **Intangibles**



Master Programs in Artificial Intelligence for Careers in EU (MAI4CAREU)

MAI 622: AI Entrepreneurship



MAI 622: AI Entrepreneurship- Module 4

Fundraising and Pitching



Module 4

Contents



- Fundraising: Key Terminology and Concepts
- Pitching your idea

Planning



Weeks 12, 13:

- 2 90-minute lectures
- 2 60-minute precepts

Learning Objectives



After attending this module, studying its case studies and reading assignments, and watching suggested videos you should be able to:

- Describe and explain the different types of funding for a new company.
- Understand the terminology of funding and the series of funding.
- Identify sources of funding for your startup.
- Describe the purpose, the structure, and the content of a presentation to seek funding for your idea/company.
- Prepare and deliver convincing pitch of your idea/company to potential investors .

Module 4: Fundraising and Pitching

Section 1: Fundraising



Reading List



- How to fund a startup? by Paul Graham, Y Combinator
 - <http://paulgraham.com/startupfunding.html>
- How to raise money? by Paul Graham, Y Combinator.
 - <http://paulgraham.com/fr.html>
- Fundraising at Y Combinator's Startup School.
 - <https://www.ycombinator.com/library>
- 10 Terms You Must Know Before Raising Startup Capital by J. Colao, Forbes, 2013.
 - <https://www.forbes.com/sites/jjcolao/2013/10/14/10-terms-you-must-know-before-raising-startup-capital/#21c123d46d6e>
- The different types of funding for new entrepreneurs by Shelley Pasqual, Startup Guide.
 - <https://startupguide.com/different-types-of-business-funding>
- How to raise venture capital: Valuating your company by Ryan Allis, Startup Guide.
 - <https://startupguide.com/how-to-raise-venture-capital-valuating-your-company>
- How to raise venture capital: Bootstrapping and beyond by Ryan Allis, Startup Guide.
 - <https://startupguide.com/how-to-raise-venture-capital-bootstrapping>
- 4 reasons why your startup should not raise capital by Eran Laniado, VentureBeat, 2013.
 - <https://venturebeat.com/2013/07/05/dont-raise-money/>



Online Videos & Courses



- **Fundraising** by Sam Altman, *Startup Playbook*
<https://playbook.samaltman.com/#fundraising>
- **Modern Startup Financing** byCarolynn Levy, Y Combinator (2019).
<https://www.startupschool.org/videos/79>
- **Fundraising fundamentals** by Geoff Ralston, Y Combinator (2018).
<https://youtu.be/gcevHkNGrWQ>
- **The Why and How of Angel Investing** by Sam Altman, Y Combinator (2018)
<https://www.startupschool.org/videos/31>
- **How to Talk to Investors** by Tyler Bosmeny, Y Combinator Partners
<https://youtu.be/SHAh6WKBgiE>
- **Fundraising and Meeting with Investors** with Aaron Harris, Y Combinator.
<https://blog.ycombinator.com/aaron-harris-on-fundraising-and-meeting-with-investors/>
- **Fundamentals of Entrepreneurial Finance: What Every Entrepreneur Should Know** with Bill Aulet on edX
<https://www.edx.org/course/fundamentals-of-entrepreneurial-finance-what-every-entrepreneur-should-know>

Some Terminology

- **Startup:** a definition that's generally accepted is that it's a company in the early or growth stages of operation, usually under three years old and (if not already) becoming profitable.
- **Lean startup:** a method used to validate a business concept quickly and cheaply when founding a new company or introducing a new product.
- **Research spin-off:** a company that: a) has an equity investment from a national library or university; b) licenses technology from a public research institute or university; c) has as founder a university or public sector employee, or d) has been established directly by a public research institution.
- **University spin-off (or spin-out):** companies that transform technological inventions developed from university research that are likely to remain unexploited otherwise – a subcategory of research spin-offs.
- **Scale up:** refers to a company that has already validated its product in a market and is economically sustainable.
- **Unicorn:** A company often in the tech or software sector worth over US\$1 billion.

Some Terminology

- **MVP (Minimum viable product):** A technique which involves the development of a basic version of a new product that aims to satisfy its early adopters. The product is then developed with further features only after considering feedback from initial users.
- **Pivot:** when a company quickly changes directions after previously targeting a different market segment.
- **Pitch deck:** a short version of a business plan which presents key figures to potential investors in hopes of winning them over.

Some Terminology

- **Accelerator:** an organization or program that offers advice, mentorship and resources to help small businesses grow.
- **Incubator:** An organization that nurtures young firms during their first few months or years, usually in exchange for equity. An incubator differs from an accelerator in that it supports startups in their early development stages.

Related Terminology

- **Angel investment:** typically happens when a startup is in its early stages; it's when an investor, or a "business angel," provides startups with initial or growth capital for a stake in the company.
- **VC (Venture capital/Venture capitalist):** Venture capital is financing provided by firms to small, high-risk, startup companies with large growth potential in return for equity. Investors working for venture capital firms that choose to invest in specific companies are typically called VCs.
- **Bootstrapping:** self-fund using personal resources, like friends and family, to get cash going.
- **Seed funding:** The first round of small, early-stage investment from family members, friends, banks or an investor.
- **Bridge loan:** a loan taken out for a short-term period, typically between two weeks and three years, until long-term financing can be arranged. Also known as a *swing loan*.
- **Term sheet/Letter of intent:** The document between an investor and a startup including the basic terms and conditions for financing which is commonly non-binding. Once an agreement is reached between the parties involved, a binding agreement based on the term sheet is drawn up.
- **Burn rate:** how fast you are spending your money. Alternatively referred to as a *run rate*.
- **Vesting:** A process that involves giving or earning a right to a present or future payment, benefit or asset.
- **Exit:** Founders sometimes develop an exit business strategy before or during their entrepreneurial journey. An exit is a way to transition the ownership of your company to another company and pay back your investors.

The Role of Venture Capital

“VC funding-early investments in high-risk, high-potential companies -barely existed before the 1970s.

Inventors and innovators during the first two Industrial Revolutions had to rely on a thin patchwork of financing mechanisms to get their products off the ground, usually via personal wealth, family members, rich patrons, or bank loans. None of these have incentive structures built for the high-risk, high-reward game of funding transformative innovation.

That dearth of innovation financing meant many good ideas likely never got off the ground, and successful implementation of the GPTS scaled far more slowly.”

Source: Kai-Fu Lee (2018) “AI Super-Powers”

The Role of Venture Capital

“Today, VC funding is a well-oiled machine dedicated to the creation and commercialization of new technology.

In 2017, global venture funding set a new record with \$148 billion invested, egged on by the creation of Softbank’s \$100 billion "vision fund; which will be disbursed in the coming years.

That same year, global VC funding for A startups leaped to **\$15.2 billion**, a 141 percent increase over 2016. That money relentlessly seeks out ways to wring every dollar of productivity out of a General-Purpose Technology like artificial intelligence, with a particular fondness for moonshot ideas that could disrupt and recreate an entire industry.

Over the coming decade, voracious VCs will drive the rapid application of the technology and the iteration of business models, leaving no stone unturned in exploring everything that AI can do.”

Source: Kai-Fu Lee (2018) “AI Super-Powers”

10 Terms You Must Know Before Raising Startup Capital

- Pre-money vs. Post-money Valuation
- Convertible Debt (Convertible Notes)
- Capped Notes vs. Uncapped Notes
- Preferred Stock
- Liquidation Preferences
- Participating Preferred vs. Non-participating Preferred Stock
- Pro-rata Rights
- Option Pool
- Board Control
- Vesting



Different types of funding for new entrepreneurs

- Bootstrapping
- Angel investment
- Venture capital (VC)
- Banks
- Seed investment

Source: Shelley Pasqual (2018) <https://startupguide.com/different-types-of-business-funding>

How to Raise Money?

- Fundraising is hard
- Don't raise money unless you want it and it wants you
- Be in fundraising mode or not
- Get introductions to investors
- Hear no till you hear yes.
- Do breadth-first search weighted by expected value
- Know where you stand
- Get the first commitment
- Close committed money
- Avoid investors who don't "lead"
- Have multiple plans
- Underestimate how much you want
- Be profitable if you can
- Don't optimize for valuation
- Yes/no before valuation
- Beware "valuation sensitive" investors
- Accept offers greedily
- Don't sell more than 25% in phase 2
- Have one person handle fundraising
- You'll need an executive summary and (maybe) a deck
- Stop fundraising when it stops working
- Don't get addicted to fundraising
- Don't raise too much
- Be nice
- The bar will be higher next time
- Don't make things complicated

Video Assignments



Watch the following videos and discuss:

- Fundraising Fundamentals, Geoff Ralston (2018) Y Combinator
 - <https://www.youtube.com/watch?v=gcevHkNGrWQ>
- The Why and How of Angel Investing, Sam Altaman (2018) Y Combinator
 - <https://www.ycombinator.com/library/8A-the-why-and-how-of-angel-investing-is-2018>
- Fundraising and Meeting with Investors, Aaron Harris (2019) Y Combinator
 - <https://www.ycombinator.com/blog/aaron-harris-on-fundraising-and-meeting-with-investors/>
- Modern Startup Funding, Carolynn Levy (2019) Y Combinator
 - <https://www.ycombinator.com/library/8F-modern-startup-funding-sus-2019>
- Understanding SAFEs and Priced Equity Rounds, Kirsty Nathoo, Y Startup School
 - <https://www.ycombinator.com/library/6m-understanding-safes-and-priced-equity-rounds>



Reading Assignment



Read the following blog post and review the financing documents developed for the SAFE (simple agreement for future equity) financing approach documents Watch the following videos and discuss

- Fundraising Templates: Safe Financing Documents
 - <https://www.ycombinator.com/library/6z-fundraising-templates-safe-financing-documents>



Reading Assignment



Read the blog post by Bill Aulet “The Basics of Finance” and review the key concepts analyzed therein:

- <https://www.entrepreneur.com/articles/featured/chapter-2-the-basics-of-finance/>

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Reading Assignment



Read the following blog post on Financial Modeling by Bill Aulet

- Financial Modeling (Part 1)
 - <https://www.d-eship.com/articles/featured/chapter-3-financial-modeling-part-1>
- Financial Modeling (Part 2)
 - <https://www.d-eship.com/articles/featured/chapter-3-financial-modeling-part-2/>

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Module 4: Fundraising and Pitching

Section 2: Pitching



Reading List



- Pitch Advice for Entrepreneurs by Reid Hoffman
 - <https://www.reidhoffman.org/linkedin-pitch-to-greylock/>
- The YC Seed Deck Template by Aaron Harris, Y Combinator (2018).
 - <https://blog.ycombinator.com/intro-to-the-yc-seed-deck/>
- How to Design a Better Pitch Deck by Kevin Hale, Y Combinator (2015).
 - <https://blog.ycombinator.com/how-to-design-a-better-pitch-deck/>
- How to Effectively Pitch Business Ideas to Investors by Sarath CP.
 - <https://medium.com/swlh/how-to-effectively-pitch-business-ideas-to-investors-dd76661b02f1>
- It's time to Rethink the Startup Pitch Deck (Here's a Start) by Rob Go (2015).
 - <https://nextviewventures.com/blog/startup-pitch-deck-founder-vc-interactions/>
- 10 Things to Include in Your Startup Pitch Presentation by Bill Clark, Mashable.
 - <https://mashable.com/2011/06/24/startup-pitch-presentation>
- 10 questions for a perfect pitch by Linda Plano, MITEF Greece.
 - <https://www.planoandsimple.com/10questions/>
- How to Create an Enchanting Pitch by Guy Kawasaki.
 - <https://guykawasaki.com/how-to-create-an-enchanting-pitch-officeandguyk/>



How To Present Your Plan?

How To Present Your Plan?

- If you are successful, you **will** present your business plan to people.
- They may (probably) not have read your plan.
- It is important to have a logical flow and capture their attention
- It all starts with telling a **Compelling Story**

Key Considerations

- Turn your pitch into a story: **Storytelling** is the best way to attract the audience.
- Know your **audience** and **target the right ones**.
- Determine what the audience is **most interested in**
- Have a **simple** yet incisive Pitch.
- Set Strict **Timelines** and be **brief**.
- Speak Up About the **Sales**.
- Be **Courageous**.
- The purpose of a successful pitch is to have investors willing to **invest** in your company.

Importance

- Attacker vs. Defender
 - As an attacker, this is more important
- Gain needed resources
 - You need to get resources & this is the way
- Instantaneous view into your abilities
 - Employees, Advisors, Board Members, Investors, Customers, etc. will all get to see your skills in this exercise

Objectives and Criteria of Success

- Gives you and your new venture credibility
- Gain concurrence, or enthusiasm, for follow-on meeting
- Sets a mental model in person's mind so you can later succeed

Baseline Expectations

- **Connect immediately** – it is about them not you
- Be **professional** and **likeable** – must prove to be someone they want to do business with
- **Stand out** – you are an attacker not a defender; a tie or incremental benefit does you no good
- **Smile!**

Key Elements

- Pain today (1st)
- Customers (1st)
- Preferably in the form of a question which will be answered “yes!”
- Your offering (product/service)
- Value Proposition
- Why you?
- Why now?
- Vision of what it can be (economic and non-economic)
- What I am asking of you and what you will gain

Intangibles for Success

- **Passion** – enthusiasm
- **Empathy** – make them feel like the most important person in the world
- **Prepared** – do your homework & practice, practice, practice

Critical Success Factors

- Passion
- Referenced in
- Market opportunity
- Proven customer value proposition/traction
- Team → Quality of Presentation and Ability to Tell the Story
- Sustainable competitive advantage
- Return on Investment
- Technology
- Partnership/trust/fun factor
- Synergies with rest of portfolio

Recipe for Failure

- **Talk about technology** – technology is a means to an end; this is a venture creation exercise not a science fair
- **Talk about yourself** – it is about them
- **Not prepared and go too long** – disrespectful
- **Lack confidence** – who will follow you then? Ans: Nobody
- **Fishing expedition** – not clear on objectives

Section 2: Pitching

Taxi Cab Pitch: the MIT Approach

Source: MIT Disciplined Entrepreneurship



Pitch types

- Elevator Pitch (1 minute)
- Escalator Pitch (3 minutes)
- Taxi Cab Pitch (10 minute)
- Commuter Train Pitch (30 minutes)
- Plane Pitch (45 minutes)
- Also: Don't forget the power of your company name, logo, 1st image & tag line

First Question

- What does your audience want?
- And remember, the responsibility is not on them to “get it” but rather on you to explain it in such a way that they understand it and are excited about it.

The Ten Minute Business Plan

- Seven slides
- Apply these suggestions with reason
- Feel free to remove or consolidate



Slide #1: Introduction

- Name of Company – important to help frame things
- Compelling Tag Line
- Visual – the power of the first image
- Tell a compelling story demonstrating target customer, as is state, urgency, desired & possible state, your value proposition (usually the persona and use case)
- Tell him what you want them to remember – three key points – and what you will be asking for at the end

Slide #2: Target Customer/Pain

- Who is the Target Customer? How many of them are there? (Who)
- What is their pain or opportunity? (Why)
- Speed of adoption? (Why Now)
- Who has the money? (Who Pays)
- Specific examples you have met...
- Your first ten customers
- This is too much but think of what you can effectively get into a minute or so and one slide – remember stories help

Slide #3: Your Solution

- Explain your solution (“pencil sell”) (What)
- Quantified Value Proposition (How Much)
- Unique Selling Proposition (Why You)
- Be very visual here ... remember, 1 minute and 1 clear easy to understand slide

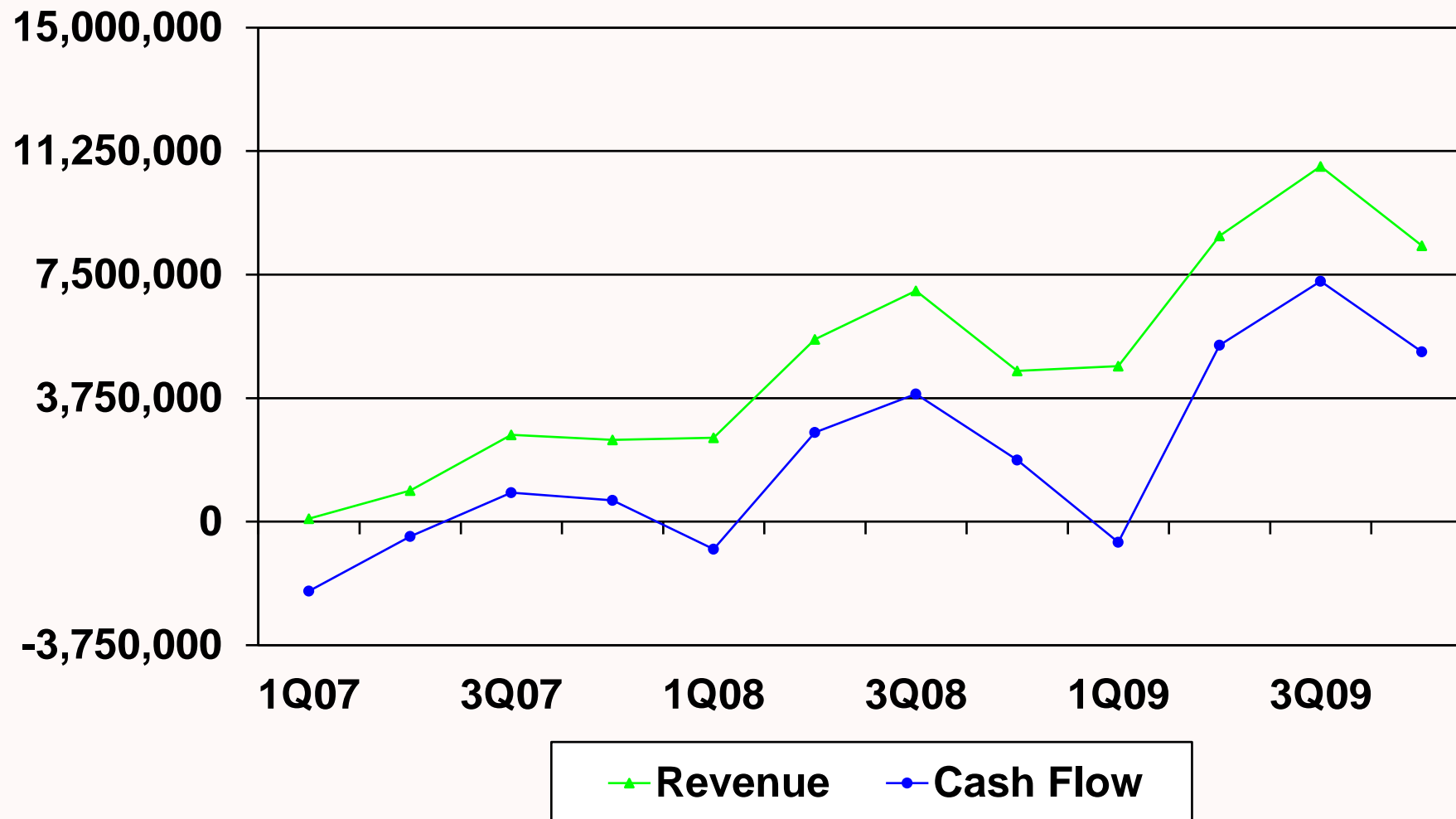
Slide #4: Go To Market Strategy

- How will you get to the customer and drive demand? Fulfill demand?
- Who will be your first set of customers? (by name)
- What will be your Cost of Customer Acquisition (COCA)
 - Initially
 - Overtime
 - Market penetration
 - Investment required → ROI

Slide #5: Financials

- Be careful not to overload!
- Simple graph with top line growth and cash flow –and a few other things (less is more)
- Be ready to explain top line because that is where it all starts -- Key Factors to know and possibly include:
 - Units installed
 - Costs
 - Key Milestones driving financials
 - Value of company estimations & exit strategy

Summary Quarterly Financials



Source: MIT Disciplined Entrepreneurship

Slide #6: Team & Competition

- Team today (Why You II)
- Team future
- Competitors and Sustainable Competitive Advantage

Slide #7: Summary and ASK!

- Summary of three key points
- Call to Action
 - How much are you asking them for?
 - What are the possible exits?
 - What types of returns are possible and/or likely?
- Then have your “ASK”!

Back Up Slides

- Have a good set of back up slides for frequently asked questions
- Especially for financials
 - Top line explanation
 - Expense explanation
- Primary Market Research Data in Structured and Statistically Valid Manner

Section 2: Pitching

the Y Combinator's Deck



Pitch Deck Structure I

- Cover Page
- Summary
- Team
- Problem
- Solution
- Marketing/Sales
- Projections or Milestones
- Competition
- Business Model
- Financing

The YC Seed Deck Template

- Focus on narrative. The rest is commentary.
- Suggested contents:
 - Title page: name of your company and a one line description of what you do
 - Clear problem statement
 - Solution explanation, in as few words as possible, with concrete benefits you provide described
 - Show off your traction (if you have it). Make the numbers clear and meaningful
 - Give more metrics, if available.
 - Tell the investor what makes you so special, what makes this work, what your insights are (possibly more than one slide).
 - Lay out your business model.
 - Present future growth potential and convince the investor that they're going to make lots of money with you.
 - Talk about what makes your team particularly well suited to the problem.
 - Tell the investor how much money you need, and what it gets you.



The YC Seed Deck Template



Read the following posts and discuss:

- “It’s Time to Rethink the Startup Pitch Deck (Here’s a Start)” by Rob Go (2015):
 - <https://nextview.vc/blog/startup-pitch-deck-founder-vc-interactions/>

Suggested Readings



Check out the following resources on how to improve your communication skills:

- 9 Simple Things Great Speakers Always Do, Jrrf Heyden (2014)
 - <https://www.businessinsider.com/9-simple-things-great-speakers-always-do-2014-2>
- English Communication for Scientists
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