



# II. Mobile Network Operators

Prof. Tsvetozar Georgiev  
University of Ruse



# 1. Mobile network operators

- A mobile network operator is a company that provides telecommunications services primarily through wireless technology, without excluding the provision of services with primarily terrestrial connections.
- From the early 1990s until 2005, Radio-Telecommunications Company EOOD, under the trademark Mobicom, provided services using a network of the NMT450i standard.
- Currently, the mobile operators in Bulgaria are: A1, Telenor, BTC (Vivacom), Bulsatcom and 4G com.



## 2. Telecommunications services

### 2.1. Market of telecommunication services:

- ▶ The main participants in the market of telecommunication services are :
  - ▶ A telecommunications network operator (Network Operator), which builds, supports and provides the infrastructure for performing the services.
  - ▶ A service operator (Service Operator, Service Provider) that rents telecommunication network resources from the Network Operator in order to offer subscribers and users services. It creates the information resources for these services, monitors their quality and manages them. It negotiates with users and subscribers who pay with it.



## 2. Telecommunications services

- **A service user** (client) is any subscriber of a public or private telecommunications network who uses the services provided by the Service Provider.
- **A service subscriber** is a user who contracts and periodically pays for the services he uses for his own purposes.
- Subscribers and customers are the most important participants because they are where the money comes from for everyone else.

## 2. Telecommunications services

### 2.2. Classification of services:

- International organizations developing standards and recommendations systematize telecommunication services according to different points of view.

#### 2.2.1. According to their importance, the services are:

- Main:
  - Carrier services.
  - Teleservices.
- Additional services.



## 2. Telecommunications services

- **Bearer services** concern the transfer of information from terminal to terminal.
- **Teleservices** refer to subscriber-to-subscriber communication, which is why subscriber terminals are also involved. Teleservices include, for example, telephony, telefax, data transmission. Telephony refers to the construction of telephone connections, telephone calls from coin-operated and phonocard telephones, the inclusion of institutional telephone exchanges in the public telephone network, etc.



## 2. Telecommunications services

- Additional services provide users with convenience for subscribers by providing them with some conveniences, e.g. call forwarding, conference connection, indication of the number of the calling subscriber on the terminal display, information about the conversations held, etc. They are used by subscribers as they wish. For operators, additional services are also of interest because they increase their income for the same number of subscribers.



## 2. Telecommunications services

### 2.2.2. According to the type of information provided, the services are:

- Speech;
- Data (symbols, letters, numbers, still images);
- Video (moving images);
- Multimedia. It is a service carrying at least two of the three main types of information – voice, data and video. Multimedia services include the exchange of speech (speech), images (pictures), video and data. The subscriber, through his multifunctional terminal, which is a personal multimedia computer, connects to the network and receives the multimedia services offered by it.





## 2. Telecommunications services

### 2.2.3. By bandwidth used, the services are:

- Narrowband - up to 2 Mb/s
- Broadband – over 2 Mb/s

### 2.2.4. By way of using the information, the services are:

- interactive services;
- distribution services;
- Talk services:
  - Video chat;
  - video conferencing;
  - Video surveillance.



## 2. Telecommunications services

- Data exchange;
- Carry messages:
  - Electronic mail;
  - Teletext.
- Extraction of information;
  - Videotext;
  - Movies;
- Services for business and home subscribers.



## 2. Telecommunications services

- With **interactive services**, information is exchanged between the two subscribers or between the subscriber and the service operator. These include conversational services, where two-way exchange of information takes place in real time. Messaging services (e-mail, teletext) are also interactive, but communication takes place via storage devices. They store and then, when possible, transmit the message, which is why the connection is not real-time.



## 2. Telecommunications services

- **Information retrieval services** provide publicly available information (video text, movies on user request) stored in operators' information centers.
- In the case of **distribution services**, the exchange of information is mostly one-way - from the operator to the subscriber. They include broadcasting and distribution services.
- **Broadcasting services** distribute information from one central source to an unlimited number of subscribers. It is emitted continuously or cyclically. Subscribers do not have the opportunity to influence the initiation and order of information transmission.



## 2. Telecommunications services

- The other category of distribution services is user control services. The information distributed by the central source is provided to the subscribers as a sequence of information blocks with cyclic repetition, which provides an opportunity to control the start and order of receiving information. Such is the case with teletext.