

Lecture №1.

**An ICT role in key sectors of  
development of society. Standards in  
the field of ICT.**

**Purpose:** To prepare students using of modern computer information technology.

- **Plan:**

- 1. Definition of ICT. Subject ICT and its purposes. An ICT role in key sectors of development of society.
- 2. Standards in the field of ICT. Communication between ICT and achievement of the objectives of a sustainable development in the Millennium Declaration.
- 1. Definition of ICT. Subject ICT and its purposes. An ICT role in key sectors of development of society.

- Under the information and communication technologies is offered to understand the complex objects, actions, and rules relating to the preparation, processing and delivery of information at the personal, mass communication and production, as well as all technologies and sectors, providing integrated these processes.
- **Information and communication technologies (ICT)** - a set of methods, workflows and software and hardware tools that are integrated with the aim of collecting, processing, storage, distribution, display and use of information for the benefit of its members
- <https://www.youtube.com/watch?v=tXs5O1yGlg4>
- <https://www.youtube.com/watch?v=7zMNjraEMvY>

- To date, the concept of IT includes microelectronics, development and production of computers and software, connection and telephony, mobile services, providing Internet access, providing information resources of the Internet, as well as a variety of cultural phenomena associated with these areas of activity and rules (both formal and informal) that govern these areas of activity.

# ICT Tools

- By means of modern information and communication technologies to understand the software, firmware and hardware, as well as devices that operate on the basis of a microprocessor, computer technology, as well as modern facilities and broadcast of information systems, information exchange, ensuring operation for the collection, the production, accumulation, storage, processing, communication and access to information resources of computer networks (including global).
- <https://www.youtube.com/watch?v=P591X6Dp7rU>
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- By means of modern information and communication technologies include computers, PC, terminal equipment kits for computers of all classes, local area networks, the input-output device information input means and manipulation of text and graphic information, means of archiving large volumes of information, and other peripheral equipment modern COMPUTER;
- means for converting data from the graphics or audio data to digital representation and vice versa;
- tools and devices to manipulate audiovisual information (on the basis of technology and Multimedia "Virtual Reality"); artificial intelligence system; computer graphics system, programming systems (programming languages, compilers, compilers, operating systems, software packages, etc..), modern means of communication, providing information user interaction both at the local level (for example, within a single organization or multiple organizations) and global (as part of the global information environment).

- Under the information technology to understand the totality of methods, production, software and technological tools combined in the processing chain, ensuring the collection, storage, processing, output and dissemination of information. Information technologies are designed to reduce the complexity of the processes of information resources.
- Computer information technologies involve the use of computer and network technologies for implementing a wide range of tasks:

# The components (structure) of information technology

**Information** - a collection of information about the properties of an object or process to digest the subject in the form of knowledge.



# All the information which is used by people, can be divided into the following types:

- **mathematical** - is any information related to numbers and formulas, it can be not only a mathematical, but physical and statistical information. Mathematical information can be processed by a variety of computing machines and devices and stored on paper in the form of books and records.
- **text** - that information can be recorded on paper by hand or using a typewriter and printing equipment and stored on paper (manuscripts, documents, books, newspapers, etc.).
- **graphics** - this information can be processed by a variety of means and methods of Fine (fine arts, photography) and stored in the form of paintings, drawings, sculptures, photo cards, etc .;
- **Sound** - this information can be processed by means of a tape recording and stored on magnetic tapes, records and audio CDs .;
- **video information** - this information can be processed by means of film and video and stored on film and videotape .
- All these types of information have existed before the advent of the computer. Modern personal computer allowed to handle these types of information and greatly facilitated their joint use.

- **Information** - a set of physical processes signals perceived by the subject through his sense organs.
- **Data** - data obtained by measuring, monitoring, logical or arithmetic operations presented in a form suitable for storage, transmission and processing.

**Information processes.** The concept of information is inseparable from the concept of information processes. For information processes include:

- transmission of information;
- receiving the information;
- data storage;
- processing of information and its presentation for use;
- use of information.

Technical means - it is a personal computer, office equipment, communication lines, network equipment.

The software is directly dependent on the technical and information support and realizes the functions of storage, processing, analysis, storage, interface with the computer.

Information support - a set of data presented in some form for computer processing.

Organizational and methodological support is a complex of measures aimed at the functioning of the computer and software to obtain the desired result.

- There is another approach to dealing with automated IT structure, according to which any IT can be divided into three interdependent and equally important components that make up its core:
  - – Hardware (Hardware);
  - – software (Software);
  - – algorithmic (intelligent) software (Brainware).

# Data processing

- All information supplied to the computer, or encoded digitized, i.e. all characteristics data assigned to the number. Thus, the computer operates with no sound, or video image, and a series of numbers. And it does not process sound or video, and the number. After the treatment, the number again converted into sound or video and we hear the music and see the cartoon on the computer screen.

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# Any sort of information is called **the volume of information.**

- The unit of information is called a bit. The computer memory cell of 1 bit can be stored for 1 or 0.
- 8 bits make up one byte.
- There are multiple byte units:
- Kilobyte (KB ). 1 KB = 1024 bytes.
- Megabyte (MB). 1 MB = 1024 KB.
- Gigabyte (GB). 1 GB = 1024 MB.
- Terabyte (TB). 1 TB = 1024 GB.
- For example, we can say that if you make the computer the text of one typewritten page, it will have a capacity of about 2500 bytes.

2. Standards in the field of ICT. Communication between ICT and achievement of the objectives of a sustainable development in the Millennium Declaration.

- **ICT-standards system** - a set of normative and technical and regulatory guidance documents, including a set of interrelated standards and other documents in the field of standardization related to ICT, documents defining the methodology of development, coordination, approval, modification, deployment, use and replacement, including a methodology to assess facilities for compliance with these standards and other documents in the field of standardization.



# ICT industry

- **ICT industry** - as a specific field of activity, which includes research, creation, development, evaluation, procurement, acquisition, implementation, operation and utilization of ICTs. It covers thus work as a developer and ICT suppliers and customers and users of ICT, including the activities for the implementation, operation and utilization of ICTs.

# Industry Standard (IS)

- **Industry Standard (IS)** - standard related to processes, products and other aspects of a particular field of activity (whether commercial or not aimed at profit). In this document, under the industry standard it refers to a standard or other document in the field of standardization, designed for the use of ICT. The procedure for the development and application of established IS specialized body of public administration.

# Standard

- **Standard** - a document in the field of standardization, standardization of relevant principles, covering categories such documents as the standard of organization, the standard non-profit association, the industry standard or set of rules (the industry), the national standard, international standard.

- **International standard** - a standard adopted by an international organization.
- **National standard** - a standard adopted by a national authority of the Republic of Kazakhstan for Standardization.
- **Non-profit association Standard** - a standard non-profit professional organization (union, association, etc.), designed for wide application by different stakeholders. The order of development of the standard and non-profit association established this association and is harmonized with the state and industry standards development orders.

- **Organization Standard** - a standard developed and approved by the organization itself, based on the necessity of its use to improve production and quality assurance of products, works and services, as well as for the dissemination and use of knowledge in different fields of research results (the test), measurement and development.

# Questions:

- 1. What is the definition of ICT and its purposes?
- 2. What is the ICT role in key sectors of development of society?
- 3. What kind of standards do you know in the field of ICT?
- 4. What kind of communications do you know between ICT and achievement of the objectives of a sustainable development in the Millennium Declaration?

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# Information and communication technologies

Textbook

## Информационно-коммуникационные технологии

Учебник



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ЧАСТЬ 1

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## INFORMATION AND COMMUNICATION TECHNOLOGIES

TEXTBOOK  
IN 2 PARTS  
PART 1  
1st EDITION



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