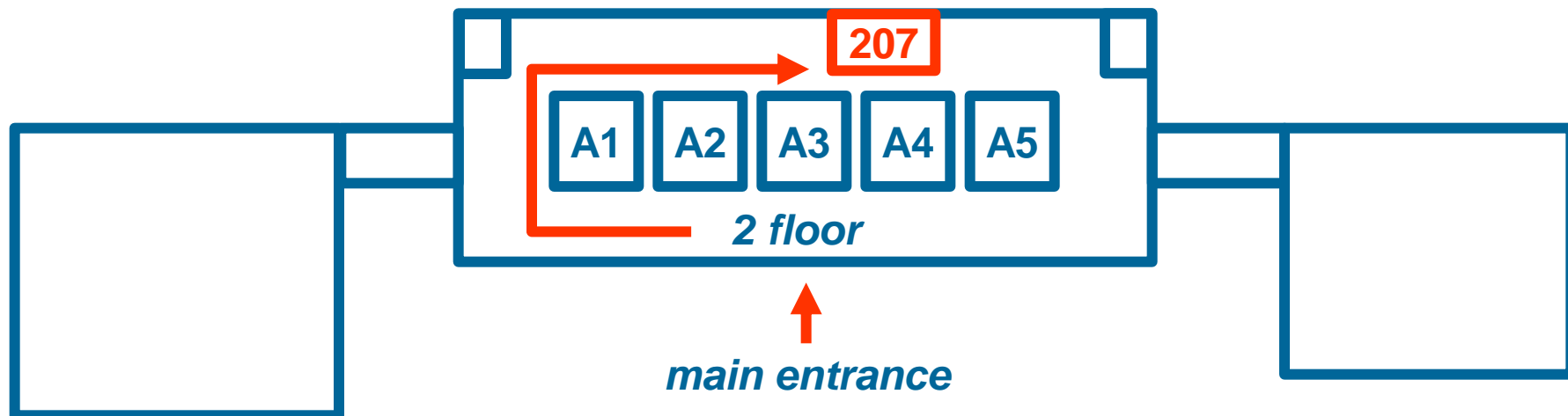


INFORMATION TECHNOLOGIES

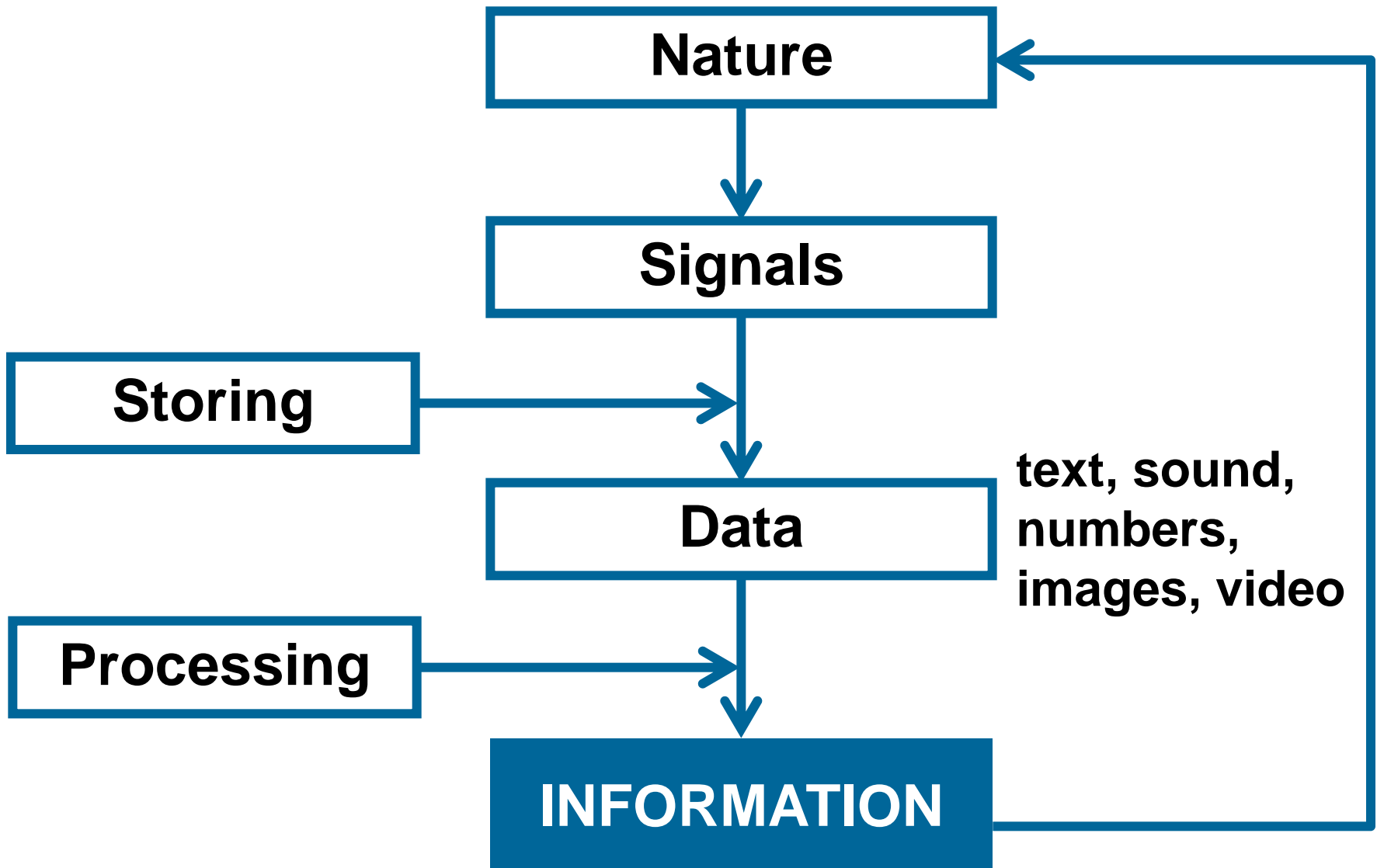
Stremnev Aleksandr Yurjevich

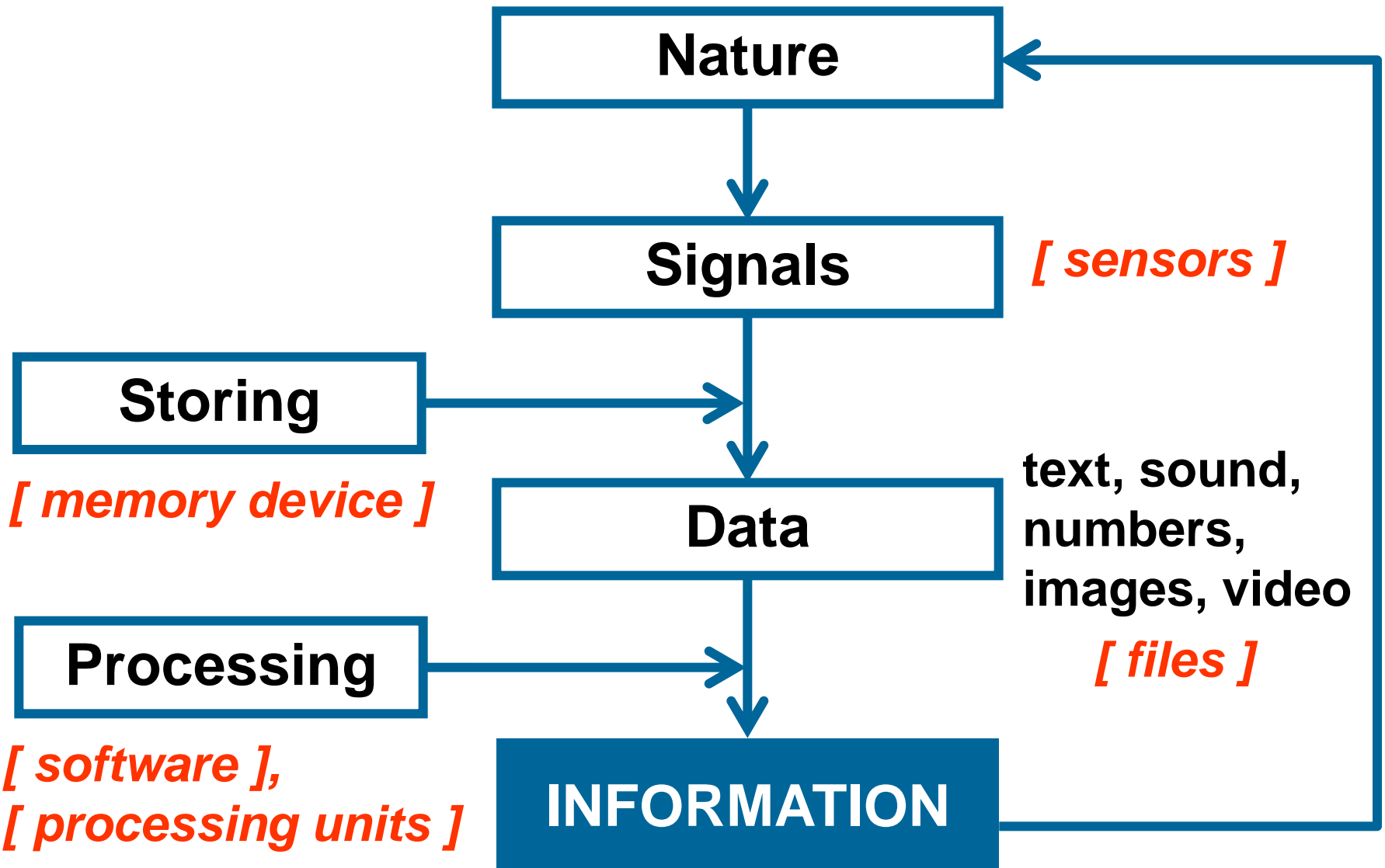
<http://kit.bstu.ru/teachers/Stremnev>

room 207, educational building 1



2018





Binary code - universal data coding system



Binary code use two 'letters': 0 and 1



Bit - base information measure unit equal 0 or 1



$$N = 2^m$$

N - number of independent values;

m - number of binary digits

For $m = 2$, $N = 4$ (four values: 00, 01, 10, 11)



**8 Bit = 1 Byte (B), 1 KB = 2^{10} Byte = 1024 Bait,
1 MB = 2^{10} KB, 1 GB = 2^{10} MB, 1 TB = 2^{10} GB**

File

sequence of bits with unique name storing on any memory device

Program

file with information about processing another files

Electronic device

electric equipment realizing its functions using programs (and files)

Main task of Information Technologies

optimization of system:

Electronic device

Program

Human



Computer

electronic device to perform following tasks:

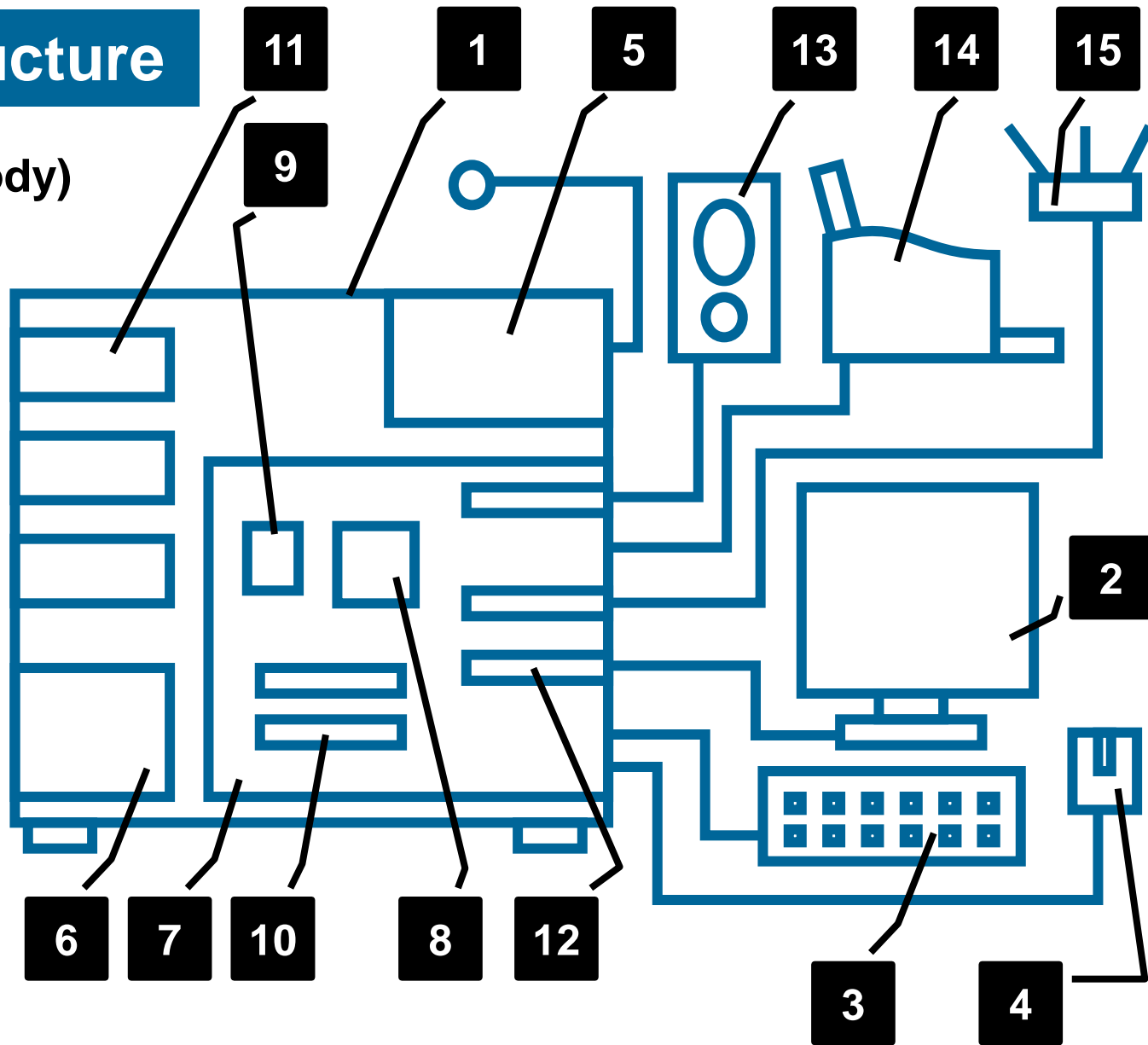
- **creating data**
- **storing data**
- **restoring data**
- **processing data**
- **transferring data**

Base computer configuration

- **system block**
- **display**
- **keyboard**
- **mouse**

Computer structure

- 1 - system block (body)
- 2 - display (monitor)
- 3 - keyboard
- 4 - mouse
- 5 - power supply
- 6 - cooler
- 7 - mother board
- 8 - CPU
- 9 - BIOS
- 10 - RAM
- 11 - HDD, SSD, DVD
- 12 - spec. sockets, expansion cards
- 13 - audio system
- 14 - printer/scanner
- 15 - net router



Computer components

CPU (central processing unit)

performing base arithmetical and logical operations

socket, tact frequency, digit capacity, number of kernels, cache memory

RAM (random access memory)

storing data for current moment processes

standard, amount of memory, read-write speed

BIOS (basic input/output system)

computer health check, access to memory devices for OS starting

HDD (hard (magnetic) disk drive)

user data storing for reading and writing (documents & software, including operation system)

standard, amount of memory, read-write speed, physical structure

SSD (solid-state drive)

Computer components

DVD (Digital Versatile Disc)

removable user data storage for reading and writing

standard, amount of memory, writing ability, read-write speed

Video card

processing video data for transferring it to display (projector)

standard, amount of memory, tact frequency, working modes, interface type

Display

displaying graphical information

type, size, resolution, frequency, number of colors, brightness, contrast ratio, interfaces

Printer

output information on paper

type, printing speed, quality, paper size, interfaces, colors

Operation system

software complex to perform following tasks:

- **hardware support**
- **software installation and management**
- **file system maintenance**
- **hardware and software interfaces support**
- **user interface support**
- **distribution of computing resources**

File manager

software to perform following tasks in file system:

- **searching objects (files, folders, shortcuts)**
- **navigation**
- **opening objects**
- **creating objects**
- **copying objects**
- **moving objects**
- **deleting objects**