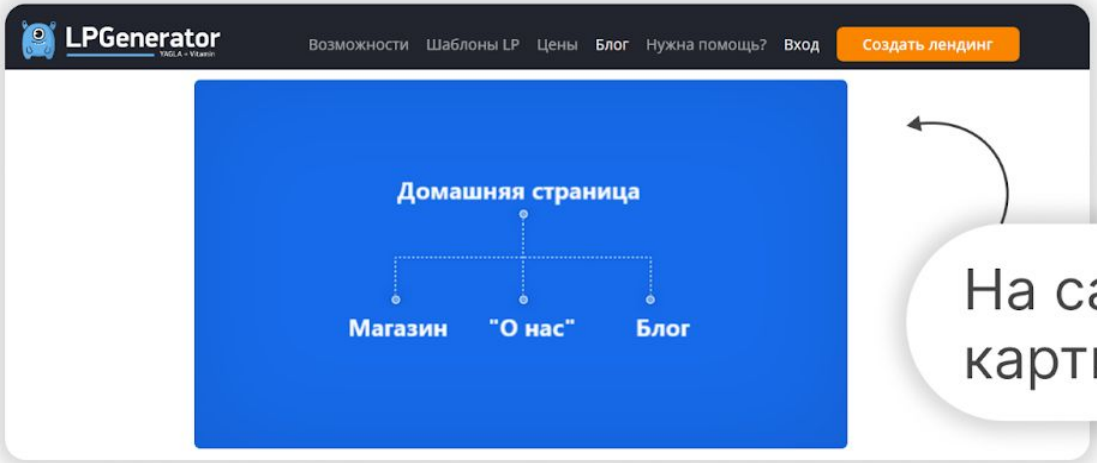
MULTIMEDIA (COMPONENTS AND SYSTEM REQUIREMENTS)

1.What is multimedia ?

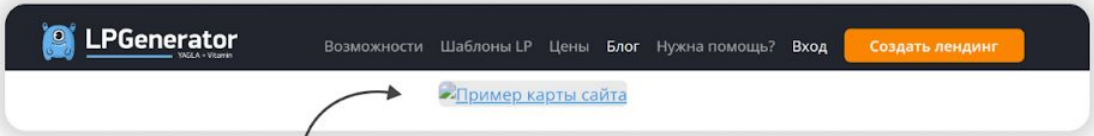
It is a computer technology that combines, processes, stores, transmits and displays various data components: text, graphics, animation, video, sound and speech.

2.Multimedia Components

Text: conveys specific information or reinforces other components. For example, websites on the Internet contain pictures. By default, the user opens the page and sees the image. But if the image didn't load for some reason, an explanatory text will load instead of the image.



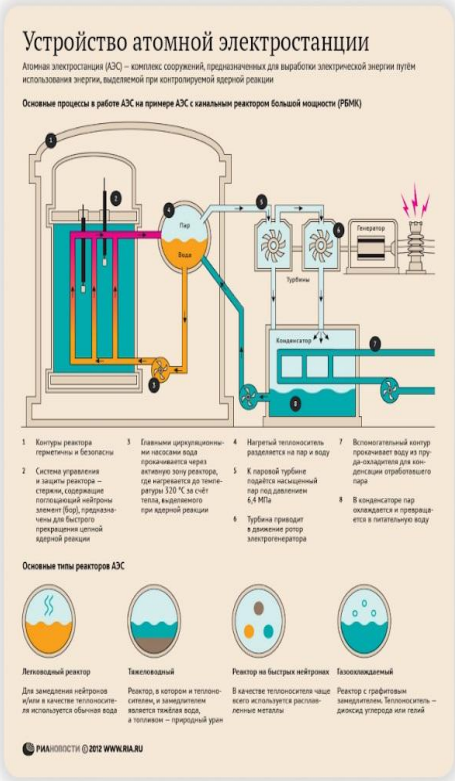
На сайте загрузилась картинка



Картинка не загрузилась, но появился поясняющий текст

Hypermedia: this is the principle of information organization, in which data is connected logically or associatively by hyperlinks. An example of hypermedia is the World Wide Web. In it, the user can access related documents on different computers if they are connected to the Internet.

Images: these are illustrations, photographs, vector graphics and any static visual. They are needed to complement the text and make its perception easier. With the help of images, complex things are explained, as, for example, in infographics



Порою сложные вещи проще изобразить схематично, чем описывать текстом

Audio: these are speech, music and sound effects. Audio is used both to complement other components and to transmit independent data.
Example: the speaker's speech in a podcast is a completely independent component that does not need either visual or animation.

Video: these are images moving one after another, which form a logical chain. Most often, video content is used together with audio for educational or entertainment purposes.

Animation: these are various effects that arise before the user arbitrarily or in response to his manipulations — pressing keys, mouse buttons, touchpad.

3.Types of multimedia

Depending on how a person interacts with multimedia, there are two groups: linear and nonlinear multimedia.

Linear

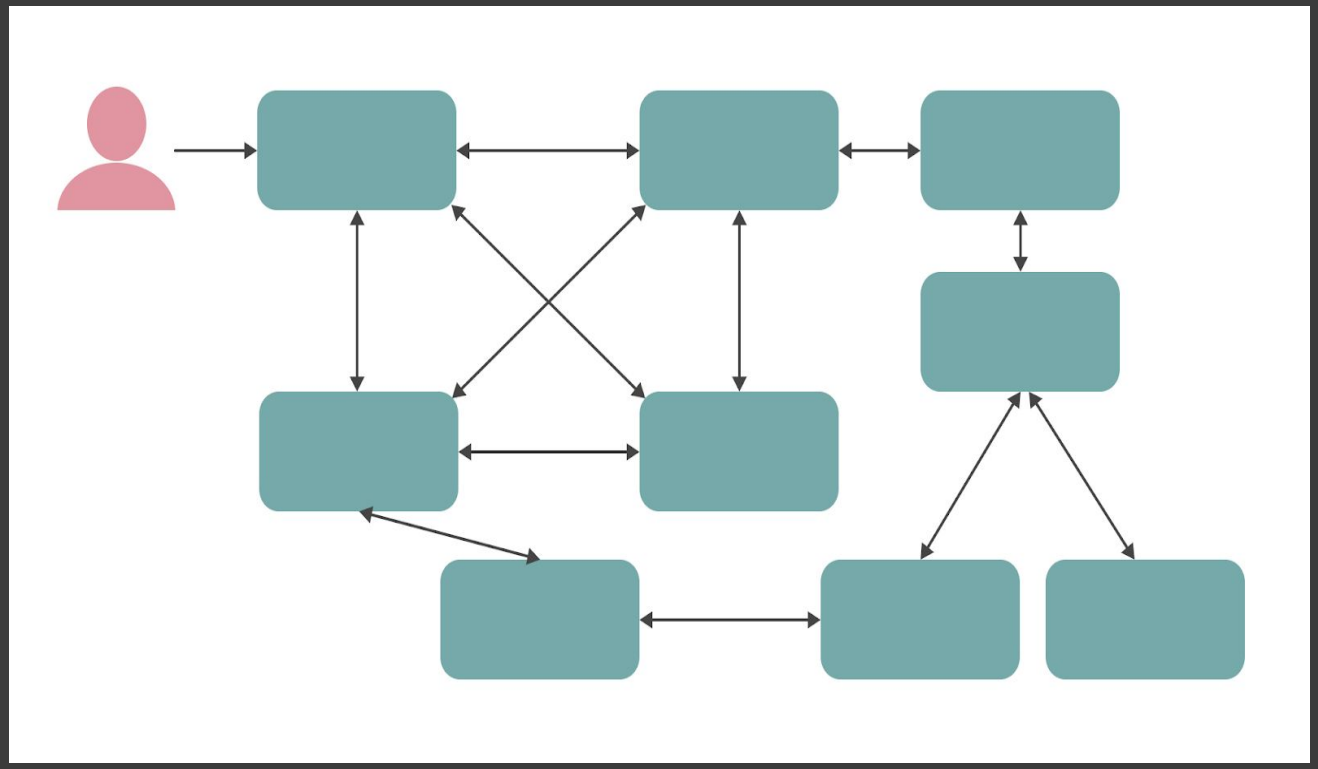
Or in another way, non-interactive multimedia. The user can neither manage such multimedia, nor interact with it. The user consumes the content in the form in which it was created.

Linear multimedia uses different information channels of a person, except tactile, since such multimedia cannot be controlled

The film is an example of linear multimedia. It goes sequentially, from beginning to end. The viewer cannot swap the characters, influence the plot or change the voice acting.

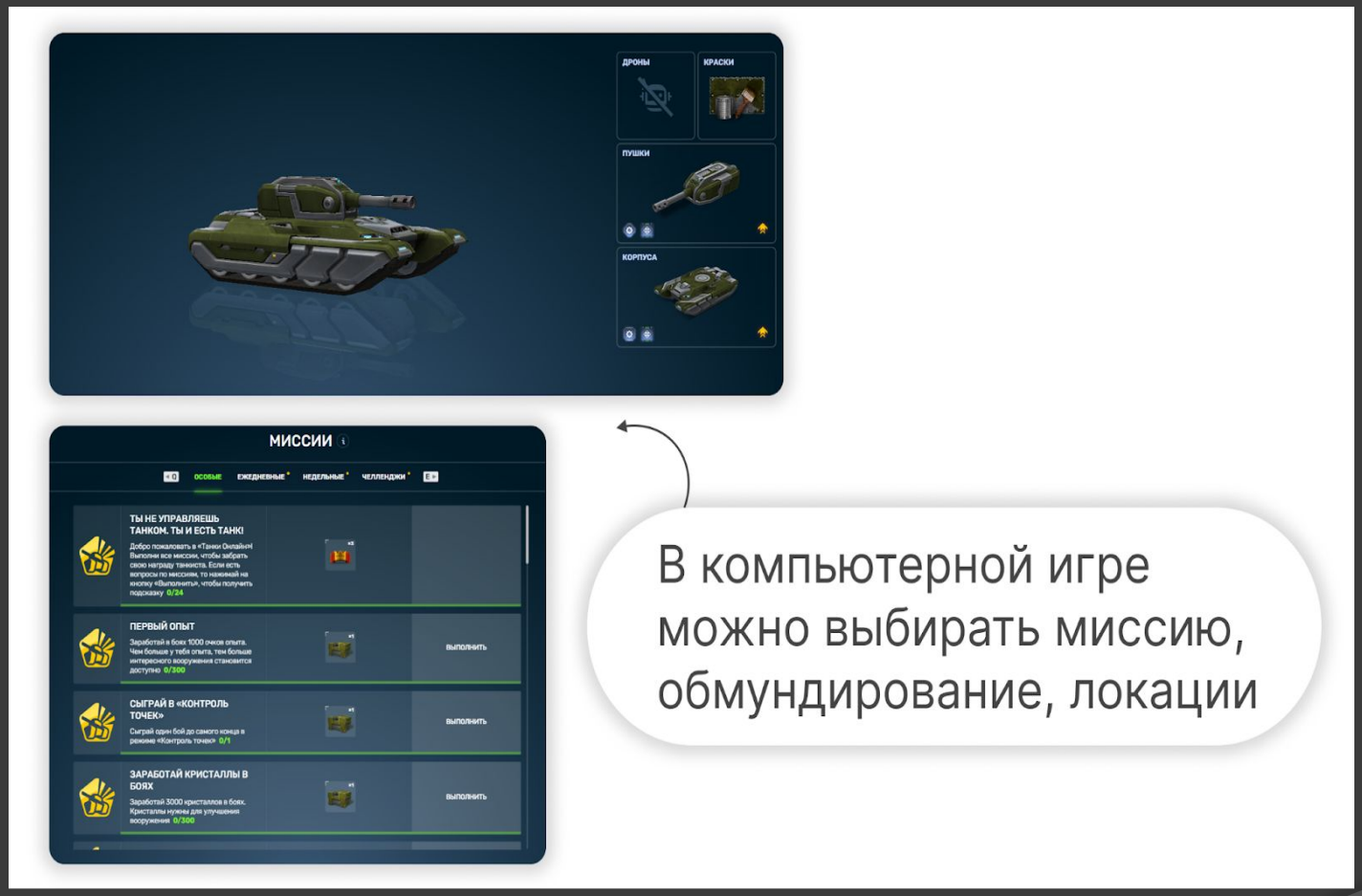
Nonlinear

In non—linear media, the user can control the content as he wishes: change the playback speed, visual form - from 2D to 3D, turn on or off the speaker's voice



In non—linear multimedia, the user can control its components as he wishes through interactive interaction - buttons, keys, manipulators, joysticks or regulators

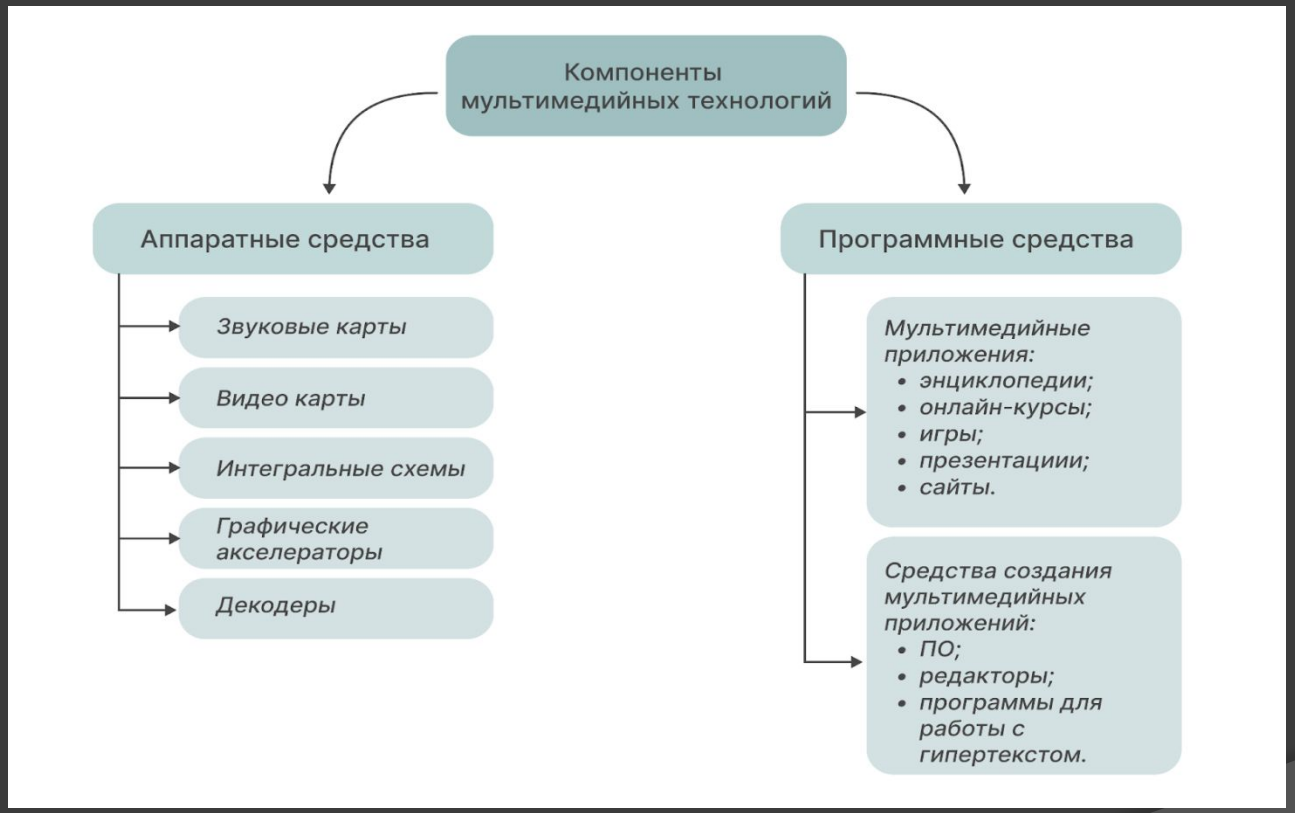
A computer game is a typical nonlinear multimedia. The gamer chooses a storyline, changes the appearance of the character and pumps it.



The online game "World of Tanks" is a typical interactive multimedia

4.What technologies are used in multimedia?

Multimedia is not only a way of presenting content, but also technology. They are based on hardware and software, which also include different elements..



Any multimedia technology consists of hardware and software parts

Hardware tools

These are various equipment and its components that are needed to reproduce multimedia content, in a simple way - "hardware".
Developers use hardware in a complex to create and release a certain device: a computer, a smartphone, virtual reality glasses.

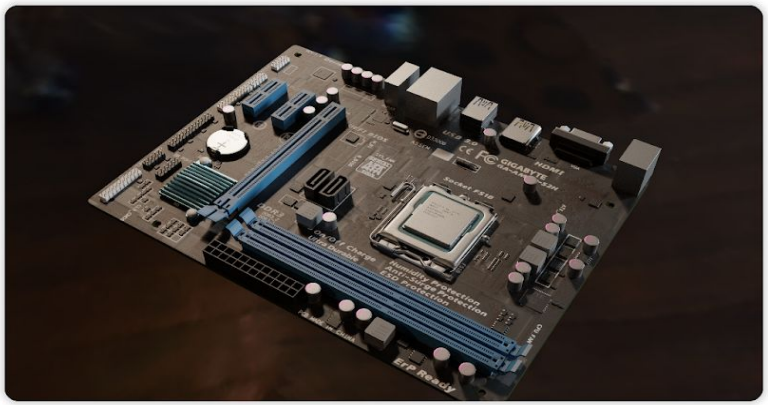
Hardware includes:

1. Sound recording equipment — boards, microphones, headset;
2. Sound reproduction means — amplifiers, speakers, acoustic systems, headphones;
3. Manipulators — computer mice, joysticks, touchpads, styluses, game steering wheels;
4. Virtual reality equipment — gloves, glasses, helmets;
5. Media — CD, DVD, HDD, flash drives;
6. Means of transmission — video cameras, digital cameras, smartphones;

7.Recording media — DVD-ROM, CDRW/DVD+RW, TV&FM Tuners;

8.Image processing tools — video editing boards, keyboards, graphics accelerators;

9.Ready—made devices - computers, televisions, laptops, smartphones, tablets.



Аппаратные средства — это и материнская плата, и виртуальные очки

Hardware means ready—made devices like smartphones, and various boards, circuits and cards, which by themselves can do little

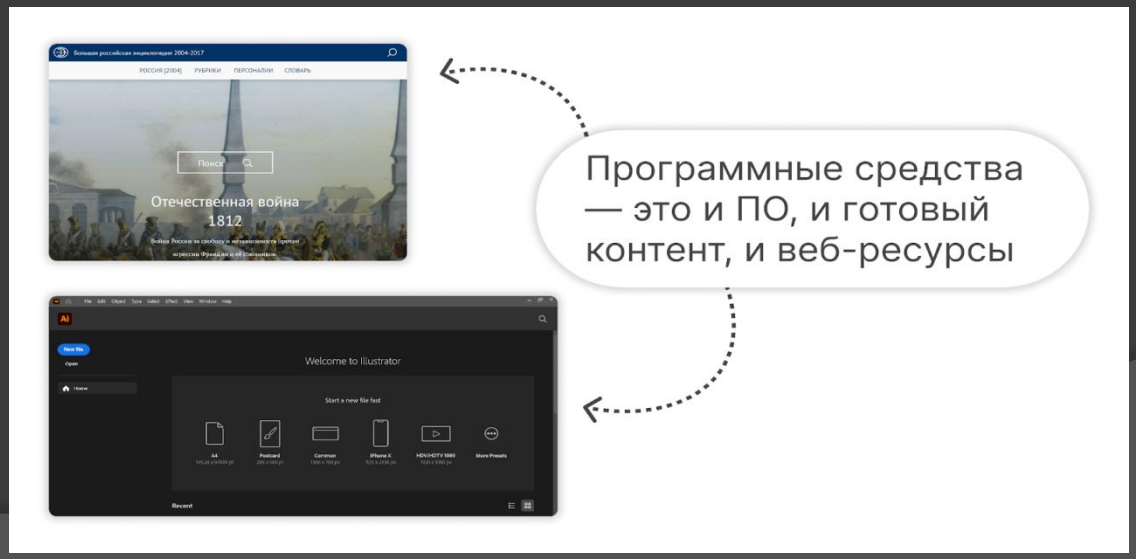
Software tools

These are software, software and various web applications in which the user directly consumes or creates multimedia content.

Software tools include:

Online encyclopedias, interactive training courses, games, graphic editors, video editing and 3D modeling programs, as well as Software that controls the direct operation of the hardware.

Such programs do not have a user interface — users work in them through machine commands.



5.Who invented multimedia technology?

The origin of multimedia began with the concept of the MEMECH machine. It was proposed by the American scientist Vannevar Bush in 1945. He believed that information on paper is the last century, and the search for data by alphabetical index or index has long been outdated, so science is obliged to offer people more.

As an alternative, he developed the concept of a photo-electromechanical MEMECH machine.

According to the idea, the information in the MEMECH was to be stored in the form of microfilms, and the machine itself was to look like a desk with screens. It was assumed that microfilm content would be projected onto these screens.

Various books, pictures, and newspapers were to be stored in microfilms. A special transparent roller would be engaged in indexing this content, that is, it would give out a specific one. As soon as a person typed the necessary code on the keyboard mounted in the table, the machine started the projection and the book appeared on the MEMEX screen.

The innovative idea was that the search for information by the machine had to take place not by ordinal number, alphabetical index or index, but according to the semantic content through cross-references. These links are created by the human brain, so a person had to use a special multimedia helmet to navigate.

In fact, Bush did not just invent a car, but formed the concept of multimedia with hypertext and interactive interaction.

The next important event in the development of technology is the appearance of the first computer game in 1952. The logic game "OXO" was a digital version of "Tic-Tac-Toe". The game was created by A.S. Douglas during his doctoral studies at the University of Cambridge, in the UK.

The game existed in a single instance on a large EDSAC computer. A rotating phone disk connected to a computer was used for the game. Each cell on the grid of tic-tac-toe corresponded to one of the numbers on the dial. To make a move — to put a cross or a zero — the player typed this number on the phone disk, after which the computer made a response move.

A decade later, in 1962, after many years of work, Morton Heilig introduced the world's first VR device called Sensorama. A person sat on a chair that moved with the device, and a large stereoscopic screen and speakers created visual and sound pictures. The device used a wind tunnel to create air effects, as well as an odor sprayer.

But a serious push in the development of multimedia occurred only in the 80s of the XX century. American computer scientist and businessman Bill Gates has created a multimedia product National Art Gallery. London. In fact, he digitized the museum database: the content included images, sound, animation and hypertext.

Further — more. On August 12, 1981, IBM introduced the world's first personal computer. It was a 16-bit processor with an operating frequency of 4.77 megahertz, 64 kilobytes of RAM. The computer was supplied with one or two disk drives. In the following years, computers improved, and with them multimedia technologies.

6.In what areas is multimedia used?

Education

Videos, digital encyclopedias, interactive guidebooks, simulators, games, tests and stimulants are used in education. Learning through multimedia is easier because a person uses several senses.
This means that different parts of the brain work on memorizing information, and as a result, a person spends less time to study the subject, and the knowledge gained is stored in memory longer.

Medicine

In medicine, specialists use multimedia knowledge bases, methods of operations, catalogs of medicines. There are even medical stimulants. With the help of VR and robots, doctors perform operations, learn to provide first aid, and develop communication skills with patients.

Gaming industry

One of the leaders in the use of multimedia technologies — computer and mobile games, as well as consoles. They use graphics, sound, manipulators to control the character, sound and visual effects, as well as elements of augmented reality. In fact, the player can immerse himself in the three-dimensional virtual world completely, since he uses sight, hearing and hands (tactility).

Business

Multimedia technologies in business are:

Interactive advertising and informational content to attract the attention of consumers

Animated presentations with sound effects at meetings with investors,

Promotional videos and live broadcasts with experts to increase brand awareness;

Applications, special projects and even an electronic queue. In addition to its main purpose, it collects statistics and reports on services.

Military sphere

Multimedia is used to train soldiers and practice combat and tactical skills: how to maintain military equipment, provide medical care and act harmoniously in stressful situations.
For example, VR and AR technologies are used to learn how to conduct military operations and land planes. Such simulators often include a training cabin that simulates military equipment, a screen and a virtual reality helmet

Art

Multimedia makes art accessible. People have a chance to hear the works of composers, see digital copies of paintings, read books from computer screens, watch recordings of theatrical productions, and all this without leaving home.

Archival business

Multimedia software is used to maintain archives and prepare documentation for complex technical products. Multimedia is used in cartography, and collectors also use it. They make catalogs of slides with images of postage stamps, labels, paintings.

Thanks for your attention!