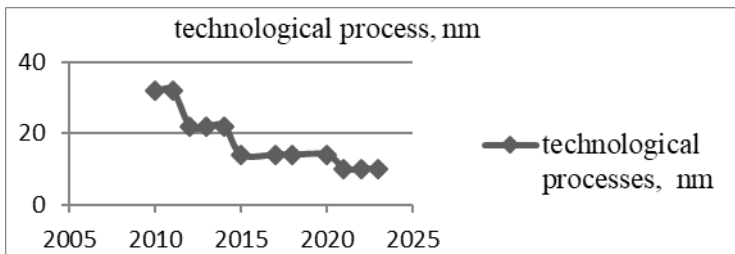


THE DEVELOPMENT OF THE TECHNOLOGICAL PROCESS OF GRAPHICS AND CENTRAL PROCESSORS

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In this paper, an analysis of the development of the technological process in the production of processors over the past 13 years has been carried out. In computer technology, the technological process is measured in nm. Previously, the numbers characterizing the nanometer process corresponded to the resolution of the lithographic equipment; later it was the gate length of the transistors used in the processor chip [1]. The length of the gate decreased along with other parts of the transistor. Subsequently, the gate length began to decrease faster than other parts of the transistor. Since then, the binding of the gate size to the technological process has become inaccurate, since it no longer reflects the real increase in the density of transistors on a chip. This is currently a more complex characterization¹. In other words, the nanometer process does not describe the dimensions of transistors. This is a relative indicator that determines the density of transistors compared to the previous technological process [1].

The production and specifics of the technological process are kept secret, so in this article, we cannot analyze the physical principles underlying these processes, but we can trace the evolution of the technological process. Picture shows data on Intel core i7 (Fig. 1) [2].



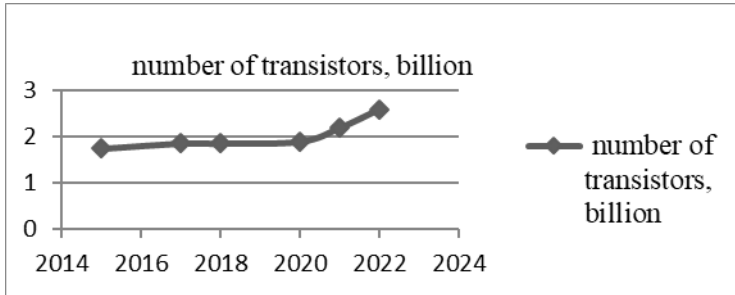
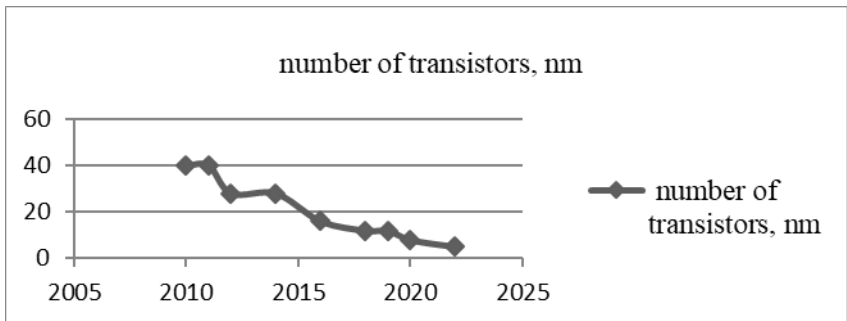


Fig 1. Evolution of technological processes Intel core i7

Let's now look at Figure 2, where is depicted a similar evolution in the production of chips for video card processors. Before comparing graphs and the development of the technological process, it should be noted that it is not correct to directly compare the development of the technological process of video card processor chips (GPU) and processor chips (CPU). The architecture and tasks of these chips differ fundamentally. The GPU specializes in graphics processing and parallel computing. Its main task is to provide visual reproduction, graphics rendering, and simultaneous execution of complex calculations. In turn, the central processor is the real brain of the computer, responsible for managing a variety of tasks. But we can assess the speed, scale, and turning points in the evolution of the technological process. Below graphs of the evolution of the technological process for GPU based on Nvidia graphics cards, namely for older generation models [2].



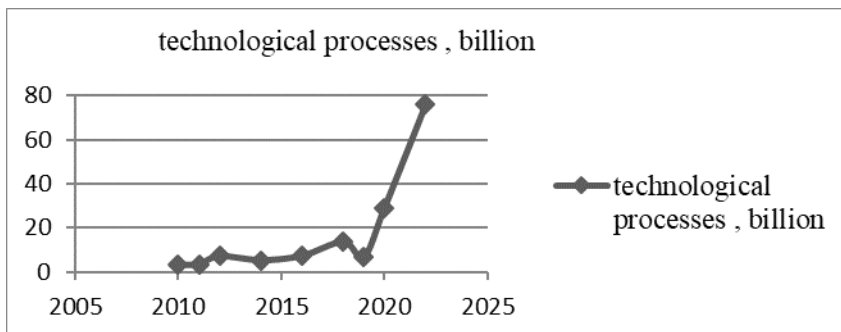


Fig 2. Evolution of technological processes GPUs

The main and general conclusion will be that the person has succeeded in developing the process. At the moment, it's hard to imagine what to expect in the future. In the development of the process in CPU, it can be said that a person has reached such a level that development slows down. But the main announcement for the next two years remains 4-6-nanometer processors. A 4-6-nanometer process has already been achieved in GPUs, and 1.4-3-nanometer technologies have already been announced. Now it's clear why the number of transistors in GPUs is an order of magnitude higher compared to CPUs. It can also be noted that the development of the technological process is very important for humanity. From it, one can establish a connection with ecology and human health. Thanks to the development of the technological process, it is possible to reduce energy consumption without losing productivity, which will have a very positive impact on ecology.

References

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