**Optical Computer**

An optical computer, also called a photonic computer, is a device that uses the photons in visible light or infrared beams, rather than electric current, to perform digital computations. An electric current flows at only about 10 percent of the speed of light. This limits the rate at which data can be exchanged over long distances, and is one of the factors that led to the evolution of optical fiber. By applying some of the advantages of visible and/or IR networks at the device and component scale, a computer might someday be developed that can perform operations 10 or more times faster than a conventional electronic computer.

Visible-light and IR beams, unlike electric currents, pass through each other without interacting. Several or many laser beams can be shone so their paths intersect, but there is no inference among the beams. Electric currents must be guided around each other, and this makes three-dimensional wiring necessary. Thus, an optical computer, besides being much faster than an electronic one, might also be smaller.

Some engineers think optical computing will someday be common. Some optical integrated circuits have been designed and manufactured. Three-dimensional, full-motion video can be transmitted along a bundle of fibers by breaking the image into voxels. Some optical devices can be controlled by electronic currents, even though the impulses carrying the data are visible light or IR.

**Vocabulary**

**three-dimensional wiring** – трехмерная разводка

**voxel –** элемент трехмерного изображения

**Questions**

1. What is an optical computer?
2. What is the speed of electric current flow?
3. Why should electric currents be guided around each other?
4. How can three-dimensional, full-motion video be transmitted?