

Please respond to the question below. (250 word maximum, double-spaced, 12-point font).

Describe a technology trend that may impact your target career.

Word count: 250.

The technology of Free software, as it continues to develop, will empower end users to do more sophisticated work than they can do now. One primary area of software engineering that it will advance will be in kernel architecture.

The heart of the Linux operating system is the kernel, which controls device drivers, the command line interface and communication with the hardware. At the moment, it is what is called a “monolithic” design, in that all possible pieces of software that might be needed are loaded into the kernel. This creates a larger kernel than is necessary, since there will be large portions that will not be used.

In order to improve upon this, the GNU Hurd project is creating a new architecture called the “Hurd microkernel”. A microkernel will provide the lowest number of parts necessary to run while at the same time streamlining the deployment of the rest of the system. This modularity will increase the flexibility of the overall operating system. This concept was first outlined by Hansen in a research paper in 1970. Unfortunately, the actual attempted coding implementation of the microkernel has proven to be extraordinarily difficult, as the theoretical efficiencies did not manifest themselves as expected. Even with these roadblocks, the GNU Hurd project is at release 0.9 and is functional, but at present is not able to be used in a production environment. However, as development moves forward, the completion of a production-ready microkernel will move the technology forward by a quantum leap.