

## **MICROPROCESSORS**

**(Creating New Ways to Live, Work and Play)**

Steve Krar

The microprocessor is the heart of every normal computer in use today. Even though there are many types of microprocessors, they all do the same thing in approximately the same way. It is also known as the CPU (Central Processing Unit), or a complete computation unit built into a single tiny chip.

Intel, the leading microprocessor in the world, produced its first microprocessor, the 8080, in 1974. It contained 6,000 transistors and processed 0.64 millions of instruction per second (MIPS) After repeated updates and improvements, the Pentium 4 containing 125,000,000 transistors, can process many types of information 5000 times faster than the original 8080 chip.

### **Common Terms**

- **Chip**, also called an integrated circuit, is generally a small piece of silicon onto which the transistors making up the microprocessor have been etched.
- **Transistors** is the number of transistors on a chip. Through years of development, they have increased from 6,000 to 125,000,000.
- **MIPS**, refers to millions of instructions per second capable of being processed. These have risen from 0.64 in the original microprocessor to over 7,000.

### **Intel Research**

Intel research is changing lives, from improving eye care for families in India to making sure technology performs in subzero weather for Arctic researchers. Intel corporation researchers have developed the world's first programmable microprocessor that delivers supercomputer-like performance from a single 80-core chip not much larger than the size of a finger nail while using less electricity than most of today's home appliances. Imagine a computer that would alert you if your elderly parent forgot his medication, or one that helped grow the perfect grape for your dinner table. Intel researchers throughout the world are working at universities, in labs, and in the field to create technology to improve every facet of life — from agriculture to manufacturing, microbiology, space exploration and beyond.

### **Intel Exploratory Research**

Intel Research is focused on a vision of essential computing: simplifying and enriching all aspects of work and daily life through application and system technologies that collectively

empower individuals, connect them to each other and into the fabric of networking society. The Intel Research Network of Labs promotes open collaboration between industry and academia. Much of the research is published and shared widely.

### **University Grant Programs**

Intel works with universities worldwide to promote technological progress and ensure the long-term health of the computing industry.

### **Medical Innovation**

Intel Corporation announced the mobile clinical assistant (MCA) is ready to enable nurses to spend more time with patients, do their jobs on the move while remaining connected, and manage the administration of medications. Intel's first platform built specifically for healthcare, the MCA is an important step in the company's efforts to better connect clinicians to comprehensive patient information on a real-time basis. The lightweight, spill-resistant, drop-tolerant and easily disinfected MCA allows nurses to access up-to-the-minute patient records and to document a patient's condition instantly, enhancing clinical workflow while reducing the staff's administrative workload.

Some of the Motion C5 features designed to ease the nurse's daily workload include: wireless connectivity to access up-to-date secure patient information and physician's orders; radio frequency identification (RFID) technology for easy, rapid user logon; a digital camera to enhance patient charting and progress notes, to keep track of wounds as they heal; and bluetooth technology to help capture patient vital signs.

The mobile clinical assistant was defined and shaped by consulting with those who will use it. They outlined their needs and decision-making problems they encounter while looking patients. The MCA eases overall workloads while improving patient care and a good example of putting innovative technology to work solving real needs.

### **Teraflops (World's First Programmable Processor to Deliver Teraflops Performance with Remarkable Energy Efficiency)**

Intel Corporation researchers have developed the world's first programmable processor that delivers supercomputer-like performance from a single, 80-core chip not much larger than

the size of a finger nail while using less electricity than most of today's home appliances. This is the result of the company's innovative "Tera-scale computing" research aimed at delivering Teraflops -- or trillions of calculations per second -- performance for future PCs and servers.

Tera-scale performance, and the ability to move terabytes of data, will play a pivotal role in future computers with ubiquitous access to the Internet by powering new applications for education and collaboration, as well as enabling the rise of high-definition entertainment on PCs, servers and handheld devices. For example, artificial intelligence, instant video communications, photo-realistic games, multimedia data mining and real-time speech recognition - once deemed as science fiction in "Star Trek" shows - could become everyday realities.

Intel's researchers have achieved a wonderful and key milestone in terms of being able to drive multi-core and parallel computing performance forward," said Justin Rattner, Intel Senior Fellow and chief technology officer. "It points the way to the near future when Teraflops-capable designs will be commonplace and reshape what we can all expect from our computers and the Internet at home and in the office." Also remarkable is that this 80-core research chip achieves a Teraflops of performance while using only 62 watts - less than many single-core processors today.