THE RIGHT TOOLS FOR THE JOB
When the only tool you have is a hammer, every problem looks like a nail." That old saying applies to most kinds of businesses, not just carpentry. It’s tempting to whitewash all problems with the same brush, or to apply one type of technology to every challenge. However, smart managers – like the best carpenters – keep their toolboxes well-stocked so that they always have the right tool for the job.

In the technology realm, a “well-stocked toolbox” means computer equipment that’s flexible, adaptable, and ready for anything. Whether the challenge involves database access, wireless communications, cloud computing, mobile devices, remote access, security and reliability, or some unforeseen combination of all of these, you need to be equipped with powerful, flexible, computing tools that are ready when you are.

Intel has been making microprocessor chips ever since they created very first one in 1971. For more than 40 years, the company has adapted, innovated, and led the way in computer technology. That kind of successful track record doesn’t come by accident. Intel chips have zigged and zagged through myriad changes in computer markets, global economics, and even breakthroughs in basic physics. Its chips have been used in everything from mobile phones to nuclear reactors, and from aircraft to video games. That kind of adaptability and broad suitability are what make Intel the world’s leading microprocessor supplier.

It starts with the proverbially well-stocked toolbox. Unlike other microprocessor chips, Intel’s products are well-appointed with a broad array of different capabilities in many different areas. They’re not stripped-down, simplified, special-purpose tools. It’s like having an entire technology toolbox in one chip. Let’s look at some examples.

**A Worldly Repertoire of Experience**

Every microprocessor chip has a catalog of "instructions," or commands, that it can carry out. The more instructions the chip supports, the more things it can do. While other chips have deliberately reduced instruction sets, Intel’s chips have a far larger and more complete set of instructions, a benefit of the company’s long experience with different global markets. These have given Intel processors a certain “worldliness” that other, simpler chips can’t claim.

Even something as simple as adding two numbers together highlights the Intel advantage. Intel architecture chips can add 8-bit, 16-bit, 32-bit, 40-bit, 64-bit, 80-bit, 128-bit, and even 256-bit numbers – whatever the job requires. In contrast, many other contemporary processors can add only 32-bit numbers. That’s like saying someone’s bank account balance must have exactly five figures, no more and no less, or that their street address must be exactly three digits long. This force-fit approach to simple arithmetic makes other chips jump through mathematical hoops just for basic grade-school addition, imagine the awkwardness with more-advanced calculations. Intel chips, on the other hand, have grown the ability to handle any type of number quickly and efficiently.

At the other mathematical extreme, Intel chips can handle AES (the U.S. National Institute of Standards and Technology’s Advanced Encryption Standard) with ease. They carry the basic instructions for calculating ciphers, the first step in protecting sensitive data. Medical and communications products often require data encryption to protect patient records or sensitive industrial data, and Intel chips are ready-made for securely performing that task. Other processors can’t; they require a separate, specialized chip to do the same work.

Moving now from numbers to words, Intel learned long ago that many of its customers aren’t interested in advanced mathematics: They’re making word processors, or designing digital signage, or working with industrial controls for harsh environments. They want their computer equipment to display words, not calculate missile trajectories. For them, Intel architecture chips have instructions that handle BCD numbers and ASCII strings, the electronic representations of words and letters. Few other microprocessor chips can say the same.

Want graphics? Intel’s got that covered, too. Once PCs started sporting graphical displays and "multimedia" options, Intel processors rose to the
challenge with a plethora of new instructions aimed directly at accelerating graphic performance. Those graphics instructions aren’t frozen in time; they’re still growing and evolving as the needs of the market change. Nowadays, Intel chips can handle a dizzying array of graphically oriented tasks such as dot products, shuffles, merges, interleaving, permutes, blending, sum of absolute differences, byte swapping, horizontal addition and subtraction, bit insertion and extraction, and still more. The graphics features alone would fill a book (and they do), which gives some indication of Intel’s dedication to this area. Graphics can be very complicated, but these built-in features have made the task much easier for programmers everywhere.

Back on the mathematical front, Intel processors can perform calculations that would warm the heart of a college-level instructor (or strike fear into their students). For example, Intel architecture chips can single-handedly calculate sine, cosine, square root, tangent and arctangent; do rounding; find minimums, maximums, reciprocals, and absolute value; calculate $2x - 1$ and $y \times \log_2 x$; do packing and unpacking of data, and more. This is math that other processors simply can’t begin to handle. Remarkably, other processors can’t even do basic division, a feature Intel chips have had for decades.

More than Talent: A Talent Pool

It’s this boundless capability that helps make Intel chips so popular. They’re designed with a range of abilities that can be deployed in so many different ways, from real-time robot control to cloud computing, and everything in between. It’s truly a programmer’s well-stocked toolbox.

That flexibility is backed up with software, development resources, and technical support, as well. Intel chips support almost every operating system available, from Windows* and Android* to real-time operating systems including Wind River’s* popular VxWorks*. It’s all backed up with cyber-security features from McAfee*, a leader in protection and security for big systems as well as small ones.

Intel’s popularity is reflected in the number of working programmers with Intel architecture experience. Hiring knowledgeable talent is easy in almost any region of the world, as Intel’s many customers will attest. Intel-based systems are used in college courses and training sessions around the globe, building a new generation of Intel-savvy programmers, in addition to the many experts already on the job. It’s a wide and deep talent pool that other, more specialized processor families can’t match. When it comes time to engineer a new product, it’s always best to have the sharpest tools and the most experienced talent on your side.

ABOUT INTEL

Intel (NASDAQ: INTC) is a world leader in computing innovation. The company designs and builds the essential technologies that serve as the foundation for the world’s computing devices. Additional information about Intel is available at www.intel.com/pressroom and blogs.intel.com.