

Computer Hardware Evolution and What It Means for your Rental Business

By William C. Veneris, President of ALERT-IMS

Over the past thirty years, management information systems for rental businesses have become increasingly affordable. This has created a more level playing field, giving operations of all sizes the ability to use these systems to provide excellent customer service, maximize profitability, and make sound business decisions. These possibilities exist because of the way computer hardware has evolved over the last thirty years. The development of computers from mainframes to minicomputers to microprocessors has created major shifts in how computer systems are developed and provided to rental operations.

Today, new advances in technology and the positive impact they can make on your business virtually guarantee that you won't be using the same computer hardware three years from now that you're using today. Your investment in a management information system represents a significant commitment, both financially and in the training of your staff. Your software vendor's ability to incorporate this cutting-edge technology into your system is crucial to protect this investment.

To begin to appreciate the rate of change occurring in the computer industry, we must compare it to the rate of change of traditional business models. Traditional businesses tend to change fairly consistently over a period of time. For instance, a rental store might focus on improving a ratio such as "rental revenue per employee". The goal could be to improve this ratio by 10% each year. This projected revenue represents a slow rate of change in comparison to the rate of change that occurs in the computer industry.

The computer industry is driven by semiconductor technology. In 1964, Gordon Moore, one of the founders of Intel Corporation, calculated the number of transistors that can be fit on a computer chip over time. Because the number of transistors that can fit on a computer chip has doubled about every two years, the result of his calculations, called "Moore's Law", is a much faster rate of change – exponential growth. A recent article published by Data General explains that if the auto industry had been following this rate of growth for the past 30 years, "a 1995 Corvette would reach 500,000 miles per hour and a 1995 Toyota Corolla would cost \$50".

Because Moore's Law illustrates that computer technology changes at a much faster pace than traditional business models, computer hardware companies simply can't use traditional forecasting and planning techniques and be successful in the long term. If they do, they will quickly "fall off" the exponential growth curve that drives the computer industry. The industry's efforts to respond to the rate of change implied by Moore's Law has created two major shifts in how computer systems have been developed and delivered to rental operators.

The first major shift occurred in the late sixties when the industry replaced transistors with the integrated circuit. The result was the minicomputer, the first computer system that became generally available to the larger rental operator. Instead of costing more than \$250,000, these new minicomputers cost around \$50,000, and did not need special temperature-controlled rooms to house them. By the early eighties, there were a number of vendors delivering systems to the

industry. These were proprietary systems, which meant that a vendor's software could only run on a specific vendor's hardware platform.

The result of Moore's Law is that rental stores have been able to purchase computer systems that do more and cost less. Every couple of years, computer systems double in terms of power and speed and cost half as much. Most rental store owners are aware of this fact and appreciate the end result – a faster, better hardware platform for their rental software. However, what most rental store owners have not understood is how their software vendors have had to adjust their delivery methods to keep up with the rapid gains in hardware technology.

Not only is the rate of change in the computer hardware industry fast in comparison to traditional business models, it also gets faster all the time. The main challenge for software vendors then is to keep up with this change and provide rental operations with the ability to incorporate cutting edge technology into their software applications. To be successful, rental software vendors must re-engineer themselves. No one company can accomplish the prodigious task of keeping on top of all the new technologies as they come to market. Therefore, vendors must establish strategic partnerships with other technology providers to take advantage of their expertise. In a sense, rental software vendors must become "systems integrators", directing the integration of new technologies into their management information systems to allow rental store owners to preserve the investment they have made in their application software.

So far we've been primarily discussing computer hardware. But hardware is only one component of your computer system. A computer system is built on three levels. First, there is the computer hardware, then an operating system (such as UNIX, DOS, or Windows 98), and finally, business application software (such as word processing software or your rental software).

While we have seen that exponential rates of change accurately describe the growth of the microprocessor technology, it does not describe the development of operating systems and applications used on that hardware. Operating systems consist of millions of lines of complex computer instructions. These instructions are written by computer programmers, line by line. Application software is developed in a very similar way. In contrast to building computer chips, these processes are very labor intensive. Because of this, operating systems are developed to have a much longer useful life. A good example of this is DOS, which has been around for more than fifteen years. Application software has a similar life span. Many software programs, while being enhanced many times over, have been on the market for many years.

All of these changes require you to think about your computer system in a way you may not be accustomed to. While a computer *system* is a long-term investment, computer *hardware* is evolving so rapidly that it cannot be considered a long-term investment anymore. Many rental store owners who purchased computers in the past kept the same hardware for ten years or more. Now, the pace of technology makes it foolish to consider a computer hardware purchase more than a two or three-year investment. At the same time, your rental software vendor has a responsibility to make sure the application software you depend on every day can take advantage of the next wave of hardware.