It has become a specialized world

The quest for industry specialization has driven innovation

Chip manufacturers are now designing and producing chips to serve the needs of particular markets rather than targeting industries as a whole. Intel, for instance, has an embedded processor specifically made for POS systems, and chips for home media systems and portable media players. Many other companies also design embedded products with industry-specific use in mind, recognizing that these end users often desire multi-purpose features. Embedded hardware is designed to converge with specific applications. Take the POS system as an example, they are now developed to provide high-definition dual or triple display, complex accounting applications and connectivity as well as remote management capability.

Decades have passed and the world has changed quite dramatically when it comes to the needs of embedded systems. Starting from designing multi-purpose computers for general use when performance was the main consideration, industrial requirements for these systems have become more demanding. Higher performance means higher power consumption and heat dissipation. Other related components would need to operate at a similar performance level. This results in increasing peripheral costs. Chip manufacturers combat the challenge of delivering higher performance systems by offering different types of processors as technology progressed, from single-core processors to dual-core on a single chip, and now to multi-core processors. Today, various industries are demanding products that serve their increasingly specific needs. Embedded systems are now required to offer more specific features that serve individual's market specifications, e.g., low power consumption, wide operating temperature range, more expansion capability, compact size, mobile connectivity needs and more.

Axiomtek has been designing and manufacturing boards and systems that serve specific industry needs for decades. For example, our tBOX product line has become more specialized for specific transportation use including railway, vehicle PC, marine and commuter station use. Our tBOXes are designed to serve various applications including fleet management, highway and railway roadside systems, toll systems, surveillance controller, passenger information systems and more. Our award-winning tBOX321-870-FL for railway offers anti-vibration, ruggedized IP40 steel case and M12 screw-type connector. Its built-in 3rd Generation Intel® Core™ processor, Core™ i7-3517UE (up to 2.8 GHz) or Intel® Core™ i3-3217UE (1.6 GHz), has been integrated into this robust system. These onboard processors and also onboard DRAM greatly reduce the impact of vibration and shock commonly experienced from railway field operations. The system is certified with EN50155 / EN50121 for rolling stock, complies with EN45545-2 for fire resistance and power interruption class S2 for power supply stability to provide great system reliability. The tBOX321-870-FL can operate in critical environments with temperature ranging from -40°C to +70°C.

Embedded Operating Systems (EOS) also plays a big part on the ever-changing trends. Traditionally, embedded systems did away with an operating system and offered simple control program with limited I/O and memory services. As the complexity of the requirements increased, it was inevitable to have an EOS which offered low latency real-time response and all of the traditional functionalities such as- memory protection, error checking/report and transparent communication.

As referenced in the EETimes blog on emerging trends, "multicore also needs multi-mission, multi-thread, multi-process, multi-processor, multi-board debugging and has to operate on open source tool chains." Proprietary operating systems are no longer in demand as more and more designs are opting for open source platforms both for development and deployment.

The tBOX products offer extensive features, rich I/O alternatives and great compatibility, aiming at providing flexibility and expansion capabilities to the customers. Their mini PCI/PCIe ports can be used for different applications including wireless communications such as remote file or surveillance video downloads. Axiomtek's tBOX products support most operating systems including Windows 7, Windows 8, Linux and WES7. Axiomtek's embedded system products give mass transit system integrators advanced, scalable choices of

controllers that can be customized to meet all their needs. These reliable systems provide around-the-clock security without the need for frequent replacements. Quick response, customization capability and prototype construction mean that Axiomtek can respond to any customer requirement to meet the demands for better mass transit security.

About Axiomtek Co., Ltd.

Axiomtek Co. Ltd. is one of the world's leading designers/manufacturers of PC-based industrial computer products. From our roots as a turnkey systems integrator specializing in data acquisition and control systems, Axiomtek has mirrored the PC evolution in various industries by shifting our focus toward the design and manufacture of PC-based industrial automation solutions.

Axiomtek Co., Ltd. established in 1990, has more than 60 distributor partners globally. Axiomtek offers Industrial PCs (IPC), Single Board Computers and System on Modules (slot CPU card, small form factor embedded boards & SoM), Fanless & Rugged Embedded System (eBOX, tBOX and rBOX), Touch Panel Computers (TPC), Medical PCs (MPC), Human Machine Interface (HMI), Digital Signage and Players (DS), Industrial Network and Network Appliances (NA).

As an associate member of the Intel® Internet of Things Solutions Alliance, Axiomtek continuously develops and delivers cutting edge solutions based on the latest Intel® platforms.