

# Born and bred

**T**he telecommunications market is undergoing a dynamic period, where customers and vendors alike are demanding the optimum combination of features to keep design complexity and costs to a minimum. This demand saw the birth, in 2002, of the Advanced Telecom Computing Architecture (ATCA) standard.

The primary goal of ATCA was to create a scaleable architecture that balanced performance and cost for high performance, high power telecom networking applications. Since its release, ATCA has gained acceptance by telecom OEMs, with some planning to base the next generation of telecom networks on it. But, to cover all network applications, ATCA needed a 'smaller brother' – so the MicroTCA standard was born.

MicroTCA targets smaller scale, less powerful, price sensitive applications, reusing the same Advanced Mezzanine Card (AMC) modules as ATCA, without the need for a carrier. Instead, these modules can be plugged directly into a backplane inside the MicroTCA system. Said to be more flexible, scalable and cost effective for lower end telecom systems, MicroTCA continues to attract interest from beyond its original intended audience. As new applications emerge, the standard needs to evolve meaning further adaptations of the standard will be required.

## Bigger brother

According to Paul Virgo, director of marketing for Emerson Network Power, MicroTCA fulfils a multimarket appeal and the adoption within certain industries has come as predicted.

"There has always been this notion that MicroTCA was going to be the little

*Will 'new kid on the block' MicroTCA be mature enough to eventually outgrow its older TCA sibling?*  
By **Mike Richardson.**



brother of ATCA," he explained. "Whilst some customers have based their applications on ATCA and scaled it down, far less has happened than predicted. Last year was supposed to be the 'big adoption year' for MicroTCA, but it looks like it's occurring this year instead."

Virgo says the reason is because MicroTCA has come too fast on ATCA's heels. "ATCA has had a phenomenal impact and companies are still absorbing its effect and replacing their proprietary designs," he continued. "For SMEs to suddenly look at MicroTCA and try and take advantage of its potential is a lot to take in."

Driving out another multimarket standard close on the heels of a technology already into some adjacent market spaces was, in Virgo's mind, not a smart move. "However, the market demanded it, so it evolved through the

need to build relatively small, scaleable open standard COTS systems," he argued. "Reacting to the market was the right thing to do and we would all love to rest on our laurels, wait for ATCA to mature and then bring out the 'next big thing'. The appeal has by no means gone – it's just moved a little to the right!"

Acal Technology's telecoms product manager Robert Seymour makes this observation: "It's fair to say that some of the initial hype overstated the price point of MicroTCA and we're still dealing with the legacy. There was an expectation over the pace of adoption that, with the benefit of hindsight, proved unrealistic. However, we're moving closer to the cost expectations our customers have."

For Schroff, MicroTCA represents an interesting and powerful new specification, with a huge feature set in a super small form factor. This, it claims, is the reason why it generates so much interest.



Rob Seymour: "We see a healthy ecosystem growing up outside what you'd consider to be the 'traditional' vendors."

Expert panel

"A year ago, we were receiving general MicroTCA inquiries, but recently, they've become very precise," noted company product manager Christian Ganninger. "These inquiries reveal that real projects are being described. We've also received the first custom specific prototype orders and some first series orders. There's a big change in the status of the hardware and, although AMC modules have been available for some time, you can now get MCHs and power modules that aren't stuck in a prototype status. PCI Express (PCIe), RapidI/O and 10GbE switch modules for MCHs are also now available. You can really test data transfer with these modules."

Kontron believes the main reason why

a variety of applications, such as image processing in industrial automation, real time motion control, medical image processing, and information systems in transportation. Amongst the military applications are communication systems and data processing for sonar or radar."

**Try a little togetherness**

Healthy cooperation – or 'coopetition' – shows the industry is strongly resisting the kind of fragmentation that would hamper interoperability and broader adoption of the standard. Has it learnt from previous mistakes by sticking closely to the standards?

"One company cannot solve all the problems," stated Virgo. "This forces us



*Dr Stephan Rupp: "AMCs provide a huge degree of flexibility for systems design."*

*"There has always been this notion that MicroTCA was going to be the little brother of ATCA."* Paul Virgo, Emerson Network Power



MicroTCA is catching on beyond telecoms is because of the AMC form factor, which is widely accepted across various industries.

"AMCs are readily available and provide a multitude of building blocks for developing cost effective COTS solutions," stated Kontron's head of business development, Dr Stephan Rupp. "When requesting MicroTCA, most customers are really asking for AMC systems. Typical requirements are multiprocessor systems with high throughput and low latency for

to collaborate. The 'coopetition' is real, and what's refreshing is the collaboration to ensure the specification meets customers' needs."

Seymour agrees: "The MicroTCA ecosystem has always been a major strength. As a value added distributor, we partner with a range of suppliers, so we're keen to stress that aspect. We see a healthy ecosystem growing up outside what you'd consider to be the 'traditional' vendors."

Kontron's Dr Rupp outlines the different levels of MicroTCA. "Some companies focus on the component level for processors, I/O, or DSPs, whilst others are ready to deliver preintegrated systems," he said. "Breaking with traditional parallel bus architectures, the serial interfaces available with AMCs are considered 'future safe' and provide a huge degree of flexibility and capacity for systems design. Current designs use AMCs with a diversity of fabrics, such as PCIe, Serial Rapid IO, GbE and 10GbE."

Growing fast, MicroTCA is already matching ATCA in terms of industry acceptance. Like a proud parent guiding its

offspring along the path to maturity, the PCI Industrial Computer Manufacturers Group (PICMG) has established initiatives to improve and standardise the ability of MicroTCA products to withstand extreme environments.

"These specifications will focus on other extreme environmental conditions," concluded Ganninger, "especially higher shock and vibration values. The Scope Alliance has reviewed the MicroTCA specification and has some useful change requests. Even if these changes are not incorporated, we'll see compliant hardware on the market."

Virgo feels the driving of the standard around extreme environment issues is well articulated. "Looking ahead, we will certainly move towards 10Gbit kinds of performance," he avowed. "It's already within the specification to do it, but it's getting vendors to start bringing products to market. This is when we'll see many changes, such as increasing compatibility and the 'dropping off' of ATCA driving it."

Clearly, MicroTCA has come a long way, having already undergone numerous generations of revisions. From cradle to grave, MicroTCA's lifecycle is an evolution, not a revolution that leverages off all the standards that have gone before, and will no doubt be further enhanced and refined in the future. ■