Interview

Mark Overgaard, Founder and Chief Technology Officer, Pigeon Point Systems

Mark is a leader in PICMG technical subcommittees, including those addressing hardware platform management of AdvancedTCA, AdvancedMC, and MicroTCA. Prior to founding PPS in 1997, Mark was VP, Engineering at Lynx Real-Time Systems and TeleSoft.

Pigeon Point Shelf Managers are in tens of thousands of installations.

Yes, and in addition to those thousands of shelf managers, our board-level solutions are used by hundreds of companies in their xTCA boards and modules. This broad presence gives us strong credibility on the management aspects of AdvancedTCA.

What makes the whole solution that you offer customers bigger than just the sum of its parts?

We are the only company that specializes in xTCA hardware platform management solutions. Often we're first to market with solutions that support major new specification revisions. We have been deeply involved in the management aspects of every new major xTCA specification starting 10 years ago with PICMG 3.0.

When we work with customers to make critical product extensions we incorporate those extensions in our standard products so that all our customers can benefit. We often succeed in getting similar extensions standardized in the relevant specifications, raising the bar for the entire industry. Our holistic view encompasses the products that we build, the specifications that govern those products, and the evolution of both.

We understand that specification development should be done within a realistic context of what will work, what will work fast enough, and what will have the right interoperability characteristics. The spec must be written in such a way that independent implementers will read the spec and implement it the same way so that different implementations can interoperate. That interplay among product implementation, specification development, interoperability testing, and customer feedback all contribute to a virtuous cycle, each part of which strengthens the others.

What changes have you seen during the first decade of AdvancedTCA and what is an example of how the spec continues to evolve?

We have gone from questions of 'will the hardware platform management layer work?' and 'will it interoperate in an implementation?' to questions of 'how can we make this layer work even more efficiently and even more cost effectively?'

The management portion of just the main ATCA, µTCA, and AdvancedMC specs spans almost 450 pages – so we've done lots of work over that 10 years!

Much of the further activity will likely be in hardware platform management focused specs: the HPM.x series. Pigeon Point led the development of the first of these, HPM.1, which established in 2007 an xTCA-wide architecture for updating management controllers, which had been a critical hole. Starting last year, Pigeon Point proposed and now leads a new PICMG subcommittee that is revising HPM.1 and creating three new HPM.x specifications.

HPM.2 covers LAN-attached controllers, which have a direct connection to an existing in-shelf LAN (such as the Base Interface in ATCA), yielding numerous development and operational efficiency benefits in the areas of performance, security, and robustness.

When you connect a management controller to an in-shelf LAN you can share use of that LAN to monitor serial ports on the main part of the board. For instance, during debug and integration, you can monitor what's going with the processors on the board (both payload processor(s) and management controllers). By implementing this LAN-attach feature you can have remote access (even across a continent!) to the console ports that tell you what is going on in those processors without having to connect any special cables.

HPM.3 is a complementary spec that provides a common framework for automatically assigning management controller parameters (such as IP addresses) via the Dynamic Host Control Protocol (DHCP), yielding further efficiencies.

Finally, HPM.4 will define authenticating management controllers that can serve as a "hardware root of trust" for boards or modules, enabling multiple security benefits, such as ensuring that xTCA shelves contain only authorized components and that HPM.1 management controller firmware upgrades are secure.

You emphasize the benefits for customers of being able to rely on Pigeon Point for this management layer. How would you paraphrase what a customer might say about those benefits?

There are some bigger companies who choose to do their own implementations of this. We of course continue to work with such companies, aiming to convince them that they should consider switching to use our implementation instead. Just such a switch has happened over the last year, and there was definitely a huge sigh of relief from the engineers in that company who were saying, 'Wow, I do not have to figure out how to implement this LAN-attach stuff on my own; I can just use your implementation; I know that my competitors have it; I know that my boards will have to have it; and I see hundreds of pages of specs that I would have to absorb and figure out how to implement. It is a relief not to have to face that.'

How does Pigeon Point participation in SA Forum and PICMG help your customers?

The cross pollination that we help to ensure between PICMG and SA Forum at the layer of the hardware platform interface within SA Forum strengthens the SA Forum specs for use in an xTCA context. I also think that cross pollination spanning both organizations among the people writing the specs, the people incorporating specs into their boards, modules, and shelves, and the people who buy those boards, modules, and shelves to incorporate in their own end products is another virtuous cycle of mutual feedback that is a very good thing.

Resources

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