The Future of FPGA- and AI- Dev Tools

Into the Great Wide Open

If you had asked me about the significance of open-source tools for FPGA design a few years ago, I probably would have yawned and answered that they’re occasionally handy for students and hobbyists, but that no “real” customers would ever use them—for a variety of reasons. I would have said that they couldn’t provide a complete development solution, that Quality of Results (QoR) was an issue, and that management at our customers wouldn’t trust that they were reliable.

FPGA companies like ours had always built proprietary tools to support design development for our silicon products. In the beginning that was because we had to, otherwise it would have been impossible for our potential customers to implement designs for (and subsequently buy) our devices. Along the way, though, we learned to value what I called the “walled garden.” Having our own proprietary tools required our customers to invest a lot of time learning our design flow, and that made them less likely to want to try out one of our competitors. We convinced ourselves that no one else could, or should, try to produce software to support our devices as surely nothing good would come from such an effort. When other companies tried, we did our best to ignore them.

That perspective changed significantly around two years ago after our CTO, Tim Saxe, and I attended a conference that showed some amazing results coming from an open-source FPGA tool chain. Not only had the tools evolved enough to provide a complete end-to-end solution, but the QoR was excellent and customers from the smallest design houses to some of the largest names in the industry had come to trust them completely. To say that I was surprised would have been an understatement.

Seeing customers getting such good results started me wondering whether open-source tools were really such a bad thing for us silicon providers. It was clear that not only had the tools evolved to a surprising level of maturity, but it was also clear that thanks to the crowd-sourcing leverage inherent in the open-source model, they would continue to evolve at a rapid pace and possibly even quicker than we could evolve our own proprietary tools.

Yes, they made designs more portable between vendors, but at the same time not having to make a large and continuous investment in tool development would allow us to invest those precious R&D dollars in...
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