HYPERION RESEARCH

HPC User Forum Update

Interviews with Steering Committee Members: Mike Bernhardt, Exascale Computing Project

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IN THIS UPDATE

After the global pandemic forced Hyperion Research to cancel the April 2020 HPC User Forum planned for Princeton, New Jersey, we decided to reach out to the HPC community in another way – by publishing a series of interviews with members of the HPC User Forum Steering Committee. Our hope is that these seasoned leaders' perspectives on HPC's past, present and future will be interesting and beneficial to others. To conduct the interviews, Hyperion Research engaged Rich Brueckner (1962-2020), president of insideHPC Media. We welcome comments and questions addressed to Steve Conway, sconway@hyperionres.com or Earl Joseph, ejoseph@hyperionres.com.

This interview is with Mike Bernhardt, who leads communications and outreach for the Exascale Computing Project. Mike is a 30-year veteran of the HPC community with a strong track record in strategic communications, marketing, public relations, branding and advertising. In the early 90s, Mike was the Director of Market Relations and Communications for the Supercomputer Systems Division of Intel Corporation. In 1994, he formed a strategic marketing firm, The Bernhardt Agency, for the HPC market segment. After selling The Bernhardt Agency in 2004, Bernhardt went on to build and sell two other widely respected, HPC-focused communications agencies, Noblemen Communications and Libra Strategic Communications. In 2010, Bernhardt launched subscription-based *The Exascale Report*, the first publication to bring an insider perspective to the emerging topic of exascale computing. In 2013, he returned to Intel as an HPC Community Evangelist, and in 2016 he joined the communications staff at ORNL to serve as the communications lead for the Exascale Computing Project. Bernhardt has been an active volunteer committee member of the IEEE/ACM SC conferences for more than two decades. He served as the Communications Chair for SC09.

The HPC User Forum was established in 1999 to promote the health of the global HPC industry and address issues of common concern to users. More than 75 HPC User Forum meetings have been held in the Americas, Europe and the Asia-Pacific region since the organization's founding in 2000.

MIKE BERNHARDT INTERVIEWED BY RICH BRUECKNER, insideHPC

Brueckner: Mike, welcome to the interview.

Bernhardt: Thank you, Rich. It's a pleasure to be here with you.

Brueckner: You've been on the Steering Committee for the HPC User Forum for a while and your current duties are handling communications for the Exascale Computing Project. Why don't we start at the beginning, though? How did you get into HPC?

Bernhardt: Well, I started out my career in computing as a programmer, which didn't really last very long. I had fun with it, but I got more fascinated with computer operations and how the systems were built and how they worked. So, I went down the path of computer operations and became an instructor teaching computer operations internals on IBM 360 and 370 mainframes. Then I did a little stint as a computer operations manager and a data center manager.

The teaching aspect is kind of a natural segue to story-telling, public relations, marketing, and communications. I was around with some of the minicomputer companies, I guess they were called back in those days: Prime Computer and Digital Equipment. But in 1987, I joined Multiflow Computer, the company that brought the very long instruction word, the VLIW architecture, to market. In 1988, the first full year with the company, I went off to Orlando, Florida for SC '88, the first of the SC (supercomputing) conferences. I staffed a little 10x10 booth for Multiflow, had the first set of brochures and product flyers there and got to see Seymour Cray do the keynote presentation that year, and I think I was pretty much instantly hooked. The passion of those people and Seymour Cray's inspiration and the conversations I had with folks … I was hooked and from that point on I was straight down that path of high-performance-computing or nothing.

Brueckner: That's how you got into HPC. Can you tell us about your career after that?

Bernhardt: Sure. It's always been focused around strategic marketing and communications. I love story-telling. It's a great thing to be doing. I was always big on building relationships and helping others figure out how to talk differently about the things they were doing, any aspect of helping a company understand how to better tell a story.

After Multiflow abruptly closed their doors I was recruited by Intel and went from Branford, Connecticut to Beaverton, Oregon to join Intel with a group that at the time was called Intel Scientific Computers, run by Justin Rattner, an Intel Fellow out there. It was really an amazing group and an amazing time. If you think about it, Intel was kind of leading parallel supercomputing at that point in time. I helped manage the launch of the Intel iPSC 860, the Intel Touchstone Delta system at Caltech, and the Intel Paragon supercomputers. The activities that I led, the press tours and the industry analyst meetings and working with the actual user community through the Intel supercomputer users group, really gave me just this incredible base of contacts, networks, and friends that I still have today.

After a few years at Intel, there was that awkward period of time when Intel was moving away from the building and production of parallel supercomputers, and I decided to leave the company and form a marketing and communications agency. With those contacts and relationships, it was pretty easy to do. There was nobody else addressing that market space really well, from an advertising, branding, and marketing segment, that really understood the culture and the lingo. We became, at the time, the most sought-after communications agency in HPC. And the biggest challenge I had was I couldn't take

on this company because we were representing the other company that was their main competitor. It was a neat problem to have. We worked with dozens and dozens of companies over a decade-and-a-half, including some international companies. From the early days there at Multiflow to Intel and then into the marketing and communications agency, the Bernhardt Agency, and working with so many companies in HPC and still staying actively involved in the Supercomputing Conference, that's it – 33 years of strategic marketing and communications in HPC.

Brueckner: I know that you happen to be one of the perennials, one of the folks that's been to every single Supercomputing Conference. It's a rare breed. What are the big changes you've seen in high-performance-computing?

Bernhardt: And by "rare breed" I assume you mean old breed? The technology changes are always there in HPC. That's what's so exciting about this community. It's a market segment where the envelope is always being pushed, even occasional paradigm shifts. We remember the battles, the SIMD vs. MIMD battles that were written up in magazines, these architectural wars. We remember the noise that was built around the Hypercube, message passing discussions, and what could we do with the possibility of accelerators tacked onto these systems? New memory and disc technologies. It was just constant.

Over time, it's a market segment that evolved. If I were trying to recap the biggest changes I've seen, it's been about attitude. It's been about communication style. It's been about how stories are told. The market segment itself has kind of come all the way back around, I think, over the last few years in particular, to having tremendous respect for marketing and story-telling. There's not a lot of hype. There is a lot of passion. We don't talk about, "my system is faster than your system." We talk about, "the systems in this market segment are going to change the world." That's what HPC is all about. I, for one, as a marketer who had to earn my stripes in marketing in this segment, am really happy to see where we are these days.

Brueckner: So that's where we are. Where do you think HPC is headed? Are there any technologies that got you especially excited or concerned?

Bernhardt: Glancing into the future, we've got so many possibilities on the radar. We're looking at artificial intelligence. We're looking at quantum computing. We're just starting to skim the surface of what I think we're going to be able to do with some of the accelerator technologies coupled into these new systems. We've seen, with the Exascale Computing Project in particular, the advancement of applying the technology to the science, and people taking a fresh look, getting a fresh perspective on how they even approach the science, knowing that they have that kind of technology available to them. It's going to change everything.

If you take a few of those examples, use AI and use quantum as just two examples of what the future might hold, it's going to come down to how do we manage it appropriately? How do we identify what we are going to do with it? Can they really have the impact that we think they can have? Time will tell. When we start to bring them into reality, how do we manage them? And then, in some cases, how do we deal with some of the ethical decisions and discussions that evolve around those things, machine learning and artificial intelligence in particular? So, there are some big challenges, but with big challenges come tremendously big opportunities.

I think what I find most exciting overall is just, in general, the exploration of the most leading-edge areas of computation and how to connect the technology to scientific discovery. And for the marketers and communications specialists who come along, how do you help those companies and

organizations tell those stories for mass appeal and for mass understanding? In many ways, it's undoubtedly the most exciting time that we've seen in years. We're just starting to skim the surface and the results that are coming back already are just mind-blowing. As long as we keep control of ourselves, it's all going to be good.

Brueckner: Any closing thoughts you want to share?

Bernhardt: Well, working with the Exascale Computing Project has absolutely been a highlight of my career. It's such a dedicated, talented, and motivated team. The passion that comes along with the entire HPC community, Rich, is something that makes this segment, and everyone in it, unique. I think, from a career standpoint, the note that I'd like to leave this with is to some of the folks coming into the HPC community that are considering it for the first time, to hear something like this. This next generation of technology and scientists, take a serious look at planting your roots in this community, in HPC. It's always been fascinating and rewarding, but it's never been more exciting than it is right now. With so much to be discovered and so much impact that can be made on the world, it's just a great place to be and I'm really thankful to be a part of it.

Brueckner: Mike, we really appreciate your efforts at the Exascale Computing Project and the HPC User Forum. Thank you, once again, for the interview today.

Bernhardt: Thank you, Rich, I've enjoyed it and I look forward to seeing you in person again one of these days, I hope soon.

About Hyperion Research, LLC

Hyperion Research provides data-driven research, analysis and recommendations for technologies, applications, and markets in high performance computing and emerging technology areas to help organizations worldwide make effective decisions and seize growth opportunities. Research includes market sizing and forecasting, share tracking, segmentation, technology and related trend analysis, and both user & vendor analysis for multi-user technical server technology used for HPC and HPDA (high performance data analysis). We provide thought leadership and practical guidance for users, vendors and other members of the HPC community by focusing on key market and technology trends across government, industry, commerce, and academia.

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