



Ditchin' DAC

Analysis from an Absentee

From before my kids were born until after they were grown and graduated, it was a June ritual. Twenty-one times in all, I made my annual pilgrimage to the Design Automation Conference (DAC), perhaps the most misunderstood massing of technology professionals our industry has to offer. DAC is "Burning Man" for the left brain – a mysteriously gravitational gathering that inexplicably pulls people from around the globe to one central location in non-consensual celebration of the unclear.

This year, the 42nd annual DAC was held in Anaheim California. It featured 240 exhibitors, 60 of whom were showing for the first time. Over 10,000 attendees were expected to attend the tradeshow, 57 technical sessions, 13 tutorials, four workshops, and 18 Pavilion presentations. As in every recent year, the 42nd DAC represented an industry at a crossroads, struggling to regain its identity. Would a new methodology, technology, or theme emerge that would re-vitalize the industry and resuscitate EDA from years of flatline

financial performance? DAC promised to reveal the secrets.

I ditched.

Nobody can say for sure when DAC stopped making sense. In the early days, semiconductor companies were both the primary producers and the primary consumers of design automation software. Chip design teams wrote their own stuff and needed a place to get together to compare notes and share ideas. University students wanted jobs with semiconductor companies and needed a place to get published in order to prove that they were working on current, relevant technology instead of simply driving Mr. Kirchoff for another lap around the circuit board. University professors wanted tenure and needed papers to add their names to, adding to the perceived value of their academic stock before the faculty review board.

DAC offered all of that and more. It proved itself an outstanding forum, measurably accelerating progress in design automation technology. However, it soon sprouted the unsightly appendage that parasitically attacks most successful technical events: a tradeshow. Tradeshows operate on technical conferences in the same way that viruses attack living cells. Viruses are incapable of replicating on their own, so they hijack the machinery of living cells and use it for their own purposes, capturing the ribosomes of host cells to generate viral proteins and generating their energy from the host cell's metabolic processes. So it is with tradeshows that attach themselves to technical conferences. The relationship, seemingly symbiotic at first, gradually follows the will of the dominant entity (the one with the cash), morphing the event into a misaligned but self-sustaining money magnet.

At about the same time, the commercial electronic design automation (EDA) industry was born. EDA got its start for many of the same reasons DAC did: there was economy of scale in the sharing of technology, ideas, and development costs across the semiconductor industry compared with the continued silo-based track where each company independently developed design tools for their own use. The birth of EDA put the semiconductor design automation efforts into a make-versus-buy mode, where companies evaluated each new development decision, examining commercial tools first to see if they could fill the need, and engaging in independent development only where they could differentiate themselves, or where no commercial product was available.

DAC was the perfect breeding ground for EDA. Fledgling design automation companies could prove their mettle by espousing their algorithmic accomplishments in the technical conference and then hawking their commercial wares on the show floor. Semiconductor CAD engineers could attend a session on channel routing, be impressed by a 20% improvement in routing density, and then stop by a booth to find out how much it would cost to replace their company's aging internal router with a fully-supported commercial EDA version sporting the latest algorithms. DAC made sense because the paper presenters, the session attendees, the tradeshow vendors, and the commercial consumers all drank from the same technology well.

DAC soon worked itself out of a job, however. Commercial EDA succeeded, and semiconductor companies downsized, marginalized, or sometimes completely eliminated their internal tool development efforts. Fabless semiconductor companies and customer-owned tooling (COT) became dominant forces and gave EDA an economic reprieve by temporarily expanding the high-end tools market. The balance of paper presentations at DAC shifted

from semiconductor, academia, and EDA to a mix of primarily academia and EDA. As EDA companies grew more mature, they became more guarded about what they'd present at the conference, fearing the loss of critical trade secrets to competitors. Academic presenters now redirected their employment hopes from the large and lucrative semiconductor industry to the smaller, more modest EDA industry. The DAC conference's technical relevance began a slow decline.

With the quiet exit of the semiconductor-house presenters came a much more subtle exodus: the departure of the customer from DAC. As electronic design automation became commercialized, the traditional customer – the semiconductor company design automation team member, ceased to exist. He left the building without fanfare or announcement and quietly disappeared, or showed up in another role wearing a smart camel-colored blazer, giving product demos in an EDA company's booth.

A new generation of customer, the commercial EDA consumer (largely made up of ASIC designers using commercial EDA tools to complete projects destined to be manufactured by merchant ASIC companies), began to attend the tradeshow portion of DAC. These customers had little interest in the technical conference because it still focused under the hood of design automation technology on the algorithms, and not so much on the end-user experience. Additionally, DAC was a secondary conference for these folks, not their main event. Companies engaged in the design of telecommunications equipment sent their engineers to telecom conferences, not to conferences on the development of design automation tools. When budgets got tight, a token representative from the CAD support team would be sent as an envoy to the tradeshow side of DAC to scope out the latest products, ride in the limos, enjoy the dinner boat parties, collect the trinkets, and report back on any developments that might concern the design team. The real designers went to conferences on topics like communications protocols and wireless standards.

The conference attendance of DAC changed too. As EDA companies put increasing emphasis on DAC as a tradeshow, their budgets grew beyond any reason. If your competitor sent 300 marketing people to DAC, you needed to send 400. Each year's booth had to outshine both the previous year's and the competition's. Beyond the booth (which was, by necessity, a sham since nothing meaningful could be shown on the tradeshow floor in full view of the competition), enormous demo suites were erected, sometimes at remote locations. Real customers who could identify themselves with bona-fide documentation and who could pass through military-grade security screenings

were quickly transported from the show floor to the suites where they were wined, dined, and demoed safe from the prying eyes and sales pitches of the competition. Of course, running such an operation cost a small fortune.

The problem of ballooning budgets found its way back into the accounting departments at EDA companies, where samurai bean counters slashed costs with the only obvious strategic option available: eliminate engineering attendance. Now, the only people who truly needed the DAC technical conference – professional engineers engaged in the development of design automation technology, had to practically sell their souls to get permission from their own companies to attend their own conference. The tradeshow was the priority, and every available dollar was needed to put marketing people on the floor and in the suites.

By some estimates, the combination of these effects has, at times, put the real vendor/customer ratio at DAC's tradeshow as high as three or four to one. EDA companies saw DAC as their premier event, and none wanted to be the first to blink and step down investment, even if measurable return on investment was poor. Following in the footsteps of the big players, EDA startups mortgaged their future to buy bigger booths, hoping to attract the attention of the occasional real customer that happened by or, more realistically, the potential suitor from one of the big EDA companies scoping out possible future acquisitions. If business was bad, marketers wanted to attend DAC for their struggling companies simply to use the show as a pseudo job fair.

The backdrop behind this chaotic choreography was an ASIC industry propelled by Moore's Law into a reality-show rat race where each process generation narrowed the number of customers, and those customers that remained required more and more sophisticated tools to get their job done. EDA prospered, or at least survived, by chasing the technology curve, selling cutting edge capabilities to cutting edge customers at premium prices. Meanwhile, the FPGA tools market was taking its own course, largely independent of DAC and its heritage. FPGA-related companies showed at DAC, but mainly attracted ASIC teams looking at FPGAs for ASIC verification. The largest suppliers of FPGA tools, the FPGA vendors themselves, quietly amassed more users of their design automation tools than the entire ASIC-based commercial EDA industry.

Take all of this at a time when the value of tradeshow themselves is being challenged by improved global information mediums such as the internet, and you get a recipe for industrial incongruity. If a company spends one or two

hundred thousand for a modest DAC presence, and gathers one or two hundred sales leads, the resulting thousand bucks a lead is not particularly competitive with other lead generation strategies in terms of ROI. There is perceived damage, however, from having a lesser presence than your competition, so investment in the intangible is the rule of the day. Many small companies practically break the bank to put on a good show at DAC, spend the rest of the year talking about how it wasn't worth the time or money, then increase the budget in hopes of making an even bigger splash the next year.

I'm really bummed about missing the Denali party.

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