

Don't settle for the ordinary

At last month's CDNLive, Tom Beckley urged attendees not to settle for the ordinary. **Neil Tyler** caught up with him in Munich.

When Tom Beckley, senior vice president and general manager of Cadence's Custom IC and PCB Group, addressed this year's CDNLive in Munich, he began his speech by referring to the 1960s cartoon *The Jetsons*.

"What's interesting about this is that *The Jetsons* predicted smart watches, robotics in the home and FaceTime, the ability to get information at any time and in any place, flat screen devices and the availability of online medical records, as well as remote diagnosis.

"The only thing it predicted that we haven't got is the personal flying vehicle," Beckley noted. "But we've pretty much got everything else."

He ended his speech with a challenge to the conference attendees. "So, where's my flying car? That's your challenge, going forward."

In Beckley's view, the industry is currently experiencing profound change. "All industries, no matter what sector, are being affected by new technology and the combination of complex software and advanced electronics. The challenge for companies like Cadence is to deliver the right tools and technologies. It's no longer simply about 'the chip'," he contended, "it's about 'the product'."

Looking back at previous generations of design engineers, he said: "Everyone looks to transform the sector they are working in, so we need, like our predecessors, to take a leap of faith and start to look outside the box."

Beckley is responsible for the Virtuoso design environment and simulation product lines, as well as the Allegro and OrCAD design and routing solutions and Sigrity, the high-speed analysis software for PCBs and IC packaging.

There was a raft of announcements – including JasperGold Apps for RTL signoff, new integration between MATLAB and Virtuoso and listing recent revisions to the company's Xcelium and Pegasus tools – but Beckley suggested that, in future, Virtuoso, Allegro and Sigrity could be brought together in a move that would enable design engineers to 'pull in package and board parasitics while the chip remained open'.

Speaking after his presentation, Beckley contended: "Today, the packaging, board and system worlds need to be brought together and into the design cycle as soon as possible."

Beckley started his career with Harris and General Motors, where he held engineering and management positions, before moving on to the EDA sector. He joined Cadence in 2004.

"When I was at GM, new car development usually took something like 10 to 12 years. Now, we are seeing an industry faced with new entrants who have cut their teeth in the consumer space and are used to a two year development cycle.

"Today's automotive industry needs ECUs to be smaller, lower power, cheaper, more reliable and more highly integrated – and wireless is going to be another big trend in this industry," he said.

"Drive-by wireless technologies will reduce the weight of vehicles significantly, increasing the reliability of connections and reducing costs."

All of which means the demand for semiconductors is set to soar in the coming 10 years. "While we wait for our autonomous vehicles to appear on the market, the demand for automotive semiconductors, in terms of value, is expected to rise from \$31billion this year to more than \$110bn by 2025.

"Whether it's the likes of Tesla, Nvidia or Uber, it seems to me that every semiconductor and software company is now seeing an opportunity. But I think the opportunities going forward will be massive and the number of units set to be sold will be huge as a result of the systems and products that will be created," he suggested.

While Beckley talked at length about how the automotive market was changing radically, he also highlighted the impact the Internet of Things was having in its broadest sense.

"From the cloud to the fog to the edge, system design enablement is changing profoundly and we, at Cadence, are having to actively transform ourselves to make what we do more relevant for this new design world. It is a world in which software and hardware teams are working more closely together.

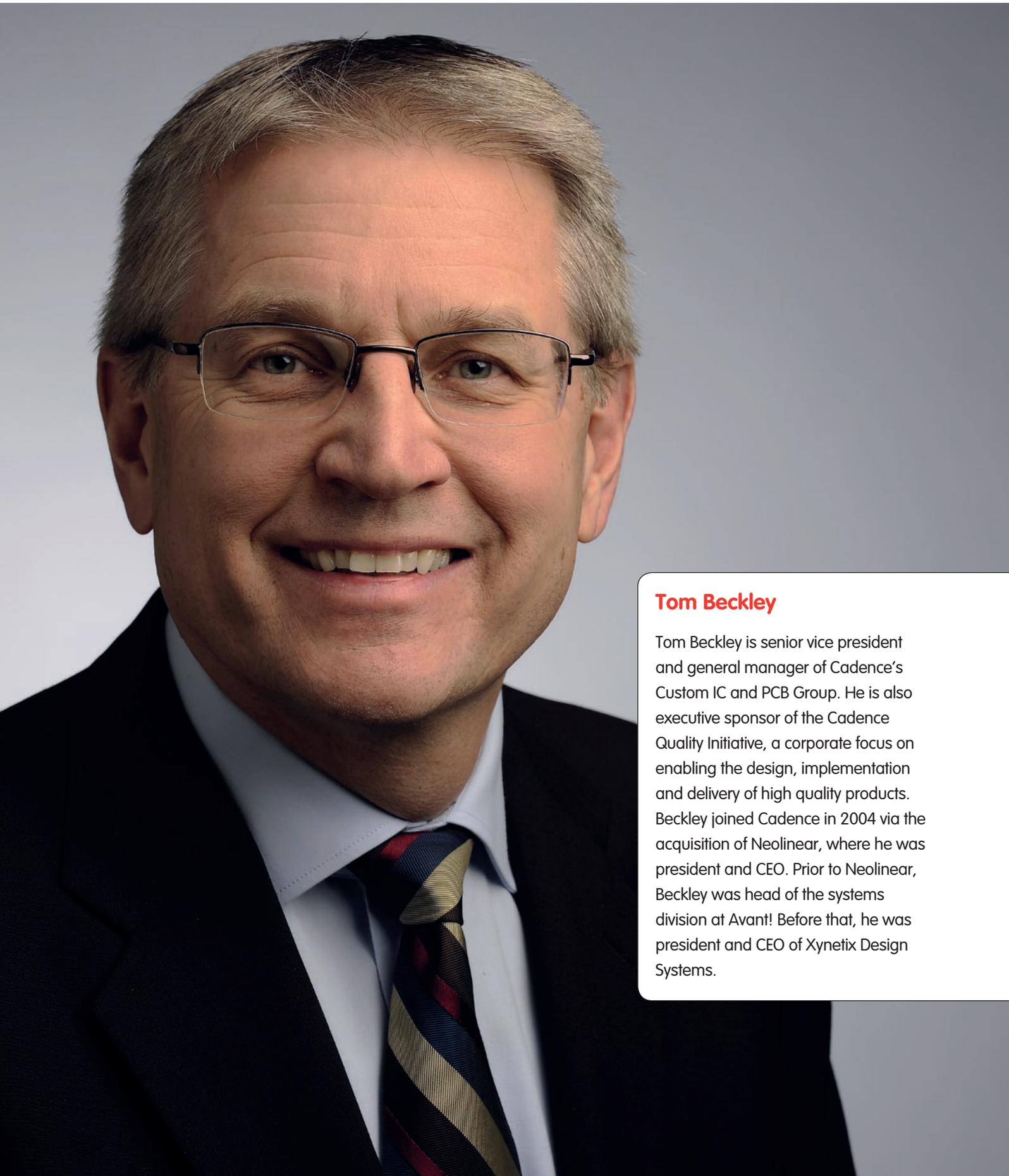
"Over the past few years, we have seen many waves of innovation. In just five years, more than 24bn IoT devices will have been deployed," he said. "We are seeing GPUs and CPUs being layered in with next generation embedded flash and 3D technologies. We are moving from millions into billions of units and it's across the board – from autonomous vehicles to even the humblest IoT enabled devices."

Beckley made the point that the number of companies doing advanced design node work is significantly higher than he expected. "If you'd asked me five years ago how many companies would be involved in FinFET design today, I would have said there would be just a few actively engaged in this. In fact, more than 130 companies are working on this today, which means hundreds of design teams and thousands of individuals.

"The opportunities in this space are immense and still unfolding. We're still chasing Moore's law, with production at 7nm and test chips at 5nm. We'll certainly get to 3, 2 and then 1nm. But then, that's it.

"The fundamental atomic structure of CMOS means it will just not be possible to scale beyond that; which raises the question of what then? Most advanced nodes design teams are already now looking at alternatives such as multi-die, 3D scaling or multi-technology solutions; it's going to have to be something exotic."

When he spoke to the conference and to *New Electronics*, Beckley made the point that design engineers should not settle for the ordinary and used a Robert Frost poem to make his point eloquently. "Two roads diverged in a wood, and I – I took the one less travelled by. And that has made all the difference."



Tom Beckley

Tom Beckley is senior vice president and general manager of Cadence's Custom IC and PCB Group. He is also executive sponsor of the Cadence Quality Initiative, a corporate focus on enabling the design, implementation and delivery of high quality products. Beckley joined Cadence in 2004 via the acquisition of Neolinear, where he was president and CEO. Prior to Neolinear, Beckley was head of the systems division at Avant! Before that, he was president and CEO of Xynetix Design Systems.