An industry panel wonders how and why innovation occurs. By Mike Richardson.

Share in the community

During National Instrument's recent NI Week, a panel of industry leaders discussed the merits of promoting a social network of like minded scientists, developers and engineers to share innovation for everyone's benefit.

Panel moderator – NI's vp of product marketing John Hanks — asked each panel member what they had learnt about innovation.

"The first story in my book concerns the relationship between Lego and NI," recalled Patricia Seybold, ceo of the Patricia Seybold Group and author of the book 'Outside Innovation'. "Originally, some of the lead users from universities were plugging Lego together with software to enable children to program robots and learn about engineering. When the original customers started 'hacking' the Lego product, Lego's reaction was that it was positive, because it was enabling innovation and allowing children to be inventive."

Associate professor and author of 'How Breakthroughs Happen', Andrew Hargadon spends a lot of time with companies that innovate continuously.

"The reason we remember Thomas Edison was because he could put together old ideas from a range of worlds, bring them together into one product and make use of them. This has led to innovation as a process of technology brokering – 'recombinant innovation' – which is about connecting across networks. I'm fascinated by the ecosystem around NI, which consists of many users. Each has created something novel, but from the same basic building blocks."

NI president and ceo Dr James Truchard offered his insight into how companies can build an innovation culture into their organisation so it becomes part of everyday work.

"When NI was fairly small, I would work on a one on one basis to try to stimulate ideas. I'm highly iterative in this style; I'll throw out questions and come back the next day to see if any ideas have bubbled up.

"However, as NI grew, it became clear we needed a framework within which innovation could take place. We have many talented people but, without a framework, you won't know in which direction innovation will go."

Absurdly ideal

VP of strategy for SolidWorks Suchin Jain works with customers and innovation teams to identify growth opportunities and to solve real problems.

"One of the things we tend to associate with innovation is invention, but we need to differentiate between the two. Innovation could be something that solves a problem. Invention is great, but it doesn't happen all the time. Innovation often happens if we take complex things and simplify them. SolidWorks has this notion called 'absurdly ideal', where you first figure out what could be innovative – like tak-

Andrew Hargadon, author and associate professor.

Patricia Seybold, ceo of the Patricia Seybold Group.

Scott Jordan, director of Physik Instruments and NanoAutomation.

Suchin Jain, vp of strategy for SolidWorks.

ing something complex and making it simple – and solve it. Think of working backwards to solve the problem."

Dr Truchard believes LabVIEW is an example of this philosophy. He said the company began by asking itself 'what do scientists and engineers do?'

"Back in 1983, engineers worked with instrument front panels, observed dos based pcs and drew signal diagrams on blackboards to describe experiments," he recounted. "LabVIEW was an absurdly ideal idea because it was far away from traditional text based programming. NI's Jeff Kodosky modified LabVIEW in order to make it computationally rigorous and that was all there was to it."

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> Dr James Truchard, **National Instruments**

Hanks moved onto Web 2.0: the second generation of web based communities, designed to enable collaboration and information sharing. "There seems to be this process of connecting customers that have knowledge," stated Hanks, "so how does this help in the innovation process?"

Dr Truchard explained: "Over the years, NI has used the web aggressively. We have such a diverse customer base, yet they have common interests. NI has a natural environment where it makes sense for information to be shared but, at one time, it seemed as though it was easier to go to Google to find out what NI was doing than it was to use our website! It became my goal to solve this problem and we now work internally and externally to provide environments where people can share information. Every time two people are doing the same thing, they should at least – unless they're competitors – know about each other's work."

Hargadon took up the theme: "There's this notion that Web 2.0 will help companies and one of the absurdly ideal challenges they should understand is to move from thinking 'how do I make my company more innovative' to 'how do I make my company's customers more innovative'. Nowadays, it's less about new product and more about enabling the people that use that product to do more than they could do before in less time."

Hanks turned to Scott Jordan, director of NanoAutomation and Physik Instruments (PI). As one of the first LabVIEW customers, or 'patient zero', what were his thoughts on the problems of getting customers to share value between each other?

"PI developed a technology to allow users to move a specimen being measured by an atomic force microscope (AFM) with a flatter trajectory than previously possible. This enabled PI to take AFMs to the next level in industrial metrology.

"To demonstrate it to customers, I built my own AFM software using LabVIEW. However, the math calculations gave me a headache, so I tried Google and up popped a few 'hits' from other LabVIEW users. One provided me with the solution which enabled PI and its customers to benefit from seeing the technology at first hand."

Does it come down to the online community being ready to search for the help and information required in order to find a solution to their problem? Certainly, NI's Web 2.0 has been pivotal in providing a framework that allows users to share ideas.

"Innovation is a network, not just of the manufacturer, the product and the customer, but also anyone else that participates in it," Hargadon explained. "The design choices you take in enabling innovation determine whether the people in the system will benefit and thus be drawn into your world or not. It's important to understand the extent to which a company's products build a community in which other people can prosper."

Hanks closed proceedings by asking Dr Truchard to offer his tip to improve the innovation process, citing 'deep Googling' – where users go deeper than the top page to get to the information.

"Pattern matching is important, where a proven solution from one industry can be transposed into another," he concluded. "You need lots of creativity when Googling and I've come to use it like a slot machine: type in the magic words, pull the lever and up pops the magic answer!"