THOUGHTleaders

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Exploring Innovative Environments

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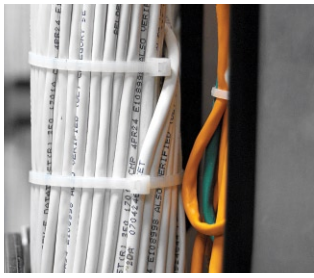

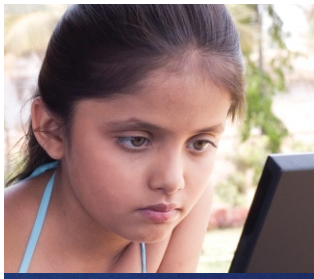

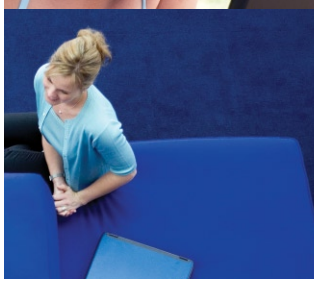

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Exploring Innovative Environments

In the early 90s, the Internet introduced a new wave of innovation that drove productivity, business models, and entertainment for more than a decade. Today, we're in the second phase of innovation. The network will become the platform, delivering all forms of communications, and will usher in new innovation that our children invented—collaboration and social networking powered by Web 2.0 technologies. We believe that this second phase will be dramatically bigger than the first. It will be a powerful change in IT, allowing IT to truly enable business goals.

This issue of *Thoughtleaders* will explore innovation in several different environments, and examine what makes those environments innovative. Countries form geographical and socio-economic environments. Networks comprise their own environments, and unique environments develop within businesses based on their culture, leadership, and other factors.

When we looked at countries around the world, Japan topped the list as the world's most innovative, based on recent research conducted by the Economist Intelligence Unit (EIU) and sponsored by Cisco. Switzerland, the United States, and Sweden followed. EIU first studied the importance of innovation, then ranked a total of 82 countries based on their ability to innovate—turn to page 5 to learn more and view the complete list. It's interesting to note that there is no single formula for encouraging innovation; those at the top of the list include both large and small countries, with contrasting cultures and characteristics, all of which foster innovation in unique ways.

At Cisco, we're constantly evolving our innovation model, which involves not only acquiring companies for their innovation and talent, but also collaborating with our strategic partners on joint innovation. In addition, we place a strong focus on internal innovation. I have often said that you can either do it yourself, acquire, or partner in order to be first to market. This issue includes a discussion around internal innovation and technology incubation with Cisco's Dave Rossetti and Greg Pelton. Additionally, Cisco CIO Rebecca Jacoby will highlight how IT departments can support innovation by aligning business and technology architectures as well as how businesses can embrace and implement emerging collaborative tools.

I can't emphasize enough the importance of collaboration as we look to the future of innovation. I believe the next phase of the Internet, which is being driven by increased collaboration and emerging Web 2.0 technologies, will spur an entirely new generation of innovation. Back in 2000, we said that businesses would lead the first wave of the Internet and consumers would lead the second. This has clearly become the reality of our world today. A recent *BusinessWeek* article entitled "The Future of Work," states that, "... new tools are going to change where we work, how we work, and even the nature of work itself." I believe it, and I see consumers driving innovation and bringing it with them into the workplace.

This second phase of Internet innovation will truly drive a new era of productivity that I believe will last a decade or more. At Cisco, we're focused on fostering an environment that emphasizes collaboration and encourages innovation to ultimately help us get even closer to our customers and anticipate their needs. I hope you find this issue of *Thoughtleaders* valuable in your quest for innovation.

Sincerely,

John T. Chambers

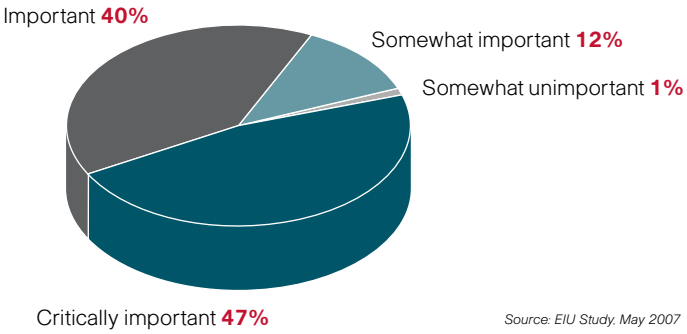
John Chambers
Chairman and CEO
Cisco

Research Highlights

Selected findings from research sponsored by Cisco Executive Thought Leadership

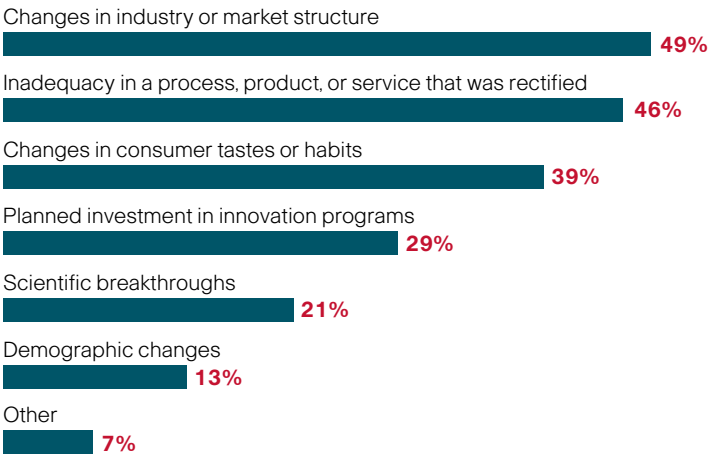
How important is innovation to your organization's success? Exactly how does your organization go about the business of innovating? What are some of the characteristics of innovative environments? What is the world's most innovative nation? These are some of the questions posed in recent research conducted by the Economist Intelligence Unit (EIU) and answered in a report entitled "Innovation: Transforming how business creates," published by EIU in Spring 2007. We've selected a few data points from the study to highlight here. To learn more about the research, and to see a ranking of the world's most innovative countries, read "Indexing Global Innovation," starting on page 5.

How important is innovation to your organization's long-term success?
(% of respondents)



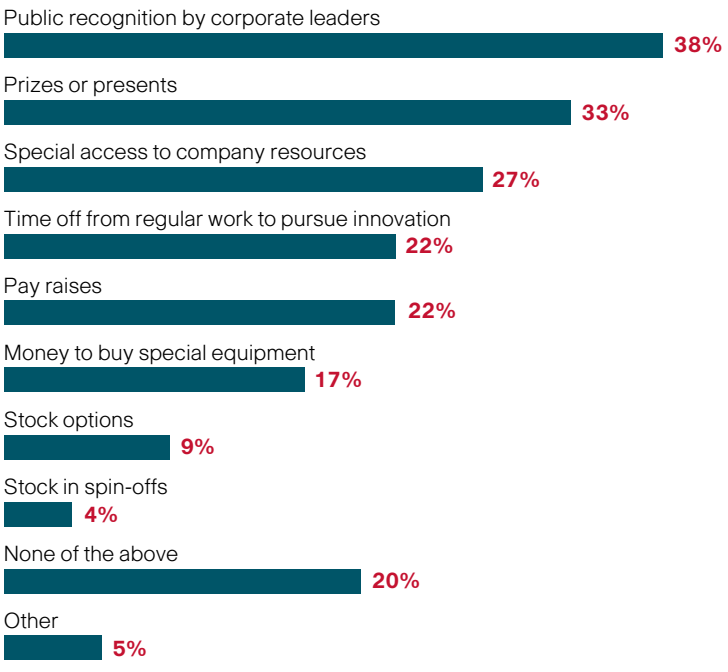
Source: EIU Study, May 2007

How would you describe the origins of your organization's most successful innovations? Select all that apply. (% of respondents)



Source: EIU Study, May 2007

How does your organization incentivize employees to suggest and develop innovations? Select all that apply. (% of respondents)

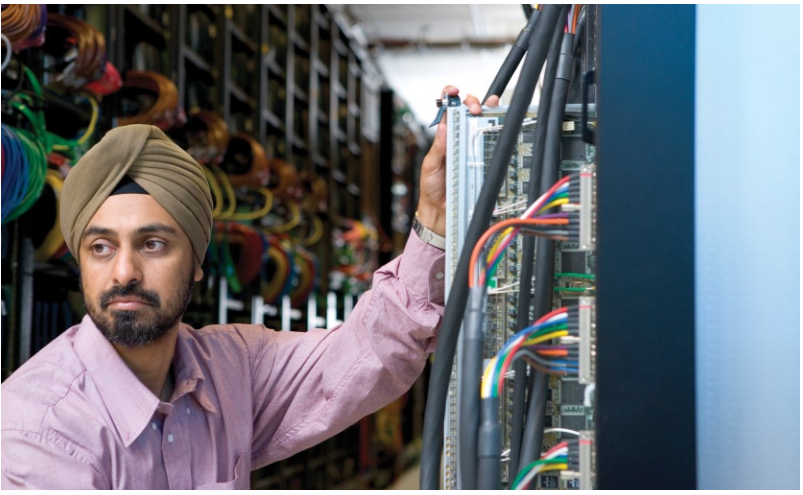


Source: EIU Study, May 2007

The CIO's Role in Enabling Innovation

IT leaders can fuel growth and innovation using three strategic levers.

By Rebecca Jacoby, Chief Information Officer, Cisco



Today, technology is broadly accepted in business as necessary to drive efficiency in operations. Leading organizations recognize that the strategic deployment of technology can be the critical enabler of virtually every business growth opportunity, especially those fueled by innovation.

The role of CIOs, and the organizations they lead, is to become the strategic "glue" between a company's business strategy and the enabling technology architecture.

IT organizations that understand and communicate in terms of business strategy will propose and implement technical strategies that create unprecedented opportunities for innovation in processes, products, and services.

A host of new collaboration technologies, combined with the expanding capabilities of the network, make the possibilities endless for innovation on a global scale. Of course, every CIO still has the responsibility to improve productivity in operations and to ensure business resilience. All that, while operating and improving legacy systems.

Three strategic levers provide the framework for CIOs to enable innovation today:

- Lead with—don't resist—new collaboration tools and processes that promote innovation within the company and with trusted partners.
- Create a flexible, secure, and scalable IT architecture that continuously improves "time to capability" for the business.
- Position IT to provide measurable value (beyond efficiency) at all levels: productivity, experience, and growth.

Embracing Collaboration

Collaboration technologies available today have initially gained broad acceptance outside the enterprise—but they are highly relevant for business use. These technologies enable innovation on a global scale that will fuel growth for the next decade.

For the CIO, collaboration technologies challenge our traditional views of governance. They invite broad participation in problem solving and idea generation. They are relatively simple to begin using. Rigid control will fail. On the other hand, taking full advantage of these tools within a business requires scalability and focus on results.

CIOs are uniquely positioned to *lead*, rather than *control*, the strategic implementation of emerging Web 2.0 collaboration technologies in the enterprise. This transformation will require changing more than technology, it will also drive change in cultures and leadership approaches. IT can lead by inviting broad participation in solving these challenges while providing the structure required for scale and focus.

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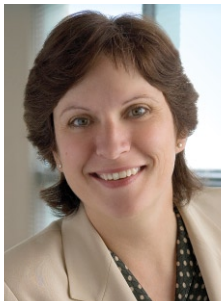


Chief Information Officer Rebecca Jacoby has more than 12 years of experience at Cisco in a variety of operations and IT leadership roles. She is responsible for making the Cisco IT organization a strategic business partner, and for producing significant business value for Cisco in the form of financial performance, customer satisfaction and loyalty, market share, and productivity.

Designing the Architecture

Every CIO can feel the momentum as consumer use of Web 2.0 tools raises expectations for flexibility and personalization in the enterprise user community. Global trends of growth and talent availability in emerging markets amplify the urgency for enabling technology. However, requirements regarding scale, security, and ongoing regulation continue to increase, creating seemingly opposing forces in the business environment.

Successfully meeting all the needs of the enterprise requires a "planful" IT architecture that works seamlessly with the business architecture to drive productivity, growth, and innovation.

Today, and in the future, the network is the platform upon which we manage our companies' core content and business processes. The network will enhance our ability to take advantage of a true services-oriented architecture, which will orchestrate those core services residing in our own network, as well as those we choose to access from partner enterprises, perhaps in a software-as-a-service business model.

The real power will come from collaboration technologies deployed at enterprise scale that allow user communities to work in the personalized fashion they desire.

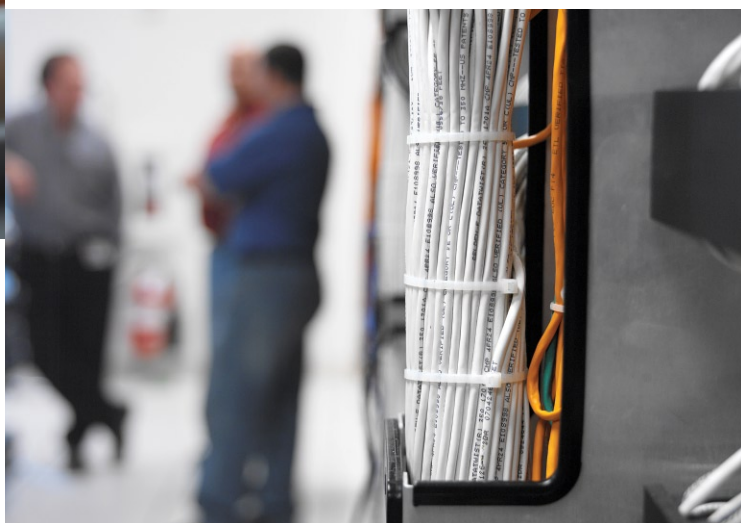
Creating Company Value

Aligning technology architecture with business strategy and leading the way for collaboration technologies to enable growth and innovation will define IT as a value center for any corporation. Positioning IT as a value center as opposed to a traditional cost center in the minds of the executive suite, as well as the IT organization itself, is essential to encourage the investment that enables sustainable growth and innovation. IT must become the synchronizing force between technology roadmaps and the strategies they enable, and this means developing new communication skills for many organizations.

Enabling business strategies requires IT to function and communicate effectively in *all* aspects of running a business. First, IT must measure its success in terms of supporting the operational functionality of the business, while driving sustainable productivity and resilience into processes as fundamental as ordering, shipping, and billing. This continues to be the price of admission for a successful IT function, but it is not enough.

IT needs to consistently deliver business capabilities to support scale or new business models with shorter timelines and improved experiences. Ultimately, IT leaders need to prioritize work and communicate progress in terms of the company's growth strategies. The technology available today makes this an opportune time for IT to drive a transformational shift from a budget focused primarily on operational efficiency, to a budget evenly allocated to operations, new capabilities, and investment in growth and innovation.

Company innovation, then, requires CIOs to utilize three strategic levers: Embrace and lead the enterprise transformation enabled by collaboration technologies; plan and implement a renewable architecture that enables both personalization and secure scalability in alignment with business strategy; and position IT as the value center it can be within your business. When it comes to innovation, these will be the hallmarks of successful CIOs for years to come.



Indexing Global Innovation

The Economist Intelligence Unit studies the importance of innovation globally and ranks the world's most innovative countries.

Japan is the world's most innovative nation, followed by Switzerland, the United States, and Sweden, according to "Innovation: Transforming the way business creates," a new report based on a study by the Economist Intelligence Unit (EIU) and sponsored by Cisco.

The EIU compiled a ranking of 82 economies based on their level of innovation between 2002 and 2006, and predicted how the ranking would change between 2007 and 2011. The top four will maintain their positions, according to the forecast, while China will move up five places to No. 54 and Mexico will climb six places to No. 39.

The aims of the study were to analyze the importance of innovation, then determine which countries innovate the best and why. To achieve this, the EIU compiled the ranking and also conducted a survey of 485 senior executives worldwide on their opinions regarding innovation. EIU used answers from the survey to set the weightings for the factors that fuel innovation, and to examine how and where companies innovate.

Rising Competition Fuels Innovation

Heightened global competition is forcing governments and companies to find new ways to increase productivity, and this is creating renewed interest in the need to innovate. But there is no single, best method to do so. The countries at the top of the ranking are large and small; some value rote learning while others emphasize spontaneity.

All of the leading nations stress the use of government policies to encourage innovation, along with education systems that produce large numbers of scientists and engineers.

"The message for governments is that there is no substitute for good education, nor for policies that encourage investment in IT and communications infrastructure," says Nigel Holloway, the editor of the report. "For companies, the process of renewal should, if anything, be accelerated. The proportion of total sales from new products and services needs to increase."

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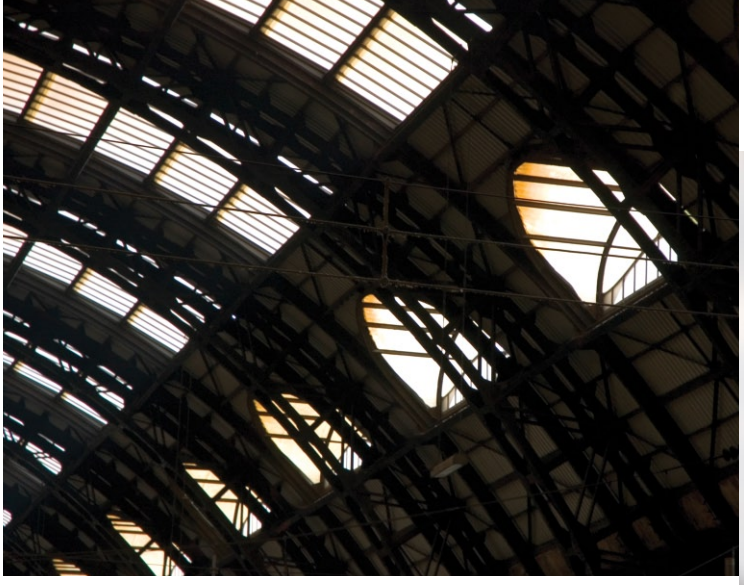


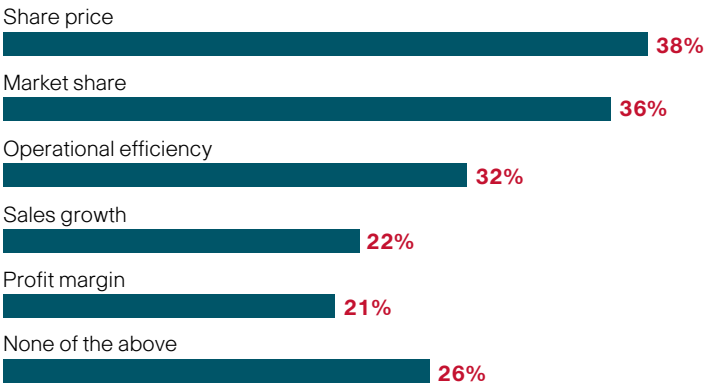
Findings Highlight Innovation Factors

While the EIU uncovered many interesting pieces of information, below are some highlights from the main findings:

- Innovation has a beneficial effect on both national economic growth and on corporate performance. The evidence of such benefits is stronger at the microeconomic than at the macroeconomic level.

- The survey panel cited a broad range of factors to explain what makes a country innovative, with the top determinants being technical skills of the workforce (92% of respondents) and quality of IT/telecommunications infrastructure (also 92%).

How Important is Innovation?
Percentage of respondents—who were free to select all that applied—that indicated that successful innovation is more important than the following success metrics:



Source: EIU Study, May 2007

- China has more favorable conditions for innovation than India. With annual expenditure of $136 billion on R&D, China now outspends Japan. However, in the sphere of innovation, there is a "small country advantage": 12 of today's top 25 countries in our ranking have a population of less than 10 million.

- The return on innovation is estimated to be proportionately higher in middle-income countries such as Mexico and China than among richer countries. This suggests that the former group of economies may be able to catch up with the latter. Although middle-income countries need imported technology, the speed with which they absorb it may depend on their own domestic innovation performance.

- At the corporate level, the survey found that among firms where innovation is identified as critically important, 46% of respondents say their firms perform better than their peers; only 32% of the firms that do not think innovation is critically important perform better than their peers.

- Among respondents who say their firm's R&D is equal to at least 5% of revenue, 44% say their company performs better than its peers. This compares with 35% among those who say their firm spends less than 5% of revenue on R&D.

- Among firms surveyed that are based in, or are closely connected to, a high-tech cluster such as Silicon Valley, 56% say they performed better than their peers; only 36% of firms outside of a high-tech cluster performed better than their peers.

"It is becoming quite clear that in order to remain competitive, innovation must become a priority at both the national and business level," says Roger Farnsworth, research director, Cisco Executive Thought Leadership. "Understanding the contributors to and enablers of innovation is critical to success in today's interactions-based economy."

The report is one of three studies conducted by the EIU for Cisco that describe the development of the "interactions" economy, in which customers, suppliers, owners, workers and others go beyond mere transactions to exchange information for mutual benefit. The other two research projects investigate the role of collaboration and personalization in the interactions economy.

Next Steps

To learn more about "Innovation: Transforming the way business creates," or to access the complete report, go to cisco.com/go/etl-eiuinnovation. Turn to Research Highlights on page 2 for more findings from the study.

For other research sponsored by Cisco Executive Thought Leadership, go to cisco.com/go/etl-research.

Innovation Index Top 25

EIU used the results of its survey of 485 global senior business executives to weight the innovation drivers it used, in part, to create the index that measured innovation between 2002 and 2006 and forecasts innovation between 2007 and 2011 within 82 countries. To learn more about how EIU measured innovation for its index, or to view the complete 82-nation list, go to cisco.com/go/etl-eiuinnovation and access the full report.

	2002–2006		*2007–2011*	
	Index	*Rank*	*Index*	*Rank**
Japan	10.00	1	9.91	1
Switzerland	9.71	2	9.80	2
United States	9.48	3	9.56	3
Sweden	9.45	4	9.55	4
Finland	9.43	5	9.38	7
Germany	9.38	6	9.51	5
Denmark	9.29	7	9.32	9
Taiwan	9.28	8	9.42	6
Netherlands	9.12	9	9.11	13
Israel	9.10	10	9.33	8
Austria	8.91	11	9.16	10
France	8.90	12	9.15	12
Canada	8.84	13	9.15	11
Belgium	8.80	14	9.00	15
South Korea	8.78	15	8.97	17
Norway	8.73	16	8.94	18
Singapore	8.72	17	9.03	14
United Kingdom	8.72	18	9.00	16
Ireland	8.46	19	8.60	20
Italy	8.41	20	8.74	19
Australia	8.37	21	8.50	21
New Zealand	8.17	22	8.42	22
Hong Kong	8.16	23	8.24	23
Slovenia	7.68	24	7.91	24
Spain	7.47	25	7.57	27

**Forecasted*

Economist Intelligence Unit | The Economist

Incubating Innovation

A discussion about what it takes to foster an innovative environment.

What is technology incubation? How can businesses successfully innovate internally? What are some of the barriers to innovation, and can businesses overcome them? These are some of the questions addressed by Dave Rossetti, vice president of Technology and Market Development at Cisco, and Greg Pelton, senior director of Cisco's Technology Center, which focuses on technology incubation. *– Ewan Morrison, Editor, Cisco Executive Thought Leadership*

Executive Thought Leadership (ETL): What do we mean when we talk about "technology incubation"?
Rossetti: First of all, I would like to draw a distinction between innovation and invention. Invention is hard stuff, don't get me wrong, but I would say that after the invention there's a tremendous amount of hard work that's required to get a good idea all the way out to the street. And what we try to provide when we talk about technology incubation is an environment where you can fully develop and deliver on those good ideas.

Pelton: It's really about getting out ahead of the market. Understanding where the new opportunities are going to be and then doing the work to take those opportunities and qualify them and understand if they have real value and can really help drive the top line for the company. So you need to do enough work to understand if an idea is a good idea and if it's a relevant idea, and if it's an idea that can generate a reasonable amount of revenue so it then can be driven into the mainline business.

ETL: What are some of the requirements that need to be present to foster an innovative environment?
Rossetti: I think it's really important to have a team that's 100-percent focused on what it's trying to accomplish with the innovation process.

Secondly, there's nothing that breeds succeeds like success, which is a way of saying that credibility is important. If you build credibility, people will actually trust you to come up with the good ideas and to follow through on what you said you were going to do.

Finally, it's important to have customers. Now what is a customer in a situation like we're discussing here? The customers that we have in our innovation groups here are actually other groups at Cisco. The output absolutely needs to be clients who want the stuff that we do and who are willing to pick it up when we're done with it.

ETL: What are some of the challenges that companies face in attempting to innovate internally?
Rossetti: There's always a struggle between short-term goals and long-term goals. What we're talking about here in terms of innovation and incubation is a more patient process in which you have to focus more on your long-term goals. There's a natural resistance within any organization to doing things

differently, so if you're really focused on the short term, doing things in a more long-term way is a challenge. I think you need to find talented, risk-taking people who can actually think more in a long-term way and go against the grain of the short-term thinking that many organizations have.

Pelton: I think it's critical to balance business with technology. There are a lot of companies that are able to set aside a

group of people and invest in technology incubation, but they don't add business process or business relevance to that.

ETL: What kind of processes can you put in place to erode some of these barriers to innovation?
Pelton: It helps to look at the overall organization. We have a series of groups of different charters focused on further out versus nearer in, and small scale versus large scale.

We have the Technology Center, which incubates new technologies and new ideas and tries to understand what the opportunity are and get them to the next step of being ready to bring into the company. We have our Emerging Technologies Group, which takes nascent ideas that have begun to show promise and turns them into business units. Then we have our traditional Technology Groups, which then systemize those business units and scale them up. So we have a pretty good pipeline for dealing with ideas.

ETL: Tell us a little more about the Technology Center.
Pelton: The Technology Center is part of Corporate Business Development at Cisco. We take a model similar to the venture capital community. We manage a portfolio of ideas and we try to make sure we've got good balance in that portfolio so that the risk is mitigated. We're covering different markets, and different products segments, and different customer segments.

Within that portfolio we identify good ideas and fund them and invest in them, but we're very careful about not running them on too long. It's not hard to find good ideas and to put them in portfolio. It's really hard to take out the ones that aren't showing promise.

ETL: Is there an example of an innovation that is emblematic of this process from idea to product?
Pelton: One that's on top of everyone's mind today is TelePresence, which began as an idea that one person within the Technology Center was working on. It then moved out from the Technology Center into our Emerging Technologies Group to be incubated into a business unit. Now, it's a brand new business unit for Cisco.

If we go back ten years or more to think about Voice over IP, that also began as a small idea within the Technology Center. We began building our first Voice over IP products; these were

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voice gateways that had some value for our customers in saving money on leased lines. Today it's a multi-billion-dollar business, and we grew that business through lots of internal investment and internal innovation.

We grew it through acquiring companies to add to the portfolio. And we grew it through building an ecosystem of partners and developers that built on top of our voice solution. To me, this is the best example, showing how we apply all of tools in our tool kit to take something from a very small idea to a multi-billion-dollar business.

ETL: Any parting wisdom for those seeking to foster innovation?

Pelton: It's important not to get locked into existing assumptions about the market, about products, about ecosystems. And finally, the only way to sum it up is get great people and then manage it like a business. It's not a lab, it's not an experiment. It's a business. So apply business process to what you're doing.

Rossetti: You need to enter technologies and markets that are not yet settled. Those are the areas where you have an opportunity to innovate without spending inordinate amounts of energy trying to make progress.

Another lesson is that it's important to show pragmatic—and by that I mean customer-applicable—results. I would also say that it's important to make your innovation efforts separate but highly connected—a separate organization, working in a focused way, but highly connected back into the organization so that you're always relevant to the show, so to speak.

The most important aspect, I think, is to take risks. Make failure okay. We have talked about pruning your bad ideas as soon as you possibly can. Fail early and fail often is the mantra that I think that we all ought to have.

Finally, have fun. Make sure that it's fun because I think a fun, creative environment is where you really get great pay off.

Next Steps

This interview was edited for length. A podcast of the full interview is available at cisco.com/go/etl-incubation.

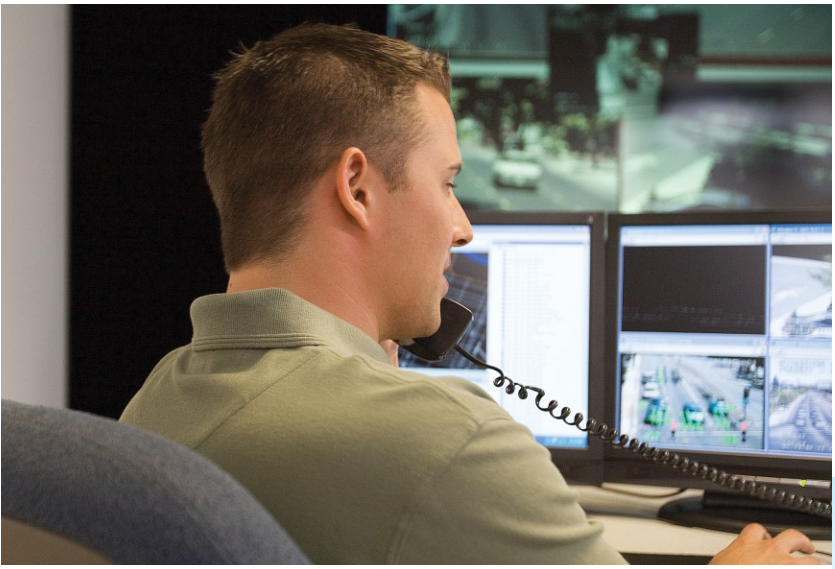
"It's important to make your innovation efforts separate but highly connected—a separate organization, working in a focused way, but highly connected back into the organization."

– Dave Rossetti

Video Changes Everything

This disruptive technology is spurring one of the fastest-growing and most exciting trends in decades.

By Charles H. Giancarlo, Chief Development Officer, Cisco



Video anywhere and everywhere. Video in real time and on demand. Video accessed as effortlessly as a phone message or Web page. Video on your handheld and video on the Jumbotron.

Pervasive video is already changing the way businesses collaborate, innovate, market their products and services, and interact with customers. And this dawning era of video is giving rise to new markets and services, and creating innovative change in traditional industries such as education, entertainment, and medicine.

In the home, as bandwidth increases, on-demand video will provide consumers with a choice among literally millions of hours of professional and consumer-created content—video that is seamlessly delivered, optimized, and stored over intelligent Internet Protocol (IP) networks.

Revolutionary Trends

Of course, video itself is nothing new. But two trends make today's video revolution different from previous disruptive technology revolutions, such as e-mail, the Internet, and mobile telephones.

First, this video revolution is being led by the end user, both at home and at work. In the past, service providers and enterprise IT departments largely fueled the development and adoption of technology. Now, consumers are the driving force, with a seemingly insatiable demand for innovative video-based services in the home. And they're taking these new video preferences with them into the workplace, where they have the same—or even higher—expectations for communicating and collaborating.

Secondly, video will soon be *pervasively integrated*. By this we mean that consumers will have full control over *where* they watch, *when* they watch, and on *what* device they watch their favorite videos—be it a personal computer, television, mobile phone, gaming platform, GPS, or some device yet to be invented.

(Continued on following page)

As executive vice president and chief development officer, 14-year Cisco veteran Charles H. Giancarlo leads a team of more than 20,000 engineers and is responsible for the overall strategy and execution of Cisco technology research and development. Additionally, Giancarlo is president of Cisco-Linksys, LLC, which provides wired and wireless products for the consumer and small office/home office markets.

The enabler of pervasive video is the underlying IP network. An intelligent and converged network allows both businesses and consumers to freely distribute and receive video content to any video device through a set of common services—some built into the network, some added on. The network is the universal platform that connects content, devices, and the people who use them.

New Roles for Video

Where will the video revolution take us? Enterprises and medium-sized organizations are using video-based digital media signage to roll out and scale content easily and flexibly to a network of digital displays in various locations in stores, branch offices, break rooms, or lobbies. Signage is dynamic now in a way it never could be before. Now it can not only be changed frequently to provide up-to-the-minute information, but it can be targeted to influence specific audiences, such as shoppers at point of purchase, or diners in a restaurant. It can also incorporate animation to attract attention in a way that static signage can't.

In manufacturing and design organizations, teams are trading ideas by using video technology to view each other's work and to collaborate in real time.

Executive-to-employee communications that are streamed as video, whether real or time-shifted, draw attention and have an impact they didn't have before.

Companies are increasingly using video to make it easier for customers to use their products. On Cisco.com, for example, we've posted streaming video instruction manuals for our most popular products. In the retail and gaming industries, real-time IP-based video surveillance and security systems are reducing theft and loss.

Training is another activity that pervasive video is transforming. In the past, employees often had to spend time and money on travel to receive training, but now they are increasingly taking advantage of interactive video tools that help bring training right to them, wherever they are.

Video at work adds up to greater productivity, lower costs, and improved collaboration.

Searching for Exponential Bandwidth

There's still plenty of work to be done before the full promise of video is realized, particularly in the home. The greatest challenges ahead belong to service providers. They have the most to gain—or lose—as video use spreads. And it hinges on delivering the sheer volume of data that video demands.

Consider this: watching a single, two-hour high-definition movie requires about the same amount of downloaded data as clicking on a new Website every five minutes, eight hours a day, every single day for a year. Here's another one of those amazing statistics: In 2010—just a few years from now—any 20 typical suburban homes will use more bandwidth than all users did on the entire Internet in 1995.

But even beyond meeting this insatiable demand for bandwidth, service providers must develop new value-added services, pricing models, and partnerships to help them enrich the customer experience and integrate data, voice, and video across all devices. It's not just about any content to any screen—it's about extending the user experience by enabling more choice, better navigation, faster interaction, higher quality, and a more intuitive experience.

In organizations, teams are trading ideas by using video technology to view each other's work and to **collaborate in real time**. Video at work adds up to greater productivity, lower costs, and improved collaboration.

With "triple play" offerings of voice, high-speed Internet, and television, we're already seeing service providers increase consumer value by consolidating services and providing a single point of interaction across all bundled elements. And leading service providers are deploying intelligent applications to help personalize the customer experience. For example, they are streaming television episodes to cell phones on demand and providing GPS tools that match information to a user's location. Television viewers can record programming to watch when it's convenient for them.

Cisco's broad suite of products and solutions help service providers successfully navigate this demanding user-driven world. The Cisco IP Next-Generation Network, for example, is designed specifically to address the complexities of multi-service, multi-device, multi-transport delivery. We are helping service providers accelerate service velocity, deliver a better user experience, and enhance customer care.

At Cisco, we are proud to be taking a leadership role in this important new stage in technology development and in the evolution of communications. We invite you to join us in exploring all the different ways that video can make a difference to your business and your life.

Next Steps

Watch a video presentation by Charles H. Giancarlo on this topic at cisco.com/go/etl-videoexplosion.

The Event-Driven Organization

Mining your network for real-time event information that enables you to proactively improve operations and build business value.

By Gary Moore, Senior Vice President, Cisco

Soon, there will be no delay from the time a business event occurs to when an appropriate response or action ripples across an organization. The event-driven "borderless enterprise" will become immediately responsive to changing conditions—whether those changes relate to facilities, operations, competitors, partners, or customers. With the advent of *network mining*, or taking advantage of information captured in your network, organizations will have proactive, collaborative decision-making, which will optimize existing processes and enable new ones.

Innovating with Information

The flattening of the global playing field has crystallized opportunities for innovative organizations, but this new world presents new challenges. The speed at which information is gathered and disseminated has changed, but the speed at which the underlying business processes deal with this real-time information has not yet changed sufficiently. The speed of reaction must be equally immediate, and this has to change for organizations to maintain or improve their competitive advantage.

CNN changed its market by reacting to the availability of real-time information to launch the first 24-hour all-news network. Before CNN's launch in 1980, the public expected news to be delivered on a daily basis, through newspapers and regularly scheduled television broadcasts. We now expect news coverage to be immediate, always available, and presented in context.

The need to innovate continues, driving new models for gathering of news. Media organizations are now getting ahead of the possibility of news with the use of embedded reporters who act like sensors at the farthest edges of news gathering. We have "mash-up reporting" where the public can submit video and pictures of news events. They are phoned for their real-time verbal accounts of the news scene, and this user-generated content is inter-mingled with professional reporting to provide dynamic coverage.

Mining Your Network's Business Value

The advent of network mining will replace today's predominant approach to addressing business dynamics, which is to reactively control a situation once it is determined that, say, inventory is low, a process needs fixing, credit-card fraud is taking place, or a call center is reaching capacity. Rather, network mining can deliver a level of immediacy and automation unavailable with traditional data mining and business intelligence.

Network mining uses the one resource that touches the entire extended enterprise and can immediately capture and communicate events: the network. A variety of network-connected sources such as sensors, cameras, location tags, readers, and other devices communicate events to applications, which, increasingly, correlate information with one another across the network to identify a condition, threshold, or event, then trigger the appropriate action.

Sensors can continually report status and changes in temperature, motion, humidity, speed, location, and pressure, offering a full picture of physical conditions and events that, if outside their normal range, can affect business operations in a heartbeat.

Integrating Networks and Applications

To communicate events to stakeholders, there will be a new level of integration between business applications and the network. Only the application-aware network can detect, capture, and filter events in real time in order to forward them to applications for aggregation within a business context. The applications can trigger notification, enforcement, and escalation processes according to corporate policies.

With the network and applications continually gathering and sharing monitored events, organizations gain immediate access to "in-context" information on the cause and effect of such occurrences. This enables collaborative decision-making that empowers the business to circumvent undesirable conditions and, ultimately, to better compete in many dimensions.

Let's say a sensor detects that a piece of equipment in a remote plant has failed. This information is correlated to a customer contract that is subject to a service-level agreement. An alert matching the equipment failure and its ramifications on the customer contract is sent to the relevant stakeholders across the extended enterprise—business analysts, plant operations, and production-control personnel. Concurrently, a meeting is automatically scheduled that includes these personnel, who can discuss the impact of the downtime, when the repair will be completed, and how to adjust business operations to cope with the situation.

Coping with the Information Deluge

The idea that we will be dealing with significant amounts of real-time sensory data could be troublesome, but this transition should actually be liberating rather than invasive. Correctly filtering and correlating that event-driven information is an important success factor. The network and the application are perfectly matched to filter the false-positives and to pass through the right information, at the right time to the right person—in a chosen format that is understandable and actionable.

Second, a world of real-time decision-making and action can also free us from the current backlog of e-mail and catch-up. By creating an environment where the team can immediately collaborate, communicate, and take action, we can avoid the backlog of required decisions and supporting collateral. Look at PDAs: essentially they make historical information—e-mails—more real-time. But that only moves the problem—it doesn't solve it. The event-driven world, with immediate collaboration and communication, changes this dynamic completely. Anyone returning from a vacation without staying current on e-mail will understand "information deluge." Our children are already exhibiting their preferences for real-time communication and collaboration based on events.

Moving to an Event-Driven World

We already live in an event-driven world that is creating closer integration between the network and application. SAP and Cisco are already delivering governance, risk, and compliance solutions that bring together the strengths of the application and network, mining information from events occurring across the borderless enterprise. There are many such alerts and actions that interactive, networked applications can enable. What exactly they correlate and trigger will depend on the type of business at hand, its internal goals, and its promises to customers.

The first step is to analyze which types of event information will add value to business operations and create differentiation in the marketplace. From there, it's a matter pairing your network and applications to unlock the untapped potential of the information flowing throughout the borderless enterprise on a continual basis.

Gary Moore joined Cisco in October 2001 as senior vice president of Advanced Services, with responsibility for a worldwide community of Cisco engineers, subject matter experts, and consultants who help define and implement network and network-related customer solutions to enable business success..

Generation Collaboration

I was reviewing a paper on collaboration the other day and the text revealed an interesting dichotomy. The paper intended to explore the ways in which collaboration enhances productivity, and woven through the writing were references to how today's collaboration tools make it much easier to assign tasks to employees. As I read, something about the context of that phrase—assign tasks—jumped out at me. Given the importance of innovation to success in today's world, I suddenly wondered, is creativity or innovation something that you can mandate? What role does hierarchical delegation—the lifeblood of command-and-control management during the halcyon days of manufacturing and mass-production—serve in today's communication-driven knowledge economy?

Nearly a third of the 153 million workers in my country, the United States, change jobs in a given year, according to the U.S. Department of Labor—generally to pursue a better opportunity. The average American worker will have held more than 10 jobs by age 40. Today's workers are looking for more than a paycheck; discussions I have with the students in my local high school indicate that they are much more likely than I was to voluntarily leave a job in which they lack interest to pursue one that is personally fulfilling. And there's also a natural tendency for someone to perform better in a job that interests them.

What does that mean? I believe it means that employers must do a better job of creating an interesting environment for employees. In the past, management selected workers based on their skills and assigned them tasks. In the workplace of the future, where data flows freely and knowledge, not information, is the coin of the realm, leaders must adapt their styles to the reality of a much more informed and mobile workforce. Give too many unpleasant tasks to one worker without considering the ramifications and you may unwittingly thrust her into the arms of a competitor. So, rather than thinking of collaboration tools as a way to assign tasks, I think of them as a way to unlock potential.

So how do we create a work environment that more effectively harnesses the innovative potential of our workers? We create an **environment of innovation** by trusting and empowering our employees and stimulating their interests.

Today's young adults enter the workforce with a different, more globally aware perspective than I did—their preparation and development is different. While the subjects my sons are studying in school are largely the same, teaching and learning processes are much more stimulating and engaging, encouraging the type of creative collaboration that celebrates and capitalizes on the differences in the children's skills. In my day, we played a lot of games that had clear winners and losers—zero-sum games, they're called; my sons play games where the value of diversity is harnessed for cooperative gain. I think that's a great training ground for a world where creativity and innovation drive growth and prosperity.

A quote from educational author and consultant Matthew Moran gets to the heart of it: "The best and the brightest—whether they recognize it and verbalize it—do not work within the confines of title, role, and responsibility. They work instead in the broader context of desire, passion, and achievement. I think this is a good thing. Organizations that cannot match their working environment with that broader context are doomed to lose the best and the brightest."

So how do we create a work environment that more effectively harnesses the innovative potential of our workers? I think it goes far deeper than putting a ping-pong table in the break room or encouraging radical behavior just to seem hip. I think we create an environment of innovation by trusting and empowering our employees and stimulating their interests. By more clearly stating the vision and strategy of the business, and then giving the employees more freedom in selecting the tasks that they find interesting. By measuring their success not by how busy they are, but by how successfully they contribute to the goals of the organization. And by rewarding them in a way that reinforces the value of collaboration.

These are not trivial undertakings. They will require trust, confidence, and realization that improvement in this area is not only difficult, but absolutely necessary. We must persist, however. As Jonathan Ive once put it, "It's very easy to be different, but very difficult to be better."

Roger Farnsworth
Research Director, Executive Thought Leadership

"Summit Meeting." Paris, Shanghai, Berlin and Boston.
Image courtesy of the human network.

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