

# THOUGHTleaders

Published quarterly by Cisco Executive Thought Leadership

THIRD QUARTER 2008

## **Innovation** on the Human Network

- **Looking Back, Moving Forward: Innovation's Evolution**
- **Building a Bold Future in Saudi Arabia**
- **Collective Innovation: Tapping into the Wisdom of Crowds**
- **Rethinking Global Education**



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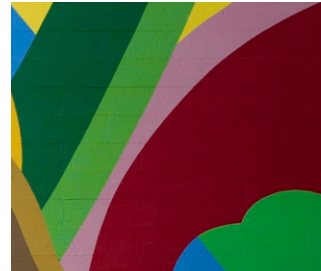
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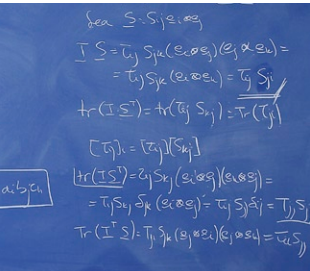
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# Enabling Innovation on the Human Network

When I raise the topic of innovation with business leaders around the world, they usually assume I'm talking about product innovation. After all, the high-tech industry has been built upon years of significant product innovations; and Cisco has certainly played a key role in contributing to its development. Early on, Cisco was innovative in one or two product areas, namely routing and switching. Today, we are considered a leader in literally dozens of product areas, a direct result of our unique ability to catch market transitions.

Over time however, I've come to realize that innovation extends far beyond just products. Innovation permeates all aspects of business and can be found in everything from technology architectures to new business models. One of the areas of innovation Cisco is most focused on is its role in building the next-generation company. To continue catching market transitions and better address the needs of our customers, we must transform our business and change the way our company is structured. At Cisco, we are in the midst of an organizational and cultural evolution, moving from a hierarchical command-and-control model to a more collaborative leadership approach, governed by councils, boards, and working groups.



A key enabler of this business transformation? A new generation of collaborative tools and networked Web 2.0 technologies that are helping Cisco and other businesses successfully scale collaboration throughout their organizations. Of equal importance is the ability to harness the power of these collaborative tools to develop new models for education, healthcare, and entertainment and to positively impact the standard of living for citizens around the world. The network plays a critical role in enabling this innovation: the network is the platform upon which these technologies are built, and it is the network that connects individuals and communities globally. The theme of this issue, "Innovation on the Human Network," is designed to present innovation in this light.

Cisco's new Chief Technology Officer, Padmasree Warrior, offers a perspective that looks back at the history of innovation and moves forward into innovation's collaborative future, and Senior Vice President of Corporate Affairs Tae Yoo outlines Cisco's vision for the future of education. Dr. Badr AlBadr, managing director of Cisco Operations in Saudi Arabia, outlines the bold and innovative efforts underway there to build entire "smart cities" that will help to diversify that country's economy and provide improved opportunities for its citizens and businesses for generations to come.

A Q&A with Guido Jouret, vice president and chief technology officer of the Emerging Technologies Group at Cisco, describes I-Prize, a new contest that opens up our innovation model to tap into the potential of the human network. And new research findings provide a snapshot about the attitudes among members of social networking sites, who are innovating new ways of connecting and interacting—without even trying.

Innovation is not just about improving productivity or revenue growth—it's about changing the way people work, live, play and learn and providing a brighter future for generations to come. Our goal is to encourage innovation on the human network in order to make this world a better place for everyone. I hope you find this issue of *Thoughtleaders* valuable in your study of innovation.



Sincerely,

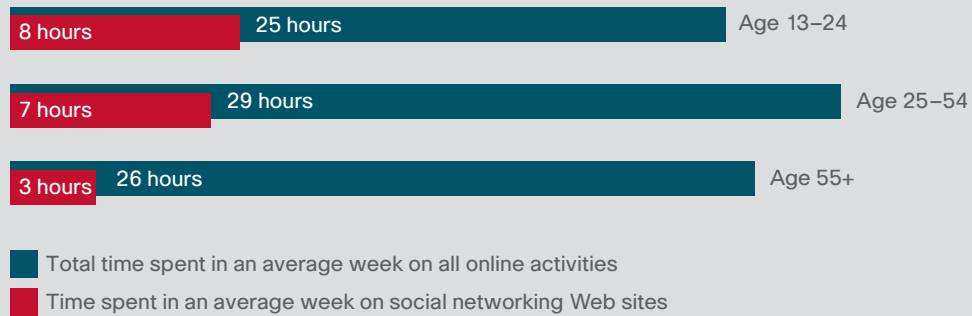
A handwritten signature in black ink that reads "John J. Chambers". The signature is written in a cursive, flowing style.

John Chambers  
Chairman and CEO  
Cisco

## Social Networking's Youth Movement

The younger you are, the more of your time online is spent social networking, and the more optimistic you are about the future evolution of social networks and their ability to improve many popular online activities. This is according to the 2008 results of a Web-based survey conducted by Illuminas for Cisco Executive Thought Leadership of more than 1,000 United States-based members of social networking Web sites. The survey uncovered several differences in attitude toward social networks among members of different age groups. Here, we highlight selected findings from the survey. Please turn to page 11 for an in-depth research perspective on the results.

While those aged 13–24 spend slightly less time online than members of both the 25–54 and 55-or-older age groups, they spend the most time on their social networking sites.



Source: Cisco Executive Thought Leadership/Illuminas 2008

While members of the 13–24 age group spend the most time on their social networks—often characterized as “Web 2.0”—they spend the least time on a more traditional, “Web 1.0” online activity, e-mailing.

Hours spent in an average week sending and receiving e-mail



Source: Cisco Executive Thought Leadership/Illuminas 2008

Company-sponsored social networks for employees are still uncommon (see below). However, among the minority that indicated their employer does offer a company-sponsored social network, more than 75% say they use it.

Employer does not offer a social network for employees



Source: Cisco Executive Thought Leadership/Illuminas 2008



## Do We Innovate to Collaborate or Collaborate to Innovate?

A look at the history and future of innovation

By Padmasree Warrior, Chief Technology Officer, Cisco

**In his 1821 poem *Don Juan*, Lord Byron describes the young Isaac Newton’s famous epiphany about gravity, writing, “... And this is the sole mortal who could grapple, Since Adam, with a fall or with an apple.”**

It was a romantic sentiment, yet one that perfectly reflected Newton’s era—that of the solitary genius—which had stretched, improbably, from ancient times through the late 1600s. By the time Byron penned his famous lines, though, the industrial revolution was approaching full throttle as revolutionary developments in steam power and industrial organization (as an expression of collaboration) drove rapid changes in agriculture, transportation and manufacturing.

The economic success that such industrial advancements produced led to a concept we now call *closed innovation*. In 1876, Thomas Edison launched what many consider the world’s first commercial research lab, which delivered innovations such as recorded sound, the incandescent light bulb and the motion picture. Based on the success of this model, others followed suit. The key characteristics of the closed innovation model are that it is systematic and assigned to a specific functional research organization.

Nearly a century later, the closed innovation model is still in use. But it can be expensive, and with it often a good deal of intellectual property goes unused. It was supplanted, in part, by the concept of team-based *inclusive innovation*, developed by Japanese manufacturing companies in the 1970s and 1980s. For example, Toyota encouraged its employees to suggest improvements and empowered workers to stop the assembly line, if necessary, for quality control. Concepts such as *Kanban*, *Kaizen*, and *Poke-Yoke* are the products of this model.

*(Continued on following page)*



*Padmasree Warrior joined Cisco in 2007 as its chief technology officer after serving in the same role at Motorola. She is responsible for helping to drive Cisco’s technological innovations and strategies, and works closely with the rest of the senior leadership team and board of directors to closely align these efforts with the company’s corporate goals.*

The rise in visual networking, enabled by video, will **impact how we innovate and collaborate** in several ways: by reducing the need for work-related travel, by dissolving geographic barriers, and by creating live, virtual, on-demand face-to-face interaction.



In the 1990s, the rise of the Internet triggered another tectonic shift in the world's approach to innovation. Speed and open communication began to drive change, forcing companies to innovate differently. Procter & Gamble is perhaps the best example of this. In 1999, the company changed its approach to the *open innovation* model. Instead of relying solely on its own scientists, P&G set a goal to look outside the company for half of its innovations—a highly open, collaborative approach to developing new ideas and products.

While open innovation remains a robust model, inventive companies such as Apple and Google—as well as communities of smaller companies that innovate symbiotically—now work to integrate industrial design, increased functionality and ease of use. This *ecosystem innovation* model balances multiple variables to create a compelling user experience. For example, the iPod is successful, in part, because it works seamlessly with the iTunes software. Similarly, Google's user interface is so simple and easy to use that it empowers somebody who knows little or nothing about the Internet to search its vastness in a matter of seconds.

### **The Future of Innovation**

So how will innovation change again? I believe the next wave of innovation will be distinct from the previous approaches because of some major shifts the world now confronts, including globalization, sustainability, mobility and bandwidth intensity.

**Globalization.** The first shift is increased globalization—facilitated by information technology—toward what Accenture described last year as a “multi-polar world,” characterized by multiple centers of economic power and a geographic diversification of innovation.

Even today, emerging economies are quickly evolving from being passive recipients of innovation into active drivers of new ideas and technology. Take, for example, the Nano, India's innovative low-cost, high-mileage car. This is just the beginning. In years ahead, we will continue to see an inversion in the flow of capital and talent, which has traditionally moved from developed economies to emerging economies. This will profoundly impact innovation as we begin to tap the creativity of more people in more places.

**Sustainability.** A second major shift is a new recognition of the need for sustainability. Cities occupy only about 3% of the earth's surface, according to a United Nations report released this year. At the same time, half the human race—about 3 billion people—will live in urban areas by the end of 2008, and by 2050, that number is expected to increase to 70%. Cities, by their nature, are dynamic places for business and fun. But they also consume 75% of the world's energy and produce 80% of the world's greenhouse gas emissions. How will we innovate to reduce consumption, increase sustainability, and create smart, livable cities? These imperatives will shape innovation for decades to come.



This trend will only continue and the rise in visual networking, enabled by video, will impact how we innovate and collaborate in several ways: by reducing the need for work-related travel, by dissolving geographic barriers, and by creating live, virtual, on-demand face-to-face interaction.

### Unified Global Innovation

These four shifts—globalization, sustainability, mobility and bandwidth intensity—are already driving us toward an era of what I think of as *unified global innovation*: integrating innovation from anywhere, everywhere. In this era, the ablest leaders understand innovation as a culture, not a function, and they work to build that culture in which everyone participates equally in innovation.

They also understand that the most important innovation solves for constraints—not just cost and sustainability, but for any-to-any interoperability. Such innovation is also driven by a persistent *global* conversation; in a connected world, ideas never sleep. Rather, they are developed through our ability to transform the muddle of brainstorming into “brainforms”—a coherent, collective intelligence. Finally, this new era of innovation will be both defined and driven by connections and networks, rather than traditional boundaries. In other words, collaboration will be more important than ever. Within this context, some people will inevitably ask: do we innovate to collaborate, or collaborate to innovate? The answer is both. Like the intertwined strands of DNA’s double helix, they are inseparable. And like the double helix, they also contain the code to our past and our future.

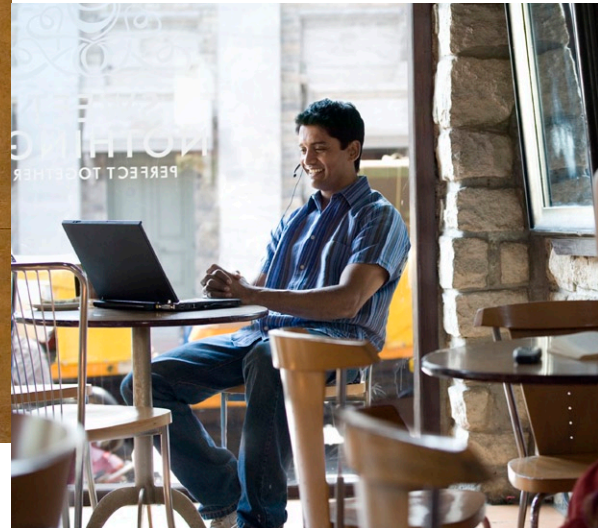
More than 350 years ago, a falling apple sparked a lone genius to articulate new ideas about how our planet fit into the universe. Today, on our modern, networked planet, millions of people are collaborating to explore a universe of new ideas—together. And it’s through that collaboration that we will discover our collective genius, innovating to identify, and address, the world’s greatest challenges.

### Next Steps

*To listen to a recent interview with Padmasree Warrior on news@cisco, go to [cisco.com/go/etl-warriorinterview](http://cisco.com/go/etl-warriorinterview).*

**Mobility.** The world is increasingly mobile. Today, more than half the world is connected via a mobile device. Every second, somewhere on Earth, four babies are born. In that same blink of an eye, about 25 mobile devices are sold. In the future, mobile devices stand to become the primary Internet appliance, especially in emerging markets. There will be an increase in demand for broadband mobility, content mobility and Internet mobility. As more than half the planet connects, the generation and communication of ideas will become more evenly distributed, driving more rapid and diverse innovation.

**Bandwidth Intensity.** Between 2006 and 2010, broadband use will grow 80% in the United States to reach 90 million households, and grow 90% worldwide to reach 474 million households, according to estimates by the United States Internet Industry Association. This spread of broadband access will be accompanied by an increase in bandwidth-intensive applications such as video. Consider this: video downloads and transmissions consume 8 to 10 times more bandwidth per minute than voice and music transmission. The 100 million video streams accessed each day through YouTube consume as much bandwidth as the entire Internet did in 2000!



## Open for Business

Cisco I-Prize uses an open innovation model to tap into the collective intelligence of the human network.

*Interview by Ewan Morrison, Editor, Cisco Executive Thought Leadership*

**Guido Jouret is vice president and chief technology officer of the Emerging Technologies Group at Cisco, and one of the driving forces behind a new program called Cisco I-Prize, a contest designed to tap into the collective innovative potential of the human network. Here, Jouret describes Cisco I-Prize, which enables individuals and groups of people outside of Cisco to submit ideas for new technology solutions and compete for a \$250,000 cash prize and, potentially, the opportunity to join a new Cisco business unit using company resources to nurture their idea from concept to reality.**

**Executive Thought Leadership (ETL): Let's start with some background information about Cisco I-Prize.**

**Guido Jouret:** I-Prize falls into a category of projects that plays a vital role in

the context of the Emerging Technologies Group. In particular, the Emerging Technology Group's job at Cisco is to incubate new businesses. And what we decided to do was to externalize the idea generation side of that. We have started eight new businesses inside of ETG in the past couple of years, but this time we wanted to tap into the wisdom of crowds and get an outside-in perspective, so we launched the contest at the end of October. The program was open for a little over two months, which meant that anybody anywhere in the world could register and submit an idea for a new business unit.

Initially, people submitted an idea. [From all the entrants, we then] selected about 40 semi-finalists and gave them a Webex collaboration space whereby they could chat, upload documents, and collaborate with other people that have either contacted them or that they already knew to improve their idea. We then

selected the 12 finalists, all of whom we interviewed using telepresence.

The website for the initial idea submission is a Wiki-like tool that allows you to upload ideas and comment on people's ideas. Then, as we progressed from the initial submission phase to the semi-finals, we discovered that communities formed automatically. In fact, some of the ideas had comments and postings up to 200 levels deep. And much to our surprise, some of the people actually decided to abandon their own ideas in favor of joining forces with someone else, so some of the members of teams that were selected as semi-finalists had never actually met in person. They found each other through the idea-contribution tool and worked together in their collaborative space. In some of the cases, they were selected as finalists and united face to face for the first time during the finalist interviews using our telepresence technology.



**ETL: What's in it for the participants?**

**Guido Jouret:** For the participants, there are a couple of things. One is the chance to submit their idea and potentially get investment resources from Cisco to make their idea a product and bring it to reality. There are lots of people with great ideas, but you need resources to really capitalize on those ideas.

The other thing that we discovered—and we didn't actually plan for this initially when we were coming up with the program—was [how much the participants valued the process]. A lot of them thanked us, unsolicited, on the fact that they learned an awful lot by going through this process. They feel that they got something out of it, even if they did not win. Just being able to get exposure, get feedback on an idea, and learn how others assess potential business ideas is really powerful.

The actual winning team shares a quarter of a million dollars. And Cisco will also reserve the right to offer them employment. So, if we want to make them a job offer to come in and join us and work on the idea, that's something we can do as well. And we've committed as a company that we will take their idea to market, which will require us to invest at least \$10 million over three years.

**ETL: What's in it for Cisco?**

**Guido Jouret:** What's in it for Cisco is, in fact, tapping into this collective wisdom of crowds, getting access to a global talent pool of ideas. Clearly, there are lots of new opportunities and adjacencies that Cisco could be in, and getting an outside-in perspective is really valuable. We also learn a lot by being able to see how potential customers in different parts of the world perceive Cisco's ability to enter into these new markets. Then, of course, we get some very particular insights

on ingenuity in terms of new products or new business models coming from these inventions themselves.

**ETL: Would you consider this a new model for innovation?**

**Guido Jouret:** I think so. We have seen examples of similar opportunities, but they're a little bit different. Usually, people externalize specific known problems. If you take the contest Netflix is doing, for example, they want to come up with a better recommendation engine for movies. They've already defined what the problem is, and they're now externalizing the search for a better solution. In the case of I-Prize, [we're not limiting the ideas in that way]. The only thing is that it has to be an adjacency for Cisco, it has to be something we think the company can execute on. I'm not aware of similar examples of really externalizing the hunt for new markets. So, I think it really is a new innovation model.

**ETL: What was the response like?**

**Guido Jouret:** We had no idea what to expect. We basically put the site up and said, "We hope somebody will come." As it turned out, we were blown away. We had 1200 ideas, and all in no more than about 60 days. We had entries from 104 different countries, including two from North Korea, a couple from Central Africa, and from as far away as some exotic islands off the coast of Australia and Indonesia. We also had submissions from 48 states in the United States.

**ETL: Do you have a winner yet?**

**Guido Jouret:** We do. We have selected a winner—a small team based in Europe that came up with a really interesting proposal. And the reason why we liked them is they identified what I think is probably the biggest new market opportunity of all the



**“Being able to get exposure, get feedback on an idea, and learn how others assess potential business ideas is really powerful.”**

**– Guido Jouret**

I-Prize submissions. They also had a very interesting approach on how to get into the market. Not only did they innovate on the technology, they spent a lot of time thinking about how to innovate on the business model as well. And the team presented really well. They obviously had done a lot of good work. And in terms of potential new hires joining Cisco, we thought they were very culturally compatible. So, we liked them a lot.

**Next Steps**

*To find out who won the Cisco I-Prize content and learn more about the winning idea, please go to [cisco.com/iprize](http://cisco.com/iprize).*

*This interview was edited for space. To listen to a podcast of the complete interview, go to [cisco.com/go/etl-iprize](http://cisco.com/go/etl-iprize).*

# Rethinking Education for the New Century

No matter the country, the educational goal is the same: to prepare students for a 21st century world.

By Tae Yoo, Senior Vice President, Cisco

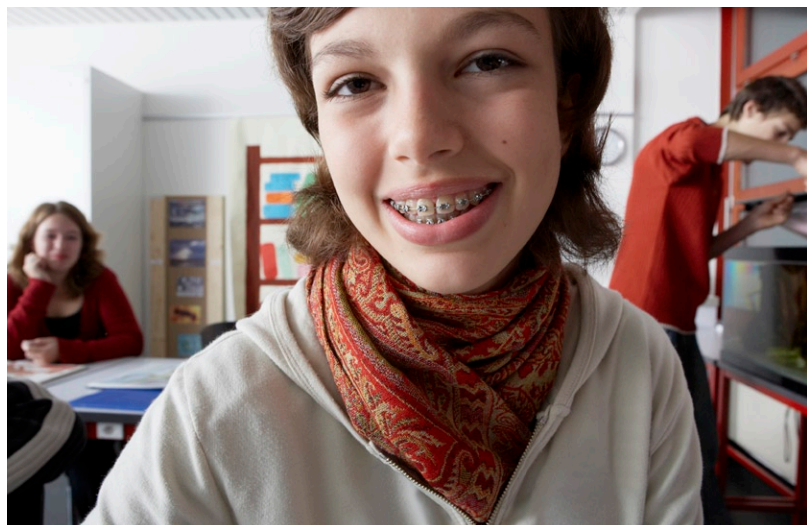
**A time traveler from the 19th century arriving today would marvel at the revolutionary changes to be found in virtually every corner of society, except one: education.**

Despite radical changes in commerce, transportation, and communications, the educational model across the developed and developing world has changed little since the introduction of public education in the early 1900s.

But now, the future growth and sustainability of our global economy depends on developing the capacities of educational systems to transform the conditions of learning into thoughtful, collaborative and creative learning environments—a world where each child will have equitable access to the opportunity to prosper from the education they receive.

At the same time as school systems around the world are struggling to meet this need, employers have begun seeking talent with 21st century skills in order to increase their competitiveness. In developed countries, skills including communication and collaboration are as much as 70 percent of the requirements in new jobs created since 1998, according to the U.S. Bureau of Labor Statistics (2004). Even in emerging regions, the job market is shifting to a knowledge-based economy with tasks that require education-based skills and critical thinking. The need for educated and technology literate graduates and the increasing demand for those skills will require bold, innovative and systemic actions on the part of education system leaders and policy makers to close this gap.

Ironically, many young people today are already leading the way. As they become more conversant with social networking technologies that allow them to connect, collaborate, learn, and create, they are controlling their own learning experiences. While half of all U.S. students who use social networking technology to communicate as well as to research and explore their world, they are also attending institutions of learning which disengage them from these very same tools. In addition, teachers struggle to gain control of this new learning environment and have not been fully prepared to act as facilitators and enablers of the new technologies.



### Education 3.0: Accelerating Teaching and Learning

Limited access to knowledge, rote learning, and significant variations in quality, practices and standards often characterized early education. Let's call this *Education 1.0*, encompassing a period of learning that defined, perhaps, the first 50 years of education evolution.

Over the past 20 years, we've seen evidence, particularly in developed countries, of educational reforms designed to professionalize processes, set standards, and upgrade capabilities that can be dubbed *Education 2.0*. Much of this improvement often required high capital



*Tae Yoo is Cisco's senior vice president of Corporate Affairs, which focuses on creating partnerships with local and global organizations to create positive, sustainable change in the areas of education, basic needs and economic development. Cisco is committed to the idea that true sustainable change is achieved through collaborative partnerships between the public, private and non-governmental organization sectors.*



investments on the part of systems and governments. But money alone can't buy excellence.

With few exceptions, schools have yet to institute a comprehensive roadmap of curricular and assessment reform. What we believe is needed is a new paradigm of 21st century learning. This new *Education 3.0* model will require a broader agenda, one that responds to socio-economic realities and enhances learning opportunities through the collaborative technologies students will be using on the job.

Naturally, education challenges and opportunities will vary greatly from country to country, but the goals are the same for all learners: to acquire the range of skills needed to succeed in a modern, globalizing world; to receive tailored instruction that enables students to reach their full potential; to connect with their communities in person and digitally; to benefit from the interaction with people from different cultures; and, most important, to embrace learning throughout their lives.

#### **Four Pillars of Education Transformation**

These are ambitious goals, but policymakers and education stakeholders can look to four areas to transform as they build an Education 3.0 model:

**21st century skills.** Give students the skills and motivation needed for problem solving and decision making; creative and critical thinking, collaboration, communication, and negotiation; intellectual curiosity; perseverance and self-evaluation and you will develop a lifelong learner with a willingness to adapt to change.

**21st century pedagogy.** Teachers are central to success. As the ways students learn changes, teachers will be called upon to facilitate, guide, and support learners to build a broader set of skills. By using technology to accelerate the learning process, enhanced professional development courses would encourage instruction in interdisciplinary and project-based learning, and the integration of relevant content to extend learning.

**21st century technology.** Just as businesses are deploying technology to support sound business practices, so education systems might deploy technology to meet educational objectives. Administrators can support teachers with adequate broadband network access for integrating digital resources into the classroom.

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**21st century leadership.** It starts at the top. Educational transformation will require new forms of teacher training, improved curriculum development and realistic assessment, and greater accountability for outcomes. All of these are dependent on sustainable educational leadership, not only from administrators and educators, but legislatures and parents as well.

Educational systems will have a greater chance of success when all four of these goals are pursued holistically; utilizing the best that schools and technology have to offer.

The growth and stability of our global economy depends on the ability of educators to **prepare students for career opportunities in a changing world.**

**Bold Moves**

Many countries have been successful in guiding their educational systems into the modern age, but all continue to work toward achieving the full spectrum of 21st century goals. To assist in the transformation of visionary system leaders, Cisco is partnering with education thought leaders from around the world and encouraging a candid exchange by all education stakeholders on the challenges and opportunities facing education system transformation. This work requires an open dialogue with education leaders to shift the way teachers teach, leaders lead, and students learn.

Although Education 3.0 is a global ambition, the journey is local—one system, one school, one teacher, one student at a time. It won't be easy and, naturally, it won't always be successful, but it's the best chance we have to prepare our children for the world of tomorrow.

**Next Steps**

To learn more about efforts to affect education change at Cisco, read or download the whitepaper "Equipping Every Learner for the 21st Century," which goes into more detail about the concepts discussed here, at [www.transformglobaleducation.org](http://www.transformglobaleducation.org).





# Age Matters on Social Networks

A recent survey conducted by Illuminas explores the influence of age on attitudes among members of social networks.

*By Eric J. Adams*

### **Ten years ago, the term *social networking* meant group luncheons and after-work mingling.**

Several years ago, social networking started to mean something very different. Facebook, MySpace, YouTube and a host of other social networking websites changed the meaning of the phrase and altered the Internet landscape. Today, the notion of social networking continues to evolve, and according to recent research, age plays an important role in that evolution.

Because social networking is a recent phenomenon, it's not surprising that younger members of social networking sites, between the ages of 13–24, are the most ardent users. This younger age group is also more optimistic than its older counterparts (those aged 25–54 and those 55 or older) in its view of how social networking will evolve in the future, expecting it will improve many common online activities. What is surprising, however, is how age is a key determinant in the way people use, think about, and feel about social networking. These findings were released in early 2008 following a survey of social network users in the

United States, conducted by Illuminas and commissioned by Cisco Executive Thought Leadership.

The data from the survey can help enterprises, service providers, and marketing and advertising professionals identify the factors that motivate online audiences, as well as the features and functions users are increasingly expecting in their online experiences.

Social networking portals range from general sites designed to bring friends together, such as Bebo, Facebook, Friendster, MySpace and Orkut to career, business and academic sites like Classmates.com, LinkedIn, Plaxo and Salesforce.com, to entertainment destinations such as YouTube and Last.fm.

Today, however, there's also a growing contingent of social networking and community sites built around lifestyle interests, hobbies and passions such as books, cars, cooking, film and TV, photography, politics and myriad others. Corporations are slowly realizing the extension of social networking functions from the large portals to their own,

*(Continued on following page)*



branded websites, and are getting into the act with sites designed to make it easier to connect with subject-matter experts, promote discussion and encourage content-sharing among employees, vendors and customers associated with a particular company or brand.

### Younger Members Fuel the Social Networking Surge

While younger social-network users spend slightly less time online than their older counterparts, they spend the greatest portion of that time social networking, according to the survey results. In fact, respondents aged 13–24 estimated that a full 33% of their entire social lives is spent online, compared to 27% for those aged 25–54 and 18% for those 55 or older (see Figure 1). Those aged 13–24 spend an average of eight hours a week on social networks, while 25–54-year-olds spend seven hours a week and those 55 or older only spend three hours a week on average.

**Figure 1**  
Percent of social life spent online



Source: Cisco Executive Thought Leadership/Illuminas 2008

It’s also interesting to consider the differences among age groups while comparing social networking—commonly characterized as a “Web 2.0” activity—to the more traditional “Web 1.0” activity, e-mailing. While those aged 13–24 spend more time on their social networks than their older counterparts, they spend considerably less time on e-mail—just seven hours per week, compared to 10 hours for both the 25–54 and 55-or-older age groups.

The hallmark of traditional social networking sites is socializing, and the survey results indicate that younger users are also more likely than older users to engage in participatory social networking activities like chatting online, posting content and customizing personal profiles.

While younger members are generally more engaged in social networking, the survey did reveal one interesting area in which older social networkers stand out (see Figure 2). It appears that older members are the most likely to engage in communities of common interest, while younger respondents are most likely to be interested in general online socializing. Instead of just socializing with existing friends, older users are increasingly looking to social networking as a way to interact with, and around, a common interest, such as a hobby, company or topic.

Regardless of age, the majority of social networkers do not feel overwhelmed by the number of sites or the number of friends that they have to keep up with. This suggests there is still opportunity to build or expand social networking hubs.

## Push Power

As social networking technology becomes more pervasive, attitudes toward how social networkers interact with entertainment content are beginning to show significant differentiation across age groups. While the majority of respondents still find pleasure in the thrill of the hunt, preferring to search for content, younger users are the most open of the three age groups to having targeted content pushed to them. Among those aged 13–24, 23% prefer to have the entertainment content they like “find” them, compared to 15% for the 25–54 age group and 11% of those 55 or older.

A similar pattern was revealed in terms of attitudes toward content tracking, as younger users are also less concerned with security issues associated with it. Only 20% of those 55 or older and 30% of those aged 25–54 indicated that the benefits of content tracking trump security concerns, while 42% of respondents 24 or younger feel the same way.

In a good sign for companies marketing to younger demographic age groups, young users are also more tolerant of targeted online advertising and more apt to consider products and services targeted to them.

Many companies are examining how best to take advantage of Web 2.0 within their organizations, but employee-focused social networks within businesses

are only beginning to emerge, according to the survey. Just 22% of working respondents indicated that their employer offered an internal social network. However, of those with employers that do offer a social network, 75% said they use it. This should give employers with an eye toward catering to the future workforce confidence that such efforts will be well adopted.

In conclusion, while social networking may be a new phenomenon, it is also one that is already evolving in terms of its application and definition. As adoption of social networking technologies continues, it will have wide ranging impacts on business as today’s social networkers carry their beliefs, attitudes and expectations about how companies should interact with them into their personal and professional lives.

## What the Future Holds

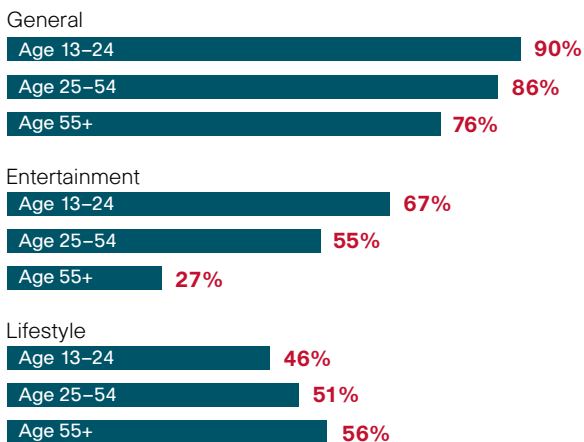
No one can predict with accuracy how social networking will evolve, but current members of social networks have some clear ideas about how they will use them in the near future. And once again, not surprisingly, social networks of the future hold more promise for younger respondents than their older counterparts.

While older respondents largely indicated that in the future, social networks would have “no impact” on many common online activities—such as messaging, photo sharing, finding and making friends, listening to music and watching TV or movies—the largest portion of those aged 13–24 expressed that social networks will “improve” these activities. This indicates that younger respondents believe that these disparate online activities will be increasingly integrated into social networks as these sites grow as the hubs of their social lives online.

While virtually all respondents indicated that they access social networks on their home computers, younger networkers are more “location and device independent.” They access their social networks more often than older users from schools, libraries, Internet cafes, and mobile hotspots. They are also less averse to using their cell phones to conduct social networking.

**Figure 2**

Percent of respondents with memberships on the following types of social networking/community sites



Source: Cisco Executive Thought Leadership/Illuminas 2008

## Building the Future

The Kingdom of Saudi Arabia invests in its future by making a bold, innovative vision—the construction of fully networked “smart cities”—a reality.

*By Dr. Badr AlBadr, Managing Director, Cisco Saudi Arabia Operations*

**Countries with oil-driven economies such as the Kingdom of Saudi Arabia realize that with only a finite supply of natural resources, economic diversification is crucial to continued prosperity in the future.**

As the world begins in earnest to make bold strides in developing viable alternative energy sources, Saudi Arabia is also building a bold new future that will help it thrive for generations to come.

Saudi Arabia is in a strong economic position that affords it the ability to address future needs with innovative and visionary projects. The country, for example, has embarked on a multiyear initiative to build several “smart cities” spanning up to 65-square-miles to serve as hubs for business, tourism, and research. Saudi is banking on the smart cities, in part, to deliver revolutionary societal and economic benefits for its future generations.

By embedding the latest networked communications capabilities into the foundation of these smart cities, the country aims to empower itself to diversify the opportunities for its citizens and businesses alike by creating jobs and enabling access to new markets, as well as attracting talent and investors from around the world. The ability to directly impact the productivity within these economic cities will be paramount to the success of the smart city concept, and increase the attractiveness of the city to both businesses and residents alike. Cisco is Saudi Arabia’s strategic technology partner, having a \$265-million investment plan.

Four smart cities are currently at various stages of planning and development—King Abdullah Economic City at Rabigh, Prince AbdulAziz bin Mousaed Economic City at Hail, Knowledge Economic City at Madinah, and Jazan Economic City at Jazan. Construction began in early 2007 on King Abdullah Economic City, which is located on the coast of the Red Sea and will serve as a portal for transportation and tourism; it should welcome its first residents in 2009. Construction has now also begun at both

Knowledge Economic City and Jazan Economic City, which should both be ready for their first residents by the end of 2010. Prince AbdulAziz bin Mousaed Economic City is now in the final planning stages.

### What is a “Smart City”?

A smart city is one that has been engineered, from the ground up, with a broadband communications infrastructure comprising very fast fiber connections and ubiquitous mobility services delivered by wireless networks. The communications networks in each city, along with a wide variety of integrated applications, invisibly tie together people, buildings, public places, and transportation centers to enable information exchange and automation never before possible. For example, the smart city network will provide the ability to deliver world-class safety and security services by taking advantage of the many Internet Protocol surveillance cameras distributed across the city. In addition, all citizens in a smart city are automatically integrated into the digital population, effectively eliminating the “digital divide” that has resulted in uneven education and employment opportunities for people in different socio-economic strata in some areas of the developing world.



*Badr AlBadr, who joined Cisco in 2004, is the managing director of Cisco Saudi Arabia operations. He has deep experience in the telecommunications industry and has held policy and regulatory positions within the government of Saudi Arabia. He earned a business administration degree and PhD in computer science and engineering from the University of Washington.*





Smart cities, in part, comprise smart buildings that use automated monitoring and sensor systems and networked security. These capabilities, along with radio-frequency identification (RFID) inventory tracking and intelligent traffic and public-safety systems, are being woven directly into the fabric of the smart cities from their inception.

Similarly, unified electronic medical records, intended to help boost the quality of patient care, will be the norm. Having a single accurate patient history and the ability to correlate a patient's current and past symptoms, illnesses, and medications contributes greatly to accurate diagnoses and error reduction. A brand new smart city can create electronic records and correlation databases from the outset and, as a result, will leapfrog cities and countries with decades of manual records still requiring electronic conversion.

Because of the broadband communications capabilities among citizens, and between Saudi Arabian cities and the rest of the world, the country stands to gain new product, service and educational opportunities.

### **Proven on a Smaller Scale**

The smart city concept has already been piloted on a smaller scale to attract residents in Busan, South Korea; Taipei, Taiwan; and Ichikawa, Japan. Busan, for example, is serving as a logistics hub, in part by becoming a next-

generation RFID-enabled port that automatically tracks imported and exported goods. The system has boosted efficiency, while an intelligent traffic system in the city has reduced congestion by about 30%.

In Taipei, the data systems of 300 hospitals and clinics are integrated. In addition, technology business parks employ 85,000 knowledge workers, producing annual revenues of \$53 billion.

Networked surveillance cameras in Ichikawa allow citizens to report crimes through mobile phones. The three cities all report a boost in job opportunities, in part enabled through electronic education and electronic government services. Saudi Arabia hopes to build a superset of these same capabilities and economic gains by fully outfitting smart cities with embedded communications networks and collaborative applications.

*(Continued on following page)*

## How to Get There

Such advances enhance a country's competitiveness, standard of living, skills, and GDP, largely by bringing the possibility of new industries to old geographies and including all sectors of society in the digital capabilities. Getting there requires several things. First, it requires the government undertaking the project to be willing to innovate and to take calculated risk. It also requires strong public-private partnerships among government, public network operators, capital investors, landowners, developers and strategic technology partners.

Small and medium-sized businesses (SMBs) account for about 80% of any market, so an incentive path for such entrepreneurial-spirited organizations is required. A significant portion of Cisco's investment in Saudi Arabia will be directed toward funding SMBs and incubating the innovation that so often stems from smaller, agile businesses.

Successful smart city projects also require preparing and educating its citizens to transition to, and thrive, in the new environment. Demand for networking skills in Saudi

Arabia is expected to exceed supply by 33% in 2009, potentially leaving a shortage of nearly 34,000 skilled people. Cisco NetVersity in Riyadh, however, is a focused attempt to generate the supply to fill that demand by bringing the global networking expertise and leadership to establish an advanced knowledge society.

Cisco NetVersity is a collaborative effort between Cisco and Prince Sultan University (PSU). The school will educate citizens and workers about information and communications technologies. Perhaps even more importantly, however, it has been established to also cultivate leaders and innovators who can direct others with the enthusiasm and creativity required to make the most of the cities' foundational capabilities into the future.

The NetVersity program, and the smart cities at which its students may someday work, are designed with an eye the future—a diverse future full of prosperity for the Kingdom of Saudi Arabia and its citizens alike.



## First-Person Perspective



# Lessons on the Human Side of Innovation

*By Brian Boeggeman, Senior Research Manager, Cisco Executive Thought Leadership*

**Recently, our team submitted a thesis proposal on the “Impacts of Trust in a Web 2.0 Enterprise Environment” for consideration as a research project by the students in a class at MIT taught by Erik Brynjolfsson, the Schussel Professor of Management and the director of the Center for Digital Business at the MIT Sloan School of Management.** Lo and behold, a group of students found our proposal interesting and decided to adopt it as a class research project, giving me the chance to interact with them.

This unique opportunity opened the door for me to consider innovation in an entirely new way by using technology to enable a group of divergent and previously unassociated individuals to both focus on the business at hand while also shaping and fostering meaningful human interactions on a personal level.

When I think about the term *innovation*, I must be honest that my predilections are biased primarily toward technology—that technology is the means and output of innovation. By engaging with this group of students, I was in for a lesson about a side of innovation I hadn't given much consideration: the human side.

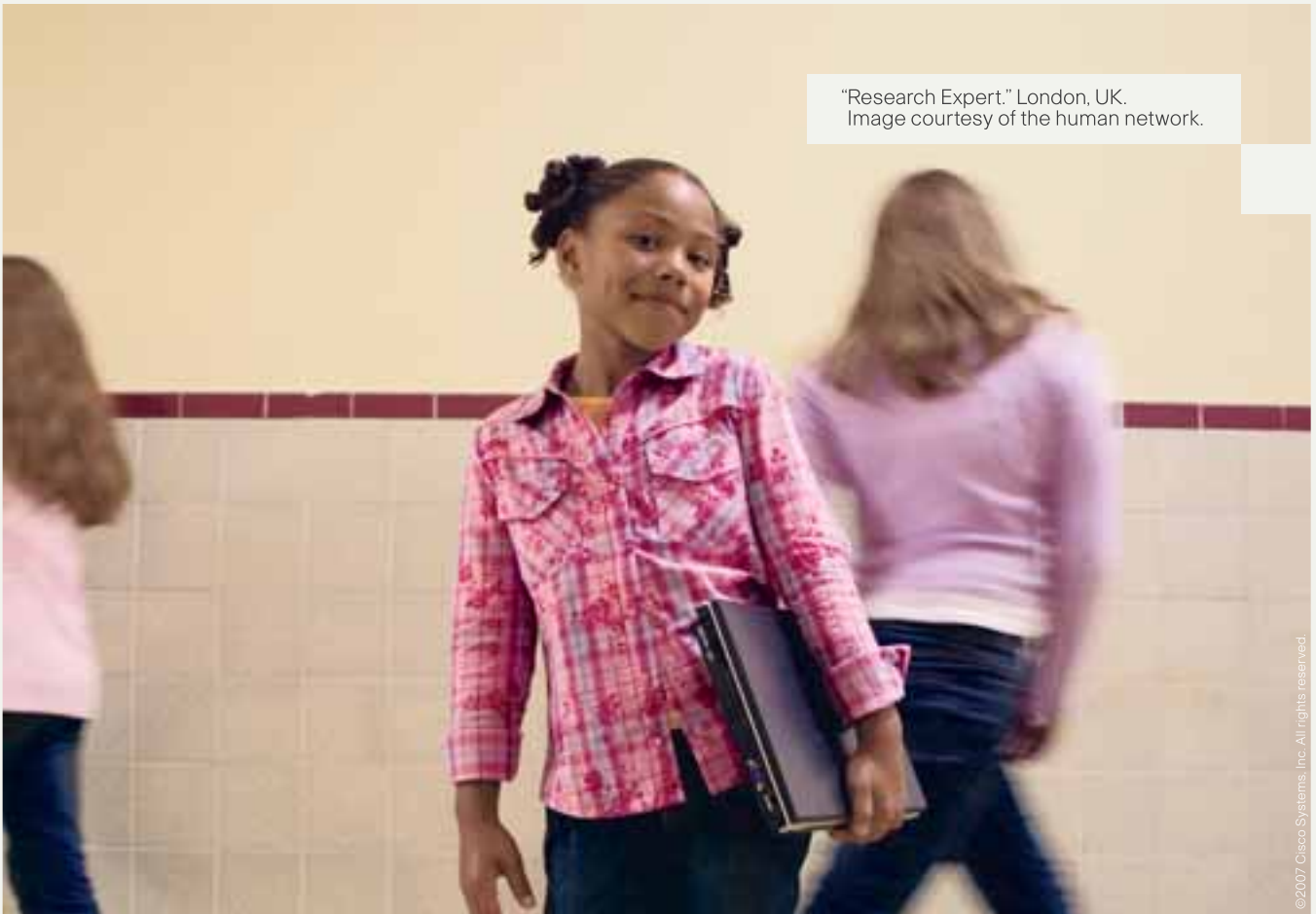
From the start, and throughout our six weeks of interaction, I was moved by the students' ability to weave a passion for this research topic into their own areas of focus in school, as well as how building strong ties with me in the context of the class project was of equal importance to their own communication, expression, learning and success. That ended up being a reciprocal experience as I increasingly felt less like an outsider and more like just one of their classmates. It has been more than 15 years since my university days, but I felt the human connection, the camaraderie, flourish—despite the fact that we never met face to face.

We used a variety of Web 2.0 tools, including Second Life and WebEx collaborative spaces, not only as an effective way to engage, share information, and collaborate in discussion, but also to establish trust and rapport that grew over time into an indirectly implied commitment to each other.

These students are the leaders of tomorrow, and will take their innovative approach to learning with them on the paths they traverse through their lives and careers. Will new business or management models emerge as a result? Will these students create a new paradigm for how innovation evolves on the human network? Only time will tell.

I plan to stay in touch with them in order to track their evolution. Bonds were created over the six weeks collectively focused on the research project, and we have now established lasting personal relationships—facilitated, naturally, by Facebook.

"Research Expert." London, UK.  
Image courtesy of the human network.



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On the human network, an eight-year-old and a professor are on equal ground. Welcome to a place where an idea is created by one, tweaked by many and shared with the world. And wikis and collaborative applications are rewriting the rules of business, as well as encyclopedias. Welcome to a network where everyone is invited to share. The story continues at [cisco.com/humannetwork](http://cisco.com/humannetwork).

welcome to  
the human network.

