



# Enterprise Web 2.0 Fundamentals

Krishna Sankar • Susan A. Bouchard



An introduction to next-generation web technologies



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## Forward by Don Proctor

Recently, a friend who is an executive at a California-based consulting firm asked me, “What is Web 2.0, anyway?” Jamie is pretty tech-savvy, lives on his Blackberry whenever his laptop can’t be conveniently connected, and has three 20-something children immersed in social networking. Yet he wasn’t quite sure what Web 2.0 was, or just when Web 1.0 ended and Web 2.0 began.

If you have been wondering the same thing—maybe you have the feeling that something interesting is going on, but you’re not quite sure what it is and how much you should care—this book was written for you. It will give you a thorough introduction to Web 2.0, explaining it in technological, sociological, and business terms. Perhaps more important, it will show you how to integrate Web 2.0 into your own organization.

Going back to Jamie’s question, the simplest answer is that Web 1.0 was an information source and Web 2.0 is an experience.

Web content in the first generation was completely controlled by its immediate owners. They decided what appeared on their sites and they or their employees were the only ones who could modify it. The success of their sites depended on how well they read their target audiences and how accurately they could anticipate what kind of information people would look for. It was one-way communication and there was really only one way to get to it: through a computer.

Today, in the Web 2.0 world, users are accessing the Web through laptops, PDAs, smart phones, and their televisions, not just to find things but to do things. A rich, user-friendly interface is a major characteristic of Web 2.0, intended to engage users in participating in some way, and participate they most enthusiastically do. Now they are often the co-creators of web content.

To take just one example, Wikipedia is an online encyclopedia in 10 languages with millions of entries that are written, edited, and continually updated by its users. Even for sites where users play a much smaller role in generating the content, companies are creating new Web 2.0 channels, such as blogs and wikis, which make possible interactive—and public—discussions outside of corporate control. We’re also seeing entirely new communications channels emerge, such as the rapid-fire messaging services Twitter and Yammer, as the main vehicle for communicating. A new kind of conversation is replacing one-way communication, and it is changing the way companies engage with their audiences.

One reason Web 2.0 is so relevant to business today is because it’s at the heart of a number of fundamental market transitions that are having an impact on many different kinds of industries, from consumer-packaged goods to energy to high tech. Some of the transitions are technology-based, some are sociological, and others are business model transitions.

One of these is *inter-company collaboration*. No word better represents what Web 2.0 is about than collaboration, and Web 2.0-enabled technologies are creating a new wave of collaboration in business. Collaboration in the work group has been with us for as long as we’ve had IT and even before, if you go back to more traditional methods, such as talking. But a few years ago, we started to see a transition from work group-based collaboration to more cross-functional collaboration, where a project might involve not only a marketing department, but development, manufacturing, and services departments as well.

Where it gets exciting is the third wave of collaboration on which we are embarking now: inter-company collaboration, or collaboration that happens between completely separate

organizations. It means that you can collaborate seamlessly across firewalls with your critical ecosystems of partners, your supply chain, your customers, and even your customers' customers. It's not simply about bilateral partnerships, but about whole ecosystems in a particular industry that can act together in a new way. That's a pretty fundamental shift, even beginning to reshape what industries look like. As eBusiness was to the 1990's, collaboration will be to the next decade, a critical growth-driver, and much of it will be delivered through Web 2.0-enabled technologies.

Another important market transition propelled by Web 2.0 is *crowd sourcing*, or distributed co-creation of content. Wikipedia, Amazon, YouTube, and other well known companies today use crowd sourcing; that is, they turn over content creation to a potentially huge audience of users. It's paying off. The social networking site, Facebook—as I write, the fifth most trafficked site on the Internet in the United States—is entirely based on information provided by 6,000,000 users self-aggregated into 55,000 networks.<sup>1</sup> Over on YouTube, an estimated 80% of the tens of millions of videos that have been uploaded have come from amateurs, in hopes of getting their content viewed, discussed, and rated.<sup>2</sup> When users create the content on a site, they are invested in it; they identify with it, pay attention to it, and tell others about it. It's less about the tools they use than in the collaborative experience they create, and how that is leveraged to create highly functioning communities.

Communities can be very powerful if you understand how they operate, and many companies are learning to use Web 2.0 tools to engage their employees and to create communities where they didn't previously exist. At Cisco, our directory of more than 65,000 employees is being enhanced so that it can be searched not by just by name but by area of expertise or personal interest. Employees can create profiles stating their skill sets, their hobbies, and just about anything they care about. One employee's profile ranged from "email authentication" to "Duke basketball." Using those profile tags, other employees looking for technical assistance or fellow fans can find them. Our CEO was one of the first to create a profile.

These examples are just a taste of what is in store in Krishna Sankar's lively journey through the Web 2.0 world. The goal of this book is to shine some light on Web 2.0 and the changes it is ushering in, as well as to offer some ideas and strategies to help you and your business make the most of it. At Cisco, we have leveraged Web 2.0-enabled technologies and Web 2.0-related practices to increase productivity, accelerate innovation, and retool basic business processes for greater efficiency and faster decision-making. Susan has some good highlights on our internal activities. But you don't have to work for a large enterprise to want to understand Web 2.0. The lines between consumers and business are blurring as the digital generation comes of age, and Web 2.0 is going to touch you almost regardless of who you are or what you do.

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Cisco Systems, Inc.  
References:

<sup>1</sup>Facebook stat source: <http://www.facebook.com/press/info.php?statistics>

<sup>2</sup>YouTube stat source: <http://mediatedcultures.net/ksudigg/?p=163>

## Forward from David Bernstein

To appreciate the significance and breadth of the term “Web 2.0,” one has to ponder at first, just what was “Web 1.0,” and more significantly, “Internet 1.0” before that? Many people rightfully trace the roots of the Internet back to 1961, when Leonard Kleinrock from MIT wrote the first paper on packet-switching theory. Others point to 1966 and 1967 when the first ARPANET plans were made and design meetings were held. From there, the progress of actually building a network was pretty rapid, from the original four hosts (UCLA, SRI, UCSB, and the University of Utah) on the ARPANET in 1969 to the development of TCP in 1974 by Vint Cerf and Bob Kahn, and to technologies such as DNS in 1984—the year that the number of hosts exceeded 1,000—to 1991, which in my opinion, is really the birth date for Web 1.0.

In 1991, collaboration became a key part of the Internet, with, on the one hand, the formation of the Commercial Internet eXchange (CIX), and on the other hand, the release of the client and server technologies of the World Wide Web (WWW), released by CERN and as authored by Tim Berners-Lee.

The CIX allowed various carriers of TCP traffic to exchange traffic carried by one network but destined for another. Because the CIX was designed around Layer 3 and 4 interoperability, any application using TCP and IP traffic could now view the “Internet” as one large, interconnected, *collaboration-ready* platform.

The introduction of the browser, which could talk to many web servers on the same page, and the web server, which could serve up content and formatting instructions to several browsers at once, was just what the new substructure needed.

What is interesting about the coincidence of these two key technologies is that they are so different and yet so interdependent. CIX was, essentially, one router; the WWW browser and server, otoh, was software, which ran on client workstations and UNIX servers, respectively. Without coordination from the routing layer to the server layer to the client layer, the collaboration system we call “Web 1.0” could never have technically existed. There is an interconnected and interdependent relationship between the networking infrastructure and the enabling upper-layer software far more fundamental than the sockets interface definition, which many engineers would point out.

It is not a coincidence that the WWW technologies were introduced to the world at the same time that the global commercial Internet became interconnected. Collaboration is a top-to-bottom driving phenomena which, in 1991, through the curious combination of the router, the web server, and the browser, gave us “Web 1.0.”

As the tremendous pace of innovation around the Internet continues, and the phenomena known as “Web 2.0” has come upon us, the fundamental parallelism and interdependence of technologies across all layers—from the network router all the way up to server-and-user-experience-software—has not changed. This explains both why Cisco is in the Web 2.0 business in the first place, and why Krishna has taken the time to write about the breadth and depth of this phenomenon and connect all these dots for us.

From his vantage point as a Distinguished Engineer in the Software Group, Krishna has been connecting these dots for the company for some time. Here in the Software Group,

which consists of approximately 7,500 full time employees, we produce everything from the embedded operating system that powers our routers and switches, to the management systems that configure and control those networks, to the systems that implement voice and telephony over the networks, to the web-based meetings and “groupware” software you know as WebEx. From this background, Krishna sorts through all the misinformation and misunderstandings about Web 2.0 to deliver a comprehensive eagle-eye view of how the network has enabled breathtaking new ways for people to live, work, play, and learn.

Follow Krishna and Susan as your guides to this interesting journey as they take you from blogs, wikis, meetings, clouds, and all sorts of Web 2.0 technologies that are living, breathing examples of thinking about collaboration from the full stack of networking to the user experience. I know as an executive here in Cisco that Krishna has been invaluable to me and my peers as a guiding light in this exciting journey. I am hopeful that you will take away both a deep understanding of the Web 2.0 phenomena as well as an understanding of why Web 2.0 is our “bet the company” strategy!

David Bernstein  
VP and General Manager, Software Group  
Cisco Systems, Inc.

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## Introduction

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*In studying and/or promoting web-technology, the phrase Web 2.0 can refer to a perceived second generation of web-based communities and hosted services—such as social-networking sites, wikis, and folksonomies—which aim to facilitate creativity, collaboration, and sharing between users. The term gained currency following the first O'Reilly Media Web 2.0 conference in 2004. Although the term suggests a new version of the World Wide Web, it does not refer to an update to any technical specifications, but to changes in the ways software developers and end-users use the web.*

—Wikipedia

The emergence of Web 2.0 isn't tied to a specific technology or tool. It's a collection of advanced capabilities growing out of technologies such as Java, Ajax, and specialized markup languages that simplify sharing and repurposing of web content. These rich and interactive features change the web experience in notable ways:

- They allow users to participate without regard to geography
- They democratize information
- They allow new ideas, products, and features to emerge

The change in the nature of how content is created and these next-generation features are ushering in new opportunities for marketing, customer service, business intelligence, and internal communication. Web 2.0 is perhaps most evident in the consumer marketplace with social networking sites, mash ups, and video sharing services. This is the “play” part of Web 2.0. But this collaborative technology will make huge advances in the business effectiveness with online collaborative tools.

Just as users play a key role in a consumer-based Web 2.0 world of blogs, wikis, communities, and collaboration, they, and the content they create, are critical to the success of Web 2.0 in business as well. Blogs, for example, are changing the marketing landscape and provide an exciting new way to gain valuable customer feedback. Wikis create valuable enterprise knowledge management assets, enabling improved customer service. Bookmarking and folksonomies enable an organization to share information and to define and tag content in ways that facilitate and accelerate search and retrieval. Photos and videos make content more visual, more personal, and more human. They can also become a valuable business asset: a customer video testimonial from a known expert helps sell product.

Web 2.0 technologies enable more effective collaboration and knowledge-sharing, improve decision-making, and accelerate productivity and problem-solving among employees, partners, and customers. Collaborative technologies are key enablers, increasing productivity and reducing travel time and expense. More importantly, collaborative technologies enable business managers to re-engineer and transform their business function, department, or process to reap the business value Web 2.0 and the Mobile Web can enable.

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## Goals, Objectives, and Approach

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A little into the writing of the book, we realized that Web 2.0 is very vast and could fill a thousand-page book! So our challenge was to see what areas we should leave out to cut through the hyperbole, the hype, the billion dollar valuations, and the security threats and still provide the readers with an introduction to the social and business characteristics of Web 2.0 as well as a glimpse of the technologies behind it.

Another challenge we had was to get the right level of detail on the topics we selected. We wanted this book to be not a guided tour but a hitchhiking experience, where sometimes the stops are quick (as in a quick look at UI or wikis), sometimes the detours linger longer (such as in social networking and cloud computing), and sometimes you need to dig deeper via the hundreds of links and references to experience the inner details.

Many of you already have some exposure to various pieces of Web 2.0, but few have a full appreciation for all the vectors of Web 2.0. In this book, we aim to provide a cohesive, coherent view of both the underlying technologies and the potential applications to bring readers up to speed and spark creative ideas about how to apply Web 2.0.

This book does not have ROI calculations or project plans. It also does not rely on extensive code fragments or programming aspects. The major challenge we faced was of omission rather than inclusion. We had to find those key pieces of Web 2.0 that would make an enterprise tick.

A complete understanding of Web 2.0 does not come just from reading a book. One has to also experience the various collaborative formats that make up Web 2.0 by creating an account in facebook.com, developing a wiki, or reading a blog about some topics of interest, or better yet by writing a blog or participating in a collaboration-based wiki.

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## Who Should Read This Book?

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The primary target audience is anyone who has a need to understand Web 2.0 technologies. This includes program managers, marketing managers, business analysts, IT analysts, and so on, who either have to market Web 2.0 or understand enough to engage in Web 2.0 systems development. The audience also includes executives, in any field, who need to understand the Web 2.0 phenomenon.

A secondary audience is the engineers who are working on traditional legacy systems and who want to understand the opportunities Web 2.0 brings. They need an in-depth conceptual view to see how everything fits and also an evaluation of the hottest technologies.

This book does not assume any special knowledge other than general computer literacy and an awareness of the Internet and the web.



## Strategies for Experiencing Web 2.0

Using Web 2.0 is like swimming: You cannot really learn it or in this case understand it by standing on the land; you need to immerse yourself in it. We have included many reference URLs to visit that will give you more in-depth information on various aspects of Web 2.0. We urge you to visit these URLs. They are listed in the appendix. You can find an electronic version of the appendix, with all the URLs conveniently hot linked, at the book's website. Keep in mind that because of the dynamic nature of the web, some links might no longer function depending on when you are reading this book.

### Enterprise Web 2.0 Fundamentals Companion Website

You can find the book's companion website at <http://www.ciscopress.com/title/1587057638>.

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## How This Book Is Organized

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Although you can read any chapter alone and get a full understanding of that particular aspect of Web 2.0, we recommend you read Chapter 1, “An Introduction to Web 2.0,” which outlines Web 2.0 and gives you an overview of Web 2.0 that should enable you to see how the pieces fit together. After you have a good feel of the various elements that make up the world of Web 2.0, you are free to roam around! But please make sure, at the end, you do visit all the chapters to get an idea of all that Web 2.0 entails. And poke through the URLs listed in the appendix to get a full Web 2.0 experience.

The following is a summary of each chapter:

- Chapter 1, “An Introduction to Web 2.0,” is the starting point. It details the various aspects—business and technology—of Web 2.0 and sets the stage for the rest of the book.
- Chapter 2, “User-Generated Content: Wikis, Blogs, Communities, Collaboration, and Collaborative Technologies,” describes the importance of the user and user-generated content in a Web 2.0 world. It identifies how blogs, wikis, communities, collaboration, and collaborative technologies are creating business value.
- Chapter 3, “Rich Internet Applications: Practices, Technologies, and Frameworks,” describes the essential technologies and business implications behind rich user interfaces and interactions.
- Chapter 4, “Social Networking,” details the multi-dimensional aspects of social networking—business value, opportunities, and technologies—from Facebook to Twitter and from standards to offerings from the big enterprise players.
- Chapter 5, “Content Aggregation, Syndication, and Federation via RSS and Atom,” is about the two-way interactions of Web 2.0, including the capability to collect and publish individual contributions via RSS feeds and Atom.

- Chapter 6, “Web 2.0 Architecture Case Studies,” looks at the most successful web applications like Twitter, eBay, Amazon, and Google and talks about the infrastructure and architecture aspects of Web 2.0 from a development perspective. Web 2.0 definitely has a new feel for application interfaces, protocols, distributability, and scalability.
- Chapter 7, “Tending to Web 3.0: The Semantic Web,” describes one of the most important next-generation web technologies: the Semantic Web. An introduction to this concept is followed by details of the various aspects of the Semantic Web.
- Chapter 8, “Cloud Computing,” details a very important development that has lasting impact: cloud computing. This chapter looks into the business practices and the technology stacks that make up the domain of cloud computing.
- Chapter 9, “Web 2.0 and Mobility,” focuses on the evolution of Mobile Web technology and examines generations of mobile phone services. The chapter touches on a number of mobile devices and key mobility features, such as voice recognition and position location. It provides examples of the types of Mobile Web services available today and identifies Cisco’s efforts to create Mobile Web applications, particularly in sales.

Chapters 10 and 11 provide a set of Cisco case studies of Web 2.0 technology adoption:

- Chapter 10, “Web 2.0 @ Cisco: The Evolution,” describes the evolution of Web 2.0 technologies at Cisco Systems, Inc. It provides basic steps and best practices for leveraging blogs, discussion forums, and wikis based on Cisco experience.
- Chapter 11, “Cisco’s Approach to Sales 2.0,” focuses on how Web 2.0 is changing the selling process and how Cisco Sales is leveraging Web 2.0 technology to transform how it does business through more effective communities, collaboration, and collaborative technologies.

# Web 2.0 @ Cisco: The Evolution

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This chapter offers a case study of Web 2.0 adoption at Cisco, detailing the evolutionary changes the introduction of Web 2.0 technology and tools is having on the company. Although Chapter 2, “User Generated Content Wikis, Blogs, Communities, Collaboration, and Collaborative Technologies,” provides a more in-depth overview of each of these technologies, the following sections

- Provide a brief introduction to what Web 2.0 means at Cisco
- Examine how Cisco’s Intranet Strategy Group vision enabled Web 2.0 technology adoption across the company
- Explain how Cisco’s Web 2.0 technology vision has evolved
- Offer practical advice from Cisco’s lessons learned
- Provide examples of how each technology is being used internally with employees and externally with partners and customers
- Underscore the organizational and process transformations underway
- Highlight the business value achieved
- Describe the groups currently leading Cisco’s adoption of Web 2.0 technology
- Outline Cisco’s internal website, which provides Cisco employees with the information they need to effectively use Web 2.0 technologies
- Showcase Web 2.0 technology adoption metrics
- Describe the Communication and Collaboration Board now leading this effort

Cisco’s evolutionary approach to Web 2.0 technology and tool adoption serves as a model for other companies, yielding practical advice and examples for others to follow. So, let’s begin with a closer look at what Web 2.0 means at Cisco.

As Figure 10-1 indicates, as a worldwide leader in networking, Cisco played a key role in the first phase of the Internet, Web 1.0. Cisco products power the network:

- Providing the pipes connecting people with personal computers (PCs) to the web, getting people online
- Transporting data around the globe
- Enabling email, instant messaging, e-commerce and other web-based applications



**Figure 10-1** *Cisco Systems: Worldwide leader in networking for the Internet.*[1]

As Chapter 1, “An Introduction to Web 2.0,” mentioned, the term “Web 2.0” was defined in Tim O’Reilly’s pioneering article “What is Web 2.0,” published in 2005.[2] According to O’Reilly, Web 2.0 is the business revolution in the computer industry. The revolution was caused by the move to the Internet as a platform, and an attempt to understand the rules for success on that new platform.[3]

This chapter describes how Cisco is taking evolutionary steps to lead the Web 2.0 business revolution internally and with its partners and customers to show them how to use the web and Web 2.0 tools effectively. O’Reilly also touts a fundamental Web 2.0 principle, “The Web as [the] Platform,” which aligns with Cisco’s strategy as well. In Web 2.0, Cisco networks serve as the platform that transports data, voice, and video beyond PCs to Internet telephones, cell phones, PDAs, iPods, video game consoles, and televisions.

John Chambers, Cisco’s chairman and chief executive officer, has long held a vision of the intelligent network serving as a platform for pervasive and ubiquitous communications for users at home and at work, providing access to people, information, and applications regardless of location, access method, or device. The quote from Chambers, shown in Figure 10-2, describes this evolution as a key element of Cisco’s strategy, a story based on market transitions, or change, and its effect on Cisco customers.

Cisco recognizes that the network is at the center of a number of market transitions as it evolves from the pipes or plumbing, connecting the Internet, to the platform enabling people to share and experience life via social networking and Web 2.0. Cisco prepares 3–5 years in advance of a major transition. It does so by listening to customers, taking risks, innovating and investing, so that it can capitalize on the transition when it is realized in the market.



**Figure 10-2** *Cisco's corporate story.*[4]

Chambers believes the changes that affect Cisco's customers most define Cisco's competitive opportunities, saying, "By the time our competitors recognize the transition, it's too late to catch up." Cisco's ability to anticipate and prepare for market transitions is critical to Cisco's success and the success of its customers. The Internet isn't a network of computers; it's a network of billions of people worldwide. Cisco calls this the Human Network.[4]

The forward-looking strategy for Cisco is enabling the company to unleash the power of "human network effect" both inside and outside the company. In the midst of a spiraling economy, Cisco has \$26 billion in cash and two dozen products in development. Many of the 26 new market adjacencies for Cisco will produce revenue within three to four years; perhaps 25% of its revenue within five years. Approximately 75% of the revenue for Cisco comes from the pipes that keep the data moving across the web: routers, switches, and advanced technologies. Cisco anticipates a market transition caused by the hunger for video, which will lead to company spending on network and infrastructure upgrades that, by 2013, are expected to reach \$50 billion.

Internally, the company has begun to reorganize. Cisco is moving from an organization with one or two primary products where all decisions came from 10 people at the top, to one with its leadership and decision-making spread across the organization. Now a network of cross-functional, interdepartmental councils and boards, working groups consisting of 500 top executives, from Cisco's global, international workforce are responsible for one another's success, innovate much faster, and launch new businesses together.

Cisco is now bringing resources together to bring more of its growing portfolio of products to market sooner, especially to new markets. For instance,

- **StadiumVision:** A board of 15 people built this new Cisco product that enables sports venue owners and stadium operators to push video, digital content, and targeted advertisements to fans during sporting events, then collaborated with sales and marketing to sell it. **Result:** A multimillion-dollar business deal with the Arizona Cardinals, Dallas Cowboys, and New York Yankees developed in less than four months.

- **MediaNet:** A council-developed strategy for a prototype of this new Cisco network platform, designed to carry rich media, such as high-quality video, securely to any screen, including TVs, PCs, and mobile devices. **Result:** Prototype developed in four months, product available in twelve.

This new distributed leadership structure and resulting faster product innovation and delivery ensures Cisco products are positioned to gain market share.

Cisco is transforming itself from a being a technology company to a leadership consultancy to other businesses as well. Having tried this new model first itself, Cisco has begun sharing case studies and best practices with customers from emerging markets such as China, Russia, Mexico, and Brazil and with other large corporations, such as Proctor & Gamble, AT&T, and General Electric, all wanting to learn from Cisco's experience. Analysts predict that the collaboration marketplace could be a \$34 billion opportunity.[5] Cisco wants to be the name that comes to mind when companies think about collaboration technologies and collaborative leadership.

Cisco is leading the effort to drive greater communication and collaboration between people, evolving the network with its own products and other Web 2.0 technologies and breaking down barriers between the company and its partners. For example, Cisco is using collaboration technologies such as Cisco TelePresence, Cisco WebEx, and Unified Communications, described in Chapter 2. By incorporating these collaboration technologies into its core business processes, Cisco is transforming those processes.

Cisco is fundamentally changing the way employees, customers, and partners work together. These efforts are yielding increased productivity and deeper relationships, balancing innovation with operational excellence.[6] Cisco is leveraging new Web 2.0 technologies, such as wikis and blogs, and new business models, such as social networking and folksonomies, to increase peer-to-peer collaboration and innovation.[7]

Cisco is making the next-generation workforce experience, mentioned briefly in Chapter 1, a reality by enabling users to

- Connect to access the right people, content, and other resources, anytime, anywhere they're required
- Communicate with greater efficiency and overall effectiveness
- Collaborate with others, both inside and outside the company
- Learn from other members of the human network

But take a step back to learn how these evolutionary Web 2.0 technology changes started.

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## Intranet Strategy Group

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Cisco has been recognized as an industry leader for its customer- and employee-facing websites almost since their inception. In December 1996, *CommunicationsWeek* announced that Cisco's customer-facing e-commerce site, Cisco Connection Online (CCO), at <http://www.cisco.com>, had achieved \$75 million in sales since its launch five months earlier. The article heralded the fact that Cisco was predicting \$1 billion in sales by fiscal year end.[8]

Eighteen months later, CIO Communications selected Cisco's intranet as a winner of its "WebMaster 50/50 Award" in the Intranet category. The award focused on selecting 50 exemplary Internet sites and 50 intranets for excellence in execution, innovative use of technologies, and demonstrated benefits from over 700 applicants.[9] The Intranet Strategy Group, part of the Employee Commitment team in Cisco's Human Resources organization, was responsible for developing Cisco's intranet, Cisco Employee Connection (CEC).

In March 2005, the Nielson Norman Group, a user-experience research group, recognized Cisco's Intranet Strategy Group in its "Intranet Design Annual 2005: The Year's Ten Best Intranets." Cisco and nine others were chosen, in part, for providing productivity tools for their employees. This media recognition helped to establish Cisco as a clear leader in both the Internet and intranet domains.

The Cisco Intranet Group realized the value of community, establishing its own internally-focused Intranet Excellence Award, a precursor to the current Collaboration Across Cisco Award. According to then Group leader, Matthew Burns, the award recognizes those not just implementing standards, but working with their team and others to add new capabilities that others can leverage.[10] In the months that followed, many internal Cisco teams received the Intranet Excellence Award, not only for working collaboratively and sharing best practices, but for helping to extend the intranet community within their respective organizations—in essence social networking had begun!

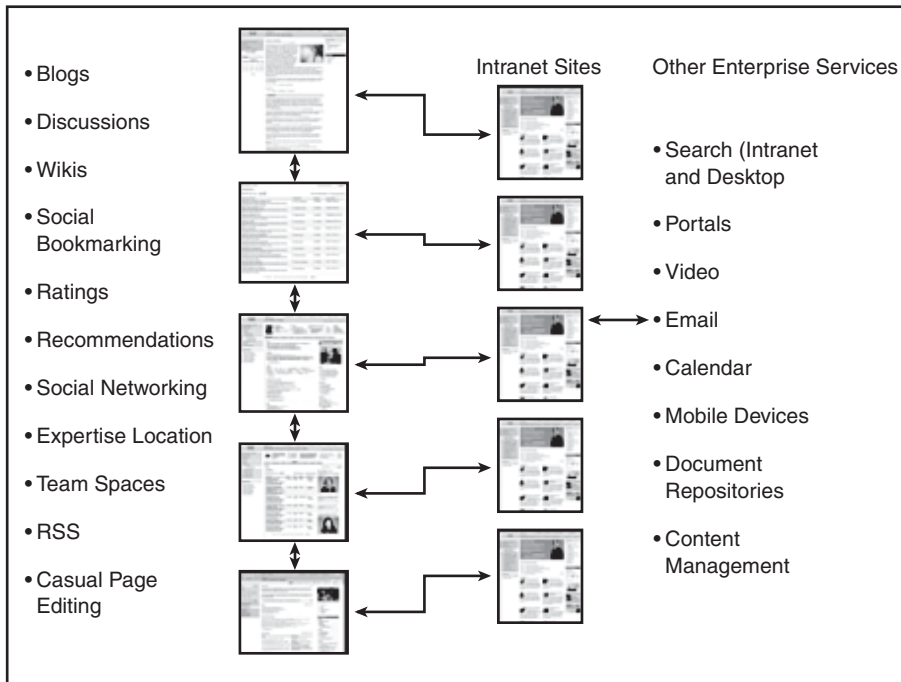
It was a natural extension of the Intranet Strategy Group's charter, recognizing a need for collaborative tools to enable employee productivity, to begin exploring Web 2.0 technologies. Early explorations, for example, focused on blogs, discussion forums, and wikis. The team's Web 2.0 vision of an integrated Web 2.0 *Enterprise* Experience was presented by Burns at Intranet Week 2007 and is shown in Figure 10-3.

To realize the integrated Web 2.0 *Enterprise* Experience vision, Web 2.0 technologies were seamlessly incorporated as elements of Cisco's intranet page design templates. Other enterprise services and tools, such as Cisco's new Facebook-style internal employee directory service, Directory 3.0; Cisco's version of Wikipedia, called Ciscopedia; collaborative communities; and video assets collected in a home-grown YouTube-like tool called C-Vision were incorporated as well. The Intranet Strategy Group began systematically piloting and testing each Web 2.0 technology, establishing a vision for how it would evolve and integrate with other technologies, services and tools.

The following sections outline Cisco's exploration and the evolution of several of these key Web 2.0 technologies.

# Web 2.0 Enterprise Experience

## Integrated Enterprise Experience



**Figure 10-3** Cisco's Web 2.0 Enterprise Experience.[11]

## Blogs

The Intranet Strategy Group began a blog (short for “web log”) pilot. This effort was designed to enable employees to publish comments, opinions, and other information on work-related topics. In preparation for the rollout, the group envisioned three different types of blogs: employee, concept, and group blogs.[11]

This vision has evolved slightly to the current blog types listed on the CCoE site:

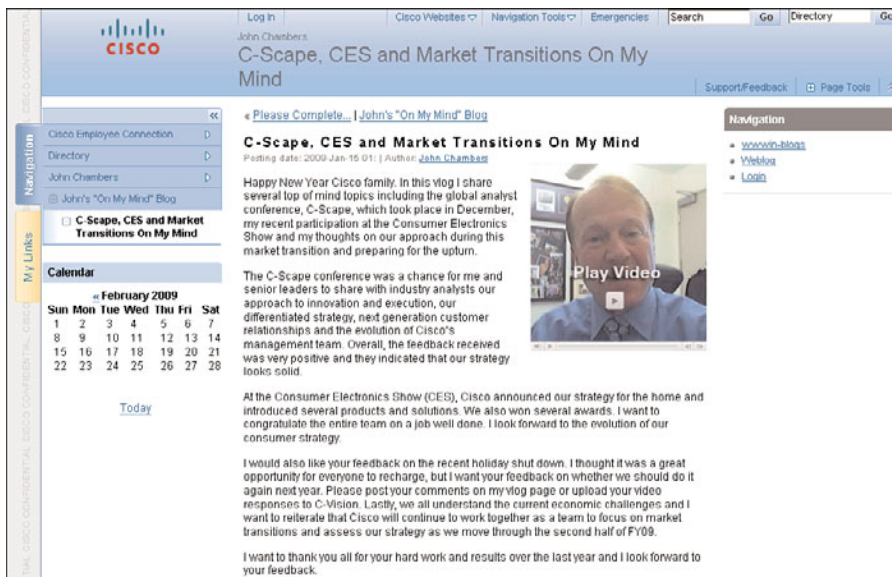
- **Personal Blog:** Enable employees to publish a personal journal on work-related topics.
- **Project/Team Blog (Concept Blog):** Enable project/teams to communicate, connected to project/team documents and data.
- **Executive Blog:** Enable organization/enterprise executives to communicate less formally and enable employees to comment.



Personal blogs are designed to be integrated with the Cisco employee directory, providing an opportunity for an individual to present thoughts, offer opinions on work-related topics, and add another dimension to a personal profile. Michael Beesley, director of engineering in Cisco's edge-routing business unit, has one of the most popular personal blogs, writing about such topics as "ASR Completes Security Testing." [5] Cisco employees are required, however, to post non-work-related topics on blogs outside the intranet.

Cisco is working to enable blogs focused on specific topics or concepts and others targeted at specific communities or groups. Concept blogs will be integrated with specific intranet site pages, offering content from experts, news, and/or project updates. Group blogs will be integrated with specific communities of interest. The latest vision for internal blogs also includes expert and news blogs. [12]

Cisco has a number of popular Executive or C-level blogs. One is Chambers' "On My Mind" blog, shown in Figure 10-4. It has been one of the most popular blogs at Cisco, with nearly 100,000 hits from its inception in June 2007 to the end of January 2009. [13] Note that the blog provides a video and an opportunity to subscribe via RSS feed.



**Figure 10-4** John Chambers' "On My Mind" blog, posted 15 January 2009. [14]

Jere King, vice president of marketing, is another example. Her blog has been second to that of Chambers in terms of comments since its inception. [14] King is using her blog to drive communication, feedback, and productivity forward. She has taken it upon herself to act as a change agent in her organization and has a few tips on what makes her blog so successful:

- **Consistency:** Publish a new blog entry on the same day, every week, say Friday.

- **Call to Action:** Every blog entry should have a specific call to comment—something to focus that week’s conversation, a reason to interact.
- **Promotion:** Promote each new blog entry, again on the same day every week, via an email newsletter to the team. In addition, post it as the “Top of Mind” feature on Cisco’s marketing homepage.
- **Quick Response:** Check the blog every day and immediately respond to comments. Email other team members when something is relevant to their area, or they would be a good person to comment back and continue the conversation.
- **Changing Behaviors:** Use every opportunity to push the blog—even putting off live discussions in meetings if there is a virtual discussion on that topic already in the blog.
- **Be a Story Teller:** Capture and keep the reader’s attention by telling a story.
- **Create an Online Watering Hole:** Get people to gather, discuss, share ideas—think water cooler!
- **Make It Worthwhile:** Have passion, be engaged, and have something to say.[15]

These tips have enabled King to become one of the most popular bloggers at Cisco and her model is emulated by many.

According to Deanna Govoni, program manager for Cisco’s blog initiative, each blog basically serves as a website maintained by an author, or group of authors, containing news and/or commentary on specific subject matter, delivered in a professional manner. As a means of one-to-many communication, authors drive the conversation and create and post topics. Their purpose could be to showcase thought leadership, engage others in communication, and receive feedback.

Cisco’s initial blog pilot led to a development of a number of guidelines and best practices posted on the Communications Center of Excellence (CCoE) site. Govoni encourages Cisco bloggers to create and use a blog based on the outcome they’re looking for. For example, users are encouraged to blog if they

- Want to engage a community on a specific topic
- Have identified a target audience and objective
- Have something interesting to say
- Have passion surrounding a chosen topic
- Have knowledge to share with others
- Want to gather feedback and start a conversation
- Want to network with peers
- Want to stop spamming colleagues

Cisco wants users to leverage blogs to start conversations and improve communications.

To help ensure Cisco bloggers are successful, Govoni and her team have identified several guidelines on when *not* to use a blog. Users are discouraged from using a blog if they:

- Don’t have enough resources or content to maintain

- Are unable to respond to comments
- Don't have a clear topic
- Are simply regurgitating news
- Are looking to foster a fully interactive discussion (use a discussion forum here instead)

Because one purpose of a blog is to start a conversation and get feedback, Govoni has also identified a number of blogging best practices:

- Update blog frequently, at least once a week.
- Be transparent.
- Respond to comments quickly to keep listeners engaged.
- Ensure blog does not interfere with primary employment responsibilities.

Most successful bloggers would agree that these best practices ring true. Finally, Govoni also has a number of guidelines on increasing blog traffic:

- Be entertaining, and show your personality/video/photos.
- Locate relevant blogs in your niche and engage in the conversation.
- Promote your blog.
- Collaborate with your peers.
- Participate in other blogs.
- Use trackbacks (links within blogs) to connect to other blogs to keep traffic flowing.
- Keep your blog current.

One other suggestion is to end each blog with a question, such as “What do you think?” to start the conversation. [16]

CCO, the Cisco external site mentioned previously, has evolved into much more than an e-commerce site. Known as Cisco.com, the site offers information on solutions, products and services, ordering, support, training and events. Cisco.com is also home to Partner Central, an area focused on Cisco's partner community described in Chapter 11, “Cisco's Approach to Sales 2.0”. [17]

The Cisco.com site contains a fairly hip consumer section. This section provides helpful consumer-focused blog posts and twitters in an area called DigItALL Consumer. Its “Digital Crib,” section enables video blogger Meghan Asher, video artist Lincoln Schatz, and NBA player and Houston Rockets forward Shane Battier to share videos on their digital lifestyles. [5]

Cisco has also enabled several external business blogs, available at <http://blogs.cisco.com>. These blogs are used to

- Provide insights and opinions from Cisco leaders and corporate representatives to showcase thought leadership.

- Provide product information and updates and solicit valuable feedback from the blogosphere, including customers, partners, and competitors.
- Enable event reporting and create event logs.

Be sure to note “More Cisco Talk” at the bottom of the column on the left side.[12][18]

As a company, Cisco has begun realizing the business value of this new medium, leveraging blogs strategically to reach customers and influence the marketplace. In 2007, Mark Chandler, SVP, Legal Services and General Counsel, worked with Cisco’s public relations team to reach out to the public via Cisco’s corporate blog. This occurred during a trademark case concerning the iPhone, and led to Chandler winning PR News’ Legal PR Award 2008 for Best Spokesperson.[19]

In 2008, Cisco’s Data Center team used Cisco’s corporate blog to engage in a heated debate with Dell over data center storage networking protocols. According to Data Center Knowledge (<http://www.DataCenterKnowledge.com>), the discussion provided an overview of the competition between several technologies and showcased the way Cisco and Dell are using blogs to advocate next-generation technologies they support.[20] The Data Center team has also successfully leveraged blogs to help launch a new product.

Members of Cisco’s Data Center team leveraged both intranet and the Internet blogs to increase awareness of the Data Center 3.0 product. The Data Center 3.0 Blog initiative

- Was used to help launch the new Data Center 3.0 product.
- Engaged tier 1 and 2 bloggers on the Internet.
- Built and nurtured relationships.
- Transferred knowledge and passion about technology on blogs focused on data centers (topics and concepts).
- Offered editorial content and influenced opinions.
- Engaged in conversations with top data center experts (groups and communities).
- Provided opportunity to enter data center communities the team was not previously part of.
- Became as influential as the data center-focused press and business analysts.
- Provided lower-cost marketing approach.

Moreover, it provided a key learning opportunity for the team to understand the power of leveraging this new medium as a way of marketing their product.[21]

Prior to the Cisco Live 2008 event, Cisco worked to build community and create buzz in Twitter, an externally hosted micro-blogging tool. Participants Twittered throughout the event, using it as a business communication tool. This experience enabled them to capture some of Twitter’s key features:

- Provides a fun tool to help users network.
- Enables users to follow peers/friends to keep up to date.

- Limits “Tweet” to a 140-character message (mini RSS feed).
- Users can monitor conversations and build relationships.
- Has low cost and high impact.

Twitter provided another medium for reaching the public and established a number of Twitter-based Cisco communities of “twitterers” and their followers.[16] Finally, Cisco blog comments have been integrated with discussion forums, so that comments on a blog can be maintained as an ongoing discussion, as needed.

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## Discussion Forums

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To achieve its integrated Web 2.0 *Enterprise* Experience, Cisco’s Intranet Strategy Group also launched an initial discussion forum pilot. They began to enable employees to share thoughts and ideas and start threaded conversations, to discuss topics, and to ask questions and get answers from the Cisco community. The group envisioned several ways Cisco employees could use discussion forums including as a means of exchanging ideas on designated topics, and as a way to facilitate information exchange within a team or group.

The group realized that discussion topics of common interest could be registered on an enterprise site, enabling experts to share knowledge on a particular subject. The main idea was to foster and chronicle fully interactive conversations between individuals, subject matter experts, groups, and teams. Although blogs were identified as the means of one person posting their ideas and getting feedback, employees were encouraged to use discussion forums to enable multiple people to participate in the conversation.

The Intranet Strategy Group identified several integration points for discussion forums: integration with intranet site content, with community context, and as a connection from blog comments.[11] Cisco users are able to navigate through the hierarchy of discussion areas, selecting from among the various discussion topics. Like blogs, discussion forums are RSS-enabled, so users can subscribe to get updates on their favorite topics. Also, forums enable users to click on the name of the forum poster, which links to a page showing that person’s activity in the forum space and, eventually, a link to his or her Cisco Directory information page.

Each organization has appointed a point of contact or team to manage forums within their organization.[22] At the end of January 2009 there were more than a hundred open group discussion forums, and the top five forums with the most threads were Wikis, Blogs (Internal), Discussion Forums, General Discussions, and Collaboration Learning.[23] And that doesn’t include discussion forums enabled through collaboration community tools that have evaluated or deployed.

Cisco’s discussion forum pilot led to the establishment of a few basic guidelines provided by Molly Barry, web program/project manager for Cisco’s discussion forum initiative, also highlighted on the CCoE site. Barry suggests discussion forums

- Should be used to foster and chronicle fully interactive conversations.

- Occur between individuals, subject matter experts, groups, and teams working together and/or needing information, answers, or solutions that can be added to and referenced anytime.
- Enable gathering of feedback and multiple opinions.
- Establish a venue for community-driven support as well as Q&A.

According to Barry, discussion forum usage at Cisco also led to a few guidelines on when to use them. For example, users should use a discussion forum when they

- Intend to foster or display a dialogue between individuals, groups, and teams.
- Can provide support for questions and answers as a reference to an audience.

And, of course, the pilot also helped identify a few guidelines on when not to use them, such as when users

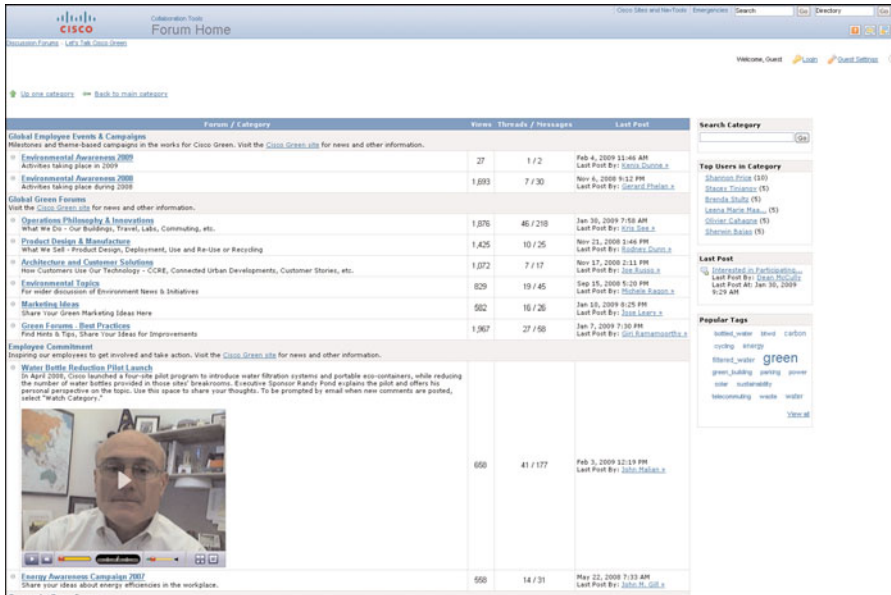
- Don't desire or need to start a full conversation.
- Are unable to regularly monitor the forum and respond to messages posted there.[24]

Discussion forums launched enterprise-wide in March 2008.

One particularly interesting example of a successful discussion forum at Cisco is the one built by Cisco's green-minded employees. Cisco's EcoBoard, established in October 2006, developed the vision and strategy to enable the company to be more "green" through its operations, products, and architecture solutions for its customers.[25] In an effort to augment traditional forms of communication, email, news stories, and so on, Kenis Dunne, executive communication manager, launched the "Let's Talk" discussion forum, shown in Figure 10-5. Note the video feature contained in the forum page.

Dunne started a number of discussion forum threads on the site to facilitate conversations on Cisco's green initiative and topics such as telecommuting and water bottles. Key take-aways, according to Dunne, include the following:

- Leverage a logical framework to guide the pattern of discussion threads.
- Mirror content employees begin seeing elsewhere.
- Partner with subject matter experts to enhance content.
- The best enabler for success is a community already interested in your body of work.
- Look viral, but act strategic.
- Watch each thread, let software prompt you with updates.
- The goal is to be effective and accurate and avoid miscommunication.
- Use as an additional communication channel to augment news.
- Push to eliminate email while extending access to the full story.
- Promote awareness via voicemail and executive champions.



**Figure 10-5** Cisco's green "Let's Talk" discussion forum.[26]

- Forums provide more in-depth, effective commentary on a topic than a survey.
- Forums give employees a place to have their voices heard.

The forum is also associated with Cisco's internal employee website as a means to keep employees current on this popular environmental initiative.[27]

Cisco has established a number of internal discussion forums focused on providing technical support to employees. Maya Winthrop, for example, is listed as Cisco's top discussion forum contributor. With nearly 450 posts, Winthrop moderates a cross-functional CCoE technologies and tools forum, answering user questions on WebEx Connect, the iPhone, and so on.[28]

Cisco IT is currently leveraging a discussion forum to support rolling out WebEx Connect across the company. The forum contains threads focused on service alerts, frequently asked questions (FAQs), support, suggested enhancements, and so on.[29] User feedback gained from these threads provides the product support team with insight into performance issues and training needs, but more importantly user requests for enhancements and new features help shape product support and development.

In addition, Cisco's WebEx Connect user community can not only provide ideas for new features and help prioritize them, but also support one another or develop solutions and share them with the community. Recently, new WebEx Connect users identified a need to invite entire groups to join a Connect team space, using a Cisco Mailer alias list as the source of names in the group. Because the capability was not on the product delivery roadmap, members of the Connect user community devised steps to enable the capability, which was turned into the Cisco Mailer BulkInvite Widget made available soon afterward.[30]

Cisco is also using discussion forums to support customers and partners. At Linksys, for example, voluntary discussion forums with customers and partners, in the form of message boards, have been in use for some time. The reasons are simple: Forums engage customers, and engaged customers stay customers and spend more. Customers use forums to find answers, to connect with others, and to make a contribution.

Customers engaged in discussions remain on the company website 50% longer, and the customers who most frequently post comments on discussion forums actually spend more. According to the 90-9-1 rule, 90% of customers browse and look at discussion forums, but may never post; 9% participate; 1% will post most of the content. That 1% is considered the super user, the person that raises a hand and contributes.

The importance of recognizing contribution to discussion forums cannot be overstated, as even just one super user can save the company huge amounts in support costs. At Cisco's Linksys and other companies, support forums are being used in lieu of phone support to help reduce costs. Live customer support, for example, costs 87% more per transaction than forums and other self-service options.

Another advantage to discussion forums, besides costs, is the quantity and quality of the content itself. The tribal knowledge that customers, partners, product teams, sales, support, services, and marketing personnel accumulate through discussion on a particular question or problem can be provided in a self-service mode. It can also serve as a knowledge base for new hires and phone support teams.[31]

Implemented successfully, discussion forums can add huge value to the business, particularly if the quality level of the content is closely guarded and exceptional behavior is applauded. Forums require ongoing management, promotion, and strong signposting to drive traffic to them. They also require the proper structure and atmosphere to remain healthy, that is, to engage users and keep them coming back.

In a healthy community there will be at least 5–10 posts per day. This significantly reduces back-and-forth email traffic as the conversation takes place via the forum. In some Cisco forums, a hundred or more daily posts may occur, as engineers around the globe often contribute to technical forums, again reducing Cisco email traffic.

Cisco learned the value of enabling external customers and partners to participate in customer service–focused community forums on Christmas Eve 2006, when an earthquake that hit the South Pacific brought down its Linksys contact centers. The holidays are a busy time for the centers as consumers who buy Linksys products as presents reach out with questions. Instead, customers turned to a forum, enabled through Lithium Technologies' online community–based CRM solution, for support and customers began helping customers.

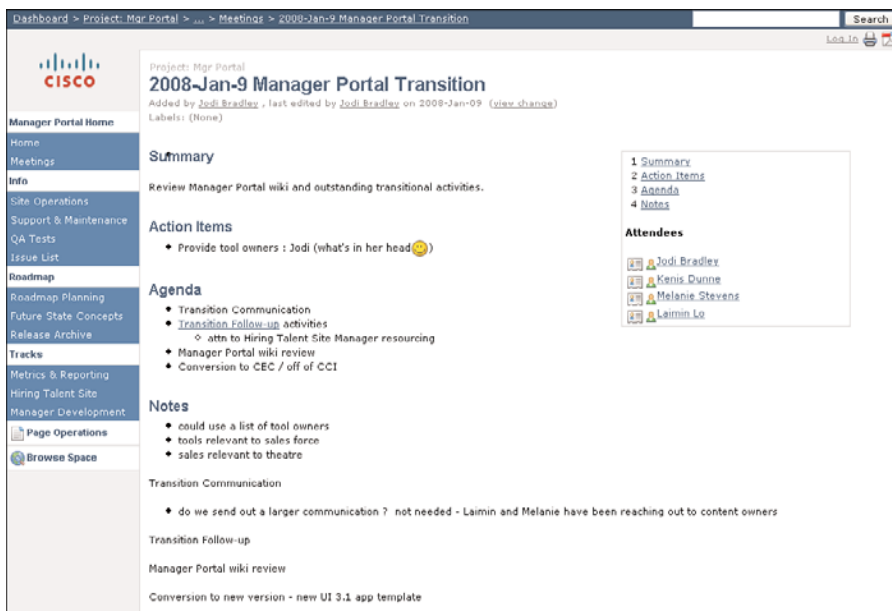
The online community enabled super users, many of whom were non-employees, to share their knowledge, answering questions about Linksys products, providing live, peer-based support throughout the holiday rush. The community response even enabled Linksys to discontinue customer support via email, reducing support costs. By mid-2008 the Linksys community forum had 100,000 registered users and more than 7 million views. This story was broadly communicated, which in itself proved rewarding to those who took part.[32] Now let's turn our attention to wikis.



## Wikis

One of the most widely adopted Web 2.0 technologies at Cisco has been the wiki platform, enabling Cisco employees and teams to publish pages of web content, which others can edit and to which they can contribute. The Intranet Strategy Group identified a number of potential uses for wikis at Cisco, such as project and team collaboration and ideation, or the generation of ideas. As they rolled out the wiki pilot, they identified a need to develop templates to help teams develop wiki sites faster and to create consistency across various sites.

The Internet Strategy Group identified the importance of tool usability and ease of navigation, both in the tool used to create the wiki sites and within the sites themselves. The group also identified the need for integration with team spaces, Cisco's document repositories, and other services.[11] Figure 10-6, for example, shows a wiki page meant to serve as an information source for the Manager Portal project. It provides a description of the project, a list of team members (linked to Cisco Directory), weekly project updates, and links to release status documentation, enabling the team to stay aligned and better manage the portal development project.



**Figure 10-6** *Manager portal wiki.*[33]

The Cisco Customer Advocacy Remote Operations Services (ROS) team built a network operations–related knowledge base on a wiki-like framework, called a twiki. In 2006, solutions architect Craig Tobias came up with the idea of creating wiki pages, like file drawers, on every topic he could think of related to the complex task of proactively

monitoring, managing, and securing complex network infrastructures. Tobias pulled together the team of individuals responsible for supporting this area within Cisco and asked them to leverage their knowledge and experience to add content to each topic.

The ROS wiki allowed the team to contribute content directly through their browsers, enabling multiple people to contribute content to a single document. It also facilitated continuous improvement of the content, enabling the team to refine each document over time, based on peer review. According to Tobias, wikis

- Are a key part of a larger community platform.
- Focus on consolidating fact-based information.
- Enable users to contribute via their browsers.
- Facilitate multiple people contributing to a single document, refining its content over time.
- Embody the practice of peer review.

Tobias and his team developed well over a hundred pages of content, a knowledge base that saves customers and employees countless hours of network diagnosis and problem-solving.

Tobias also has a number of wiki best practices and lessons learned, as follows:

- **Information Architecture:** Start with a solid framework.
- **Branding:** Give your wiki an identity.
- **Navigation:** Make your site easy to navigate.
- **Images:** A picture is worth a thousand words.
- **Open:** Be open; lock as little down as possible.
- **Purpose:** Clearly state what you're trying to do.
- **Support:** Support users so they'll contribute.
- **Training:** Provide user training.
- **Drive Adoption:** The more users contribute, the better your content.

The ROS wiki has been so successful and well-received that customers often subscribe to Cisco's ROS just to gain access to the knowledge base.[34] Now let's turn our attention to another use case, an example of wiki-driven collaboration and innovation.

In August 2006, the Emerging Markets Technology Group (EMTG) set up a wiki as a collaborative platform, called I-Zone. The site was designed to enable the entire company to submit and brainstorm on ideas for new businesses. The I-Zone initiative, led by Guido Jouret, vice president and chief technology officer in EMTG, has enabled Cisco to benefit from ideas from anywhere in the company, leveraging collaboration to drive new growth markets.[7]

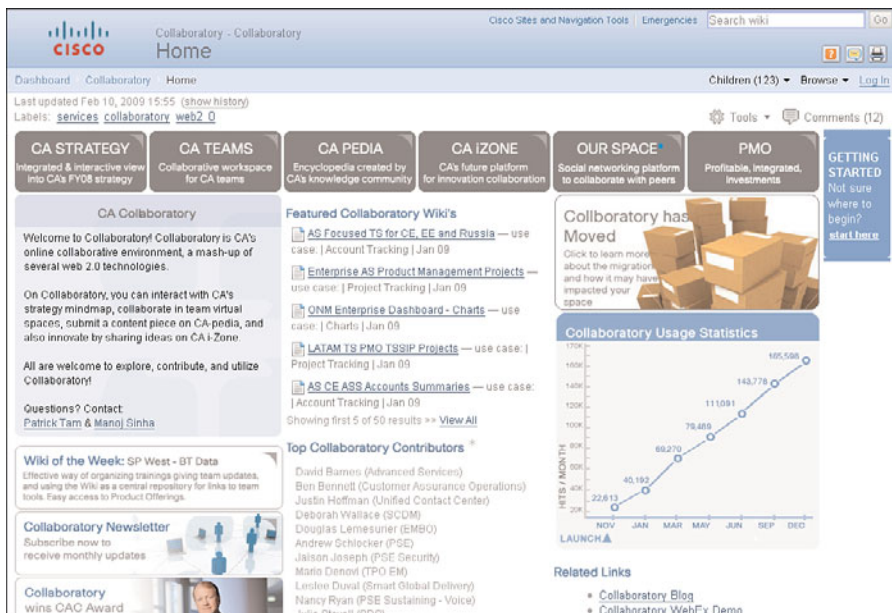
Since its inception, the I-Zone team has reviewed hundreds of ideas and the process has already yielded success. In 2007, the I-Zone wiki led to the incubation of four new Cisco

business units. In 2008, ideas captured through I-Zone led to the start of one additional business unit each quarter.

I-Zone has provided an open forum where ideas for new products, as well as new ways to use existing Cisco products, can be posted and others can comment or pose questions on the ideas. In this way, average ideas can trigger collaboration that yields idea improvement or an even better idea. Ideas are also kept on file for consideration at a later date because timing often plays a part in whether an idea should move forward, and today's good idea might look even better tomorrow.

The team has recently moved I-Zone to a leading innovation social networking platform, Brightidea. The new platform enables employees to post their ideas, vote on and browse for ideas, and get the latest information on idea submissions. Now the I-Zone wiki legacy lives on in another Cisco organization.[35]

In November 2007, a group within Customer Advocacy (CA) decided to leverage a wiki platform to enable CA employees to collaborate more effectively. The initiative, led by Patrick Tam, operations manager in CA's Office of Strategy and Planning (U.S.), is known as CA Collaboratory, as shown in Figure 10-7.



**Figure 10-7** Customer Advocacy's Collaboratory wiki site.[36]

Collaboratory consists of a number of wiki-based components:

- **CA Strategy:** An interactive and integrated view of CA's FY08 strategy.
- **CA Teams:** A set of collaborative workspaces for CA teams organized by theaters, functions, and governance councils.

- **CA-pedia:** An encyclopedia of CA-related content and knowledge, built by the community.
- **CA I-Zone:** A future platform for CA collaboration on innovative ideas (similar to EMTG's I-Zone).
- **Our Space:** A social networking platform for peer-to-peer collaboration within the organization.
- **(Services) PMO:** A comprehensive view of CA's FY09 initiative investment portfolio.

The site also features a Wiki of the Week and a top contributors list, related links, and Collaboratory usage statistics. As Figure 10-8 shows, Collaboratory has grown from 22,000 plus users, just after its launch in November 2007, to well over 165,000 users at the end of 2008, one reason the site has moved to its own, dedicated server.[36]

According to Tam, key Collaboratory facts include:

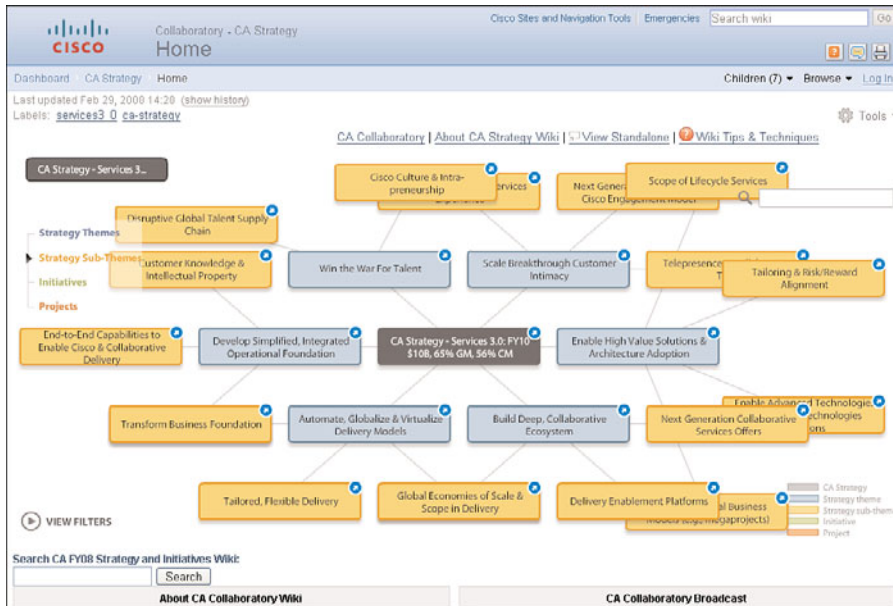
- Serves as Customer Advocacy's internal Web 2.0 platform.
- Developed to present CA strategy in a multi-dimensional way.
- Centralizes information about CA via CA-pedia.
- Provides directory of 70+ CA teams.
- 10% of CA employees contribute.
- Had 26,000 hits within first two months.

The CA Strategy wiki, shown in Figure 10-8, is used to

- Communicate the organization's complex, multi-dimensional FY10 Strategy Architecture.
- Support fiscal year planning.
- Enable employees to visualize how their initiatives connect to other CA initiatives.
- Provide the ability to click on an initiative and drill down to review initiative objectives, challenges, risks, milestones, and financials.

Within two months of its inception, more than 50 global CA teams had built workspaces as part of the Collaboratory community, sharing information on initiatives, projects, and team knowledge through a wiki-based knowledge base called CA-pedia. In June 2008, Collaboratory won the coveted Collaboration Across Cisco Award, mentioned earlier in the chapter.[38]

There are several other Cisco examples of wikis being leveraged as a community support platform. For instance, Cisco IT supports Windows-based PCs as official desktop hardware, so Mac users have established their own Mac-Wiki support community, Mac Trolls. The site provides a wealth of useful information, enabling new Mac users to become productive more quickly and offering experienced users the opportunity to learn and share their knowledge and innovative ideas as well. Mac-Wiki won the Collaboration Across



**Figure 10-8** *Customer Advocacy's strategy wiki site.[37]*

Cisco Award in January 2008, acknowledging over 100 key contributors and distilled content from more than 40,000 emails at the time.[39]

Another example is the recently launched WebEx Connect Community wiki, providing links to

- Best practices
- Clearinghouse for submitting Connect feature enhancements
- FAQs
- Getting started information
- Metrics reports on Connect adoption and usage
- Program team and key stakeholders
- Program tracks and status updates (metrics, performance testing)
- Related blogs and initiatives across Cisco
- Service alerts and resolutions
- Support and learning resources
- Tips and tricks
- Use cases
- Widget approval and governance

## ■ Widgets

Developed through a collaborative partnership between the Connect IT team, the US-Canada Collaboration team, and others, the wiki-based community site offers support to WebEx Connect users across the company.[40]

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## Connecting People, Information, and Communities

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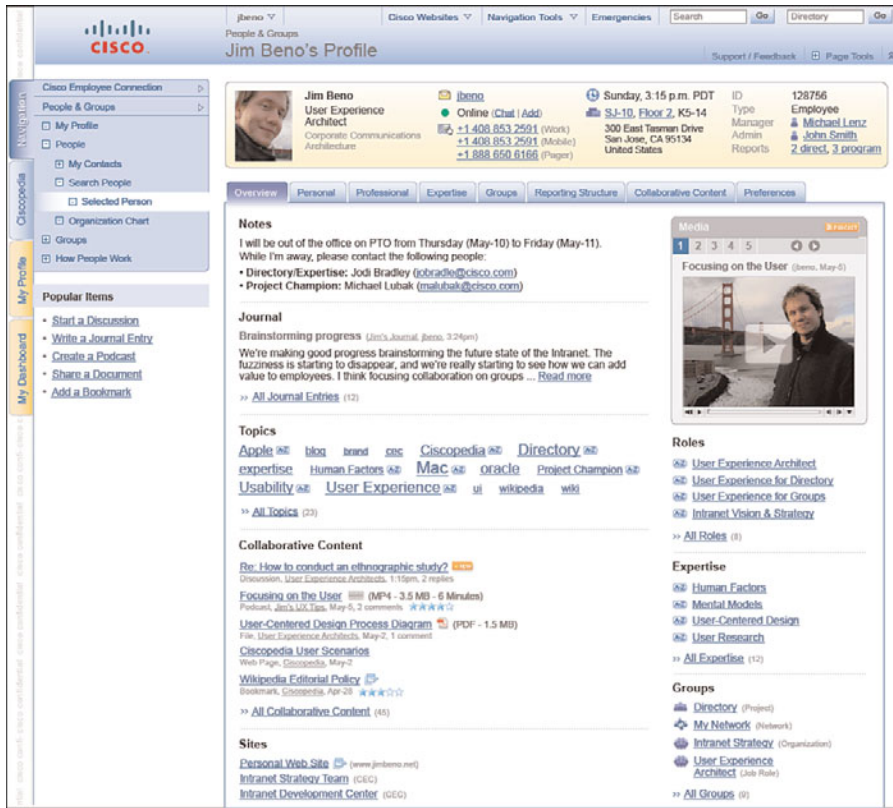
An important component of Cisco's Intranet Strategy Group vision was recognition of a need to improve employee access to people, information, and communities, which led to Cisco's Directory 3.0, Ciscopedia, and Communities initiatives. In 2006, Cisco's Directory provided contact details, such as photo, title, organization, phone, email, and address for the global workforce, totaling more than 50,000. The organization realized the need to make it easier to search through this content, to find the right person to answer a question or assist on a project.

The Directory team studied a number of possible approaches to connecting people and the decision was made to add an Expertise section to existing Directory entries. This new release, called Directory 3.0, is designed to enable connections between people, groups, and information to facilitate teamwork, collaboration, and networking across the company. The Facebook-style pages enable employees to easily find the right person to answer a question, provide a product demo to a customer, or make a conference presentation, anywhere, anytime, in any language. The first Directory 3.0 employee profile prototype is shown in Figure 10-9.

The Intranet Strategy Group developed mock-ups and held focus groups across the organization to obtain feedback on the new design and then began to implement it. Numerous additional changes were made to the user interface before Phase 1 of Directory 3.0 was rolled out in March 2008. Phase 1 adds an "Expertise" section designed to enable the workforce to enter keywords or phrases identifying business or technical knowledge so that a search of Directory 3.0 will enable users to quickly find people with the required expertise.

Directory 3.0 Phase 2, launched at the end of January 2009, offers new features and functionality, as well as improved performance and scalability, providing a powerful foundation that enables individual, information, and community connections. Directory 3.0 now offers enhanced search, enabling users to take advantage of the expertise section enabled in Phase 1. Users can search for and find people within the company based on keywords they've entered in the expertise section of their directory profile.

The keywords entered in the Directory expertise section are linked to topical information defining those terms in Ciscopedia, Cisco's version of Wikipedia.[41] Where CA-pedia, mentioned previously, focuses on topics related to the CA organization, Ciscopedia focuses on topics of interest to the broader company. When the beta version of Ciscopedia launched at the end of January 2009, it contained over 540 Sales and marketing-related terms merged into Ciscopedia from Salespedia, a Sales collaboration tool described in Chapter 11. As a result, Salespedia is currently the most popular tag in Ciscopedia, followed by acronym and internetworking terms.[42]



**Figure 10-9** Employee profile prototype for Directory 3.0.[11]

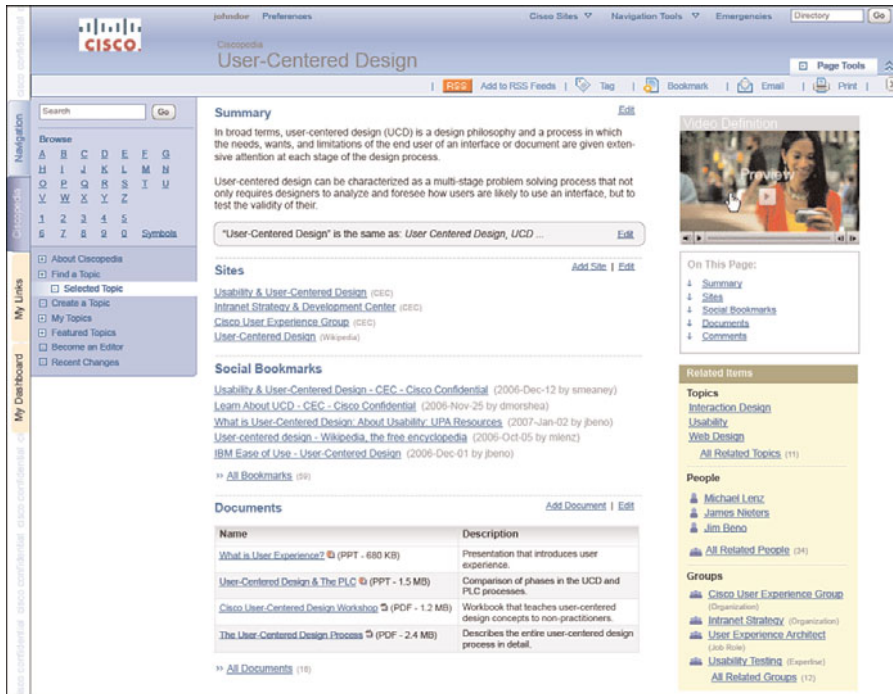
The idea of Ciscopedia came about as Jim Beno, a user experience architect on the Intranet Strategy Group team at the time, began doing research on how experts felt about identifying their expertise in Directory 3.0. Jim discovered that many experts were concerned about being flooded by requests for basic information and preferred to write a summary on the topic of their expertise, providing links to key resources. The Strategy Group vision of Ciscopedia, an open encyclopedia like Wikipedia, where everyone at Cisco contributes to the content, was born![43]

According to Ciscopedia project manager, Nikki Dudhoria, Ciscopedia is

- An online, wiki-based, topical information hub
- A place for employees to share expertise
- Information aggregated from multiple sources
- Owned and governed by the entire Cisco community

Figure 10-10 provides an example of a Ciscopedia prototype page, developed by Beno on the topic of user centered design.





**Figure 10-10** *Ciscopedia prototype page on user-centered design.[11]*

Like this example, each Ciscopedia topical entry is meant to

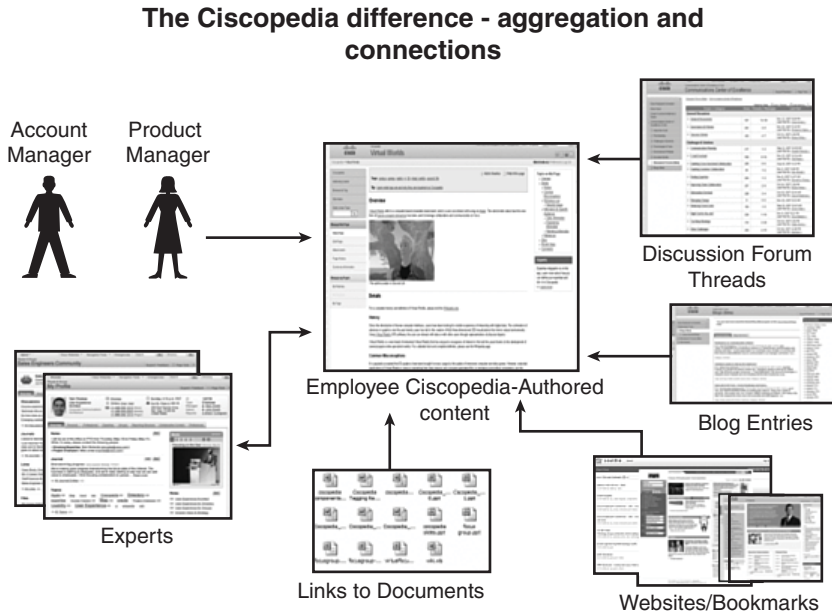
- Educate users.
- Share associated resources.
- Serve as a “hub,” aggregating related information.
- Enable users to easily navigate to other relevant sources of information on the Cisco intranet.

Figure 10-11 illustrates the types of information aggregated into Ciscopedia topic pages.

In 2006, research analysts from Butler Group, an IT research and analysis company based in the U.K, reported that company productivity can be reduced by up to 10% as employees waste time searching—or searching ineffectively—for information.[45] When fully realized, Ciscopedia will provide a searchable, centralized location for employee-authored content and knowledge-sharing by subject matter experts. Ciscopedia will enable users to quickly and easily find information aggregated from other sources, including blog entries, discussion forum threads, websites, bookmarks, and documents, increasing overall employee productivity.[46]

The Intranet Strategy Group vision also identified communities as a key piece of Cisco’s Web 2.0 strategy, enabling employees to collaborate with others who have similar expertise



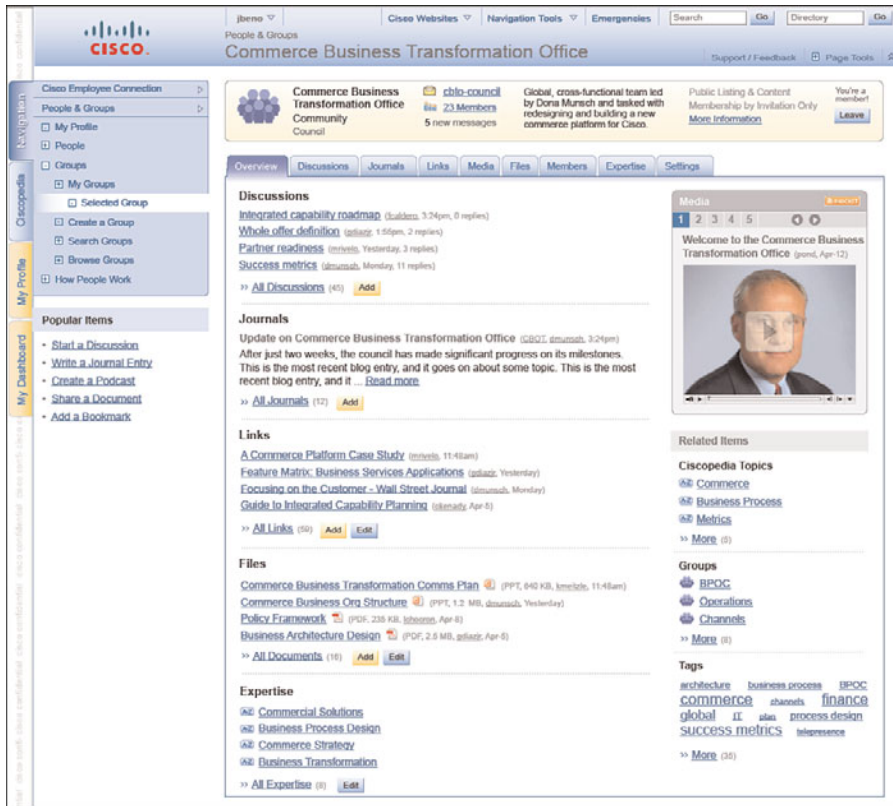


**Figure 10-11** *Ciscopedia topical information hub of employee-authored content.[44]*

and interests. Figure 10-12 shows a prototype for a community page focused on Cisco's Commerce Business Transformation Office. The community page contains information specifically designed to meet the interests and information needs of its members.

A key piece of Cisco's Web 2.0 strategy is enabling more effective connections and capabilities based on the interrelationships between people, information, and communities. As mentioned earlier, Cisco Directory pages currently contain information about people and their expertise. These people-specific pages will evolve to link to their blog entries, rich media, such as videos and podcasts they've created, their interests and expertise, the communities they're part of, their recent bookmarks, and other recent activities, such as discussion forum posts, presentations, etc. Directory pages will also contain embedded Unified Communications capabilities, described in Chapter 2, such as presence indicators, click-to-dial, click-to-chat, and so on, enabling the ability to connect and communicate with people in real-time.

Ciscopedia pages contain topical information, including an overview of the topic, function-specific content from sales and engineering, for example, and associated documents and tags. These information-specific pages will evolve to link to people who are experts in the topic, as well as related rich media, such as recent videos and podcasts. Ciscopedia pages will also link to other resources that are topic-related, including recent discussion forum and blog activities, links to associated communities, related content in WebEx Connect team spaces, and so on.



**Figure 10-12** Community prototype page for Commerce Business Transformation Office.[11]

Community pages, which are currently under development, will also help tie together related content distributed in other Web 2.0 technologies and tools. Community pages will contain an overview of the community; provide the ability to access community members and content in real-time; and to subscribe to community updates created and delivered via store-and-forward mechanisms, email, or Really Simple Syndication (RSS). Community pages will also list top contributors and offer links to community related content, including rich media, such as video and podcasts, a community calendar, activities of community members, as well as associated documents, tags, projects, communities, and WebEx Connect team spaces.

One key advantage of stratifying content along the lines of people, information, and communities is that it can be leveraged multiple times through cross-references. Rather than creating duplicative and redundant content, aggregated and consolidated information sources can scale to serve as a reference to multiple interests. For example, an information page on Unified Communication (UC) will be updated and referred to by experts in the UC space. That same page can also be updated and referenced by sales and engineering communities focused on UC.

At the heart of this integrated workforce experience vision is the My Cisco view, which essentially renders the information related to me. It provides news and information in a single portal, including my profile, colleagues, communities, WebEx spaces, RSS feeds, messages, meetings, tasks, tags, and so on. The My Cisco view also enables contextual relational navigation, which means that from My View, I can click on and navigate to any of my related people, information, communities, and all the rich media they contain, including video."

## Video

The beginning of this chapter identified Cisco's anticipation of a market transition caused by the hunger for access to video leading to network-related spending expected to reach \$50 billion by 2013.[5] Video plays an important role in Cisco's Web 2.0 strategy, as well, leading to the development of its own YouTube behind the firewall, enabling employees to share information in the form of videos and photos. C-Vision is a video wiki, which enables Cisco employees to publish informal and engaging video messages in much the same way YouTube is used on the Internet.

The C-Vision portal, shown in Figure 10-13, is designed for internal Cisco use only.

The portal also offers a number of features to make video sharing easier. For example, C-Vision



**Figure 10-13** C-Vision Portal.[47]

- Enables employees to publish informal and engaging video messages captured via desktop web camera.
- Upload and download audio, video, and photos.
- Play back videos in full-screen mode.
- Tag, rate, and comment on videos.
- Create albums or favorites.
- Build groups and communities with similar interests.[47]

The Cisco video-sharing portal has become widely used, attracting over 47,000 unique viewers and a total of over 2,100 videos and over 400 photos uploaded and published in 2009.[48] Most of the video content, consists of short product reports, updates from engineering, and ideas from sales. This content has been created by employees recording video via their desktop camera and uploading it to the site with a few mouse clicks.

C-Vision provides another avenue for information sharing and idea exchange, another water cooler to facilitate the connection and communication among Cisco employees. In the process of piloting the series of Web 2.0 technologies and tools outlined here, Cisco recognized the need to establish a program dedicated to communication, collaboration, and Web 2.0 to help manage the explosion of Web 2.0 technology adoption, to ensure scalability and reduce the threat of network overload. Let's now turn our attention to learn more about that program.

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## Communications Center of Excellence (CCoE)

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In 2007, the foundational efforts of the Intranet Strategy Group described in the chapter led to the establishment of the Communications Center of Excellence (CCoE). According to Burns, the cross-functional CCoE initiative was chartered to bring together the resources of the community to provide guidance on the right tools to use to solve specific communications needs. The scope of these communications needs included everything from email to web to rich media.

The underlying CCoE value proposition focused on consolidation and alignment of ongoing Web 2.0 activities, which led to its formation. For example, CCoE

- Helps drive an enterprise collaboration framework, using collaborative tools.
- Harnesses energy (and funding!) to create better, broader capabilities, which can be leveraged by all.
- Avoids spending additional resources and funding on siloed, often redundant activities.

The value of consolidating efforts to drive adoption of collaborative tools more holistically across the company was soon realized as teams began to contribute resources and content toward the effort.

The original CCoE website, shown in Figure 10-14, was created to consolidate this enterprise Web 2.0 technology content in one location.



**Figure 10-14** Original Communications Center of Excellence website.[11]

Some of the content Burns and team provided on the CCoE site include

- Web 2.0 technology pages, with info for getting started
- Technology roadmaps
- Communications challenges
- Solutions, best practices, and success stories
- Discussion forums
- News blog and project update blog
- One-minute video overviews
- Process and policies[11]

Since that time, Cisco's Web 2.0 initiative has gone through an organizational change, resulting in the establishment of the groups currently leading Cisco's adoption of Web 2.0 technology, introduced in Chapter 1:

- **Corporate Communications Architecture (CCA)**, the business organization led by Jim Grubb, vice president of corporate communications, which evolved from the original Intranet Strategy Group, is focused on communication with internal employees as well as external audiences and includes Executive Technical Marketing, Collaboration Business Services, and Collaboration Business Technologies. The fact that the Corporate Communications team is also focused on rich media, such as video, synergizes and accelerates the incorporation of rich media into the people, information, community, and My Cisco pages, which comprise Cisco's integrated workforce experience.
- **Communications & Collaboration IT (CCIT)**, the IT organization led by Sheila Jordan, vice president of information technology, communications, and collaboration technology, is building the architecture to enable key business processes including communication, collaboration, delivery of employee services, innovation, and management.[50]
- **Communications & Collaboration Delivery Team (CCDT)**, the team formed out of these two organizations, is now leading the Web 2.0 technology delivery effort.

These teams now partner to build out the latest version of the CCoE site, shown in Figure 10-15. Today, CCoE provides employees with the information they need to effectively use Web 2.0 technologies to get engaged and increase both internal and external collaboration across the company. For example, the CCoE site provides

- **Vision, Strategy and Initiatives**, providing information on plans for the future and strategic imperatives designed to achieve that vision.



**Figure 10-15** *Communications Center of Excellence (CCoE).[51]*



- **Technology Roadmap**, laying out plans for Cisco, Web 2.0, personalization technologies, and related applications and services for the fiscal year.
- **Communications & Collaboration Guide**, tools and quick reference guides designed to help employees understand how and when to use each technology.
- **Communications & Collaboration Learning**, providing information on training series and other learning materials.
- **Technologies & Tools**, offering information on each of the various Web 2.0 technologies and tools, including availability, quick reference info, overview, and related discussions.
- **Collaboration Across Cisco**, showcasing and rewarding initiatives that implement Web 2.0 technologies to enable collaboration with employees, customers, and partners in an exceptional way.
- **Executive Communications**, offering tools and templates to enable more consistent, effective executive communications.
- **Governance and Policies**, providing links to the Cisco Code of Business Conduct and Social Networking Handbook, which provides policies, procedures, guidelines, and best practices in employee Web 2.0 technology use.
- **Success Stories**, focused on bringing stories on the Human Network Effect to light.
- **Discussions**, providing a list of discussion forums, organized by categories: General, Executive, Communications & Collaboration Guide, or Technologies & Tools, and ranked by views.
- **CCoE Blog**, where team members share thoughts and news on Web 2.0 technology rollouts affecting the company.[51]

Table 10-1 shows how Cisco's Web 2.0 technology adoption and usage exploded during 2008, thanks to CCoE guidance and support. Wiki pages, for example, have grown five-fold in the last year, to eight times the number of pages of two years ago. TelePresence meetings have doubled in the last year, five times the number of two years ago. And there are now 31 times the number of WebEx Connect users than a year ago.

**Table 10-1** *Cisco's Web 2.0 Technology Adoption Metrics*[52]

Technology	Adoption Metrics		Increase of bold metrics
	February 2008	January 2009	
Blogs			
Active Blogs	<b>756</b>	<b>1,992</b>	
Registered Bloggers	<b>2,870</b>	<b>7,792</b>	3X
Published Blog Entries	3,296	11,457	
Total Comments	2,588	8,827	

*continues*

**Table 10-1** *Cisco's Web 2.0 Technology Adoption Metrics[52](continued)*

<b>Technology</b>	<b>Adoption Metrics</b>		<b>Increase of bold metrics</b>
Discussion Forums	January 2008	January 2009	
Categories	157	1,270	
Forums	312	2,847	
Threads	1,059	14,499	<b>12X</b>
Messages	3,058	44,297	
Registered Users	<b>2,582</b>	<b>32,666</b>	
Groups	41	137	
Wikis	January 2007	January 2009	
Accounts (15K Editors)		72,020	<b>5X</b>
Spaces (330/Quarter)		3,633	
Pages (18K/Quarter)	<b>35,621</b>	<b>187,280</b>	
C-Vision	January 2008	January 2009	
Video Publishers	<b>130</b>	<b>2,108</b>	<b>16X</b>
Photo Publishers	40	438	
Videos Uploaded	<b>300</b>	<b>6,797</b>	
Photos Published	100	3,475	<b>23X</b>
Unique Viewers	3,257	46,871	
TelePresence	January 2008	January 2009	
Meetings	<b>90,000</b>	<b>215,833</b>	<b>2X</b>
WebEx Connect	January 2008	January 2009	
Users	<b>1,000</b>	<b>31,047</b>	<b>31X</b>
Spaces	2,500	66,816	
Documents	2,000	238,310	
CCoE Website	January 2008	January 2009	
Unique Users	24,608	57,019	<b>2X</b>
Visits	26,868	63,935	
Hits	<b>37,450</b>	<b>89,890</b>	

In January 2009, the CCoE site had nearly 90,000 hits, more than double the number measured a year earlier. The most hit pages in January 2009: CCoE Home, WebEx, RSS Publishers, Directory, and Blogs.[23] The next step in our ongoing metrics gathering process will be to identify and measure the business impact of these technologies: reduced



search time, improved access to information, reduced email, faster and more effective decision-making, and increased ability to solve the more difficult problems, for Cisco and perhaps the world. In the words of vice president Jim Grubb, known as John Chamber's product "Demo Guy," "Collaboration this way helps a world community solve big problems."[5]

## Communication and Collaboration Board

In keeping with the Cisco distributed leadership model, a cross-functional Communication and Collaboration (C&C) Board was established in late 2007. Its mission is to drive more effective communication and collaboration at Cisco through the innovative use of Web 2.0 technologies and tools. The Board, whose members are shown in Figure 10-16, is responsible for delivering the vision, policies, and strategy and defining the architectural framework.



**Figure 10-16** *Communication and Collaboration Board members.*[53]

The Board meets regularly to review Web 2.0 technology roadmaps presented by the collaboration delivery team. Board meetings also enable members to hear read-outs from its other subcommittees focused on areas such as technical integration, metrics and value proposition, governance and policies, communication, and organization adoption. Each cross-functional Board member works to foster more effective collaboration in his or her function.

C&C Board members also serve as the conduit for functional requirements to the Board and for collaboration communications from the Board to the functional organization—a true model of collaborative leadership in action! Many of the dramatic increases in Web 2.0 technology adoption have been a direct result of CCoE and C&C Board efforts to drive a collaboration framework based on Web 2.0 technologies and tools across the company. Now let's talk about the future of Web 2.0 at Cisco.

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## Cisco 3.0

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Cisco is evolving into the next generation company—Cisco 3.0, re-inventing itself around Web 2.0 and then taking the lessons learned to its customers. The company is evolving organizationally to distribute decision-making, innovate faster, bring products to market sooner, and capitalize on market transitions, such as ubiquitous video and visual networking. Cisco's Linksys Wireless Home products, for example, enable consumers to easily manage music, photos, and video content stored in home devices and across the network.

Cisco is using Web 2.0 technologies such as Cisco TelePresence, Cisco WebEx, and Unified Communications to enable collaboration between employees, partners, and customers, yielding increased productivity and deeper relationships. Cisco's Q3 Company Meeting in February 2009 was held virtually over live video on Cisco TV, Cisco's internal video channel, from its campus in Bangalore, India, with employees around the globe watching on IPTV or taking part via TelePresence. CEO John Chambers uses TelePresence to meet with a dozen customers in Russia; meetings and travel that would have taken 96 hours now take 8 hours, enabling Chambers to meet with twice as many customers and cut his travel schedule in half.

TelePresence is greener, faster, and cheaper than air travel and enables employees, family and friends to connect in new ways. In the future, consumers will leverage the visual networking capability of TelePresence, part of the media-enabled connected home, to interact with friends and family members across the country or around the globe—talking, sharing special events, or even watching sporting events together.[54] According to popular cartoonist, Scott Adams, even Dilbert uses TelePresence.[55]

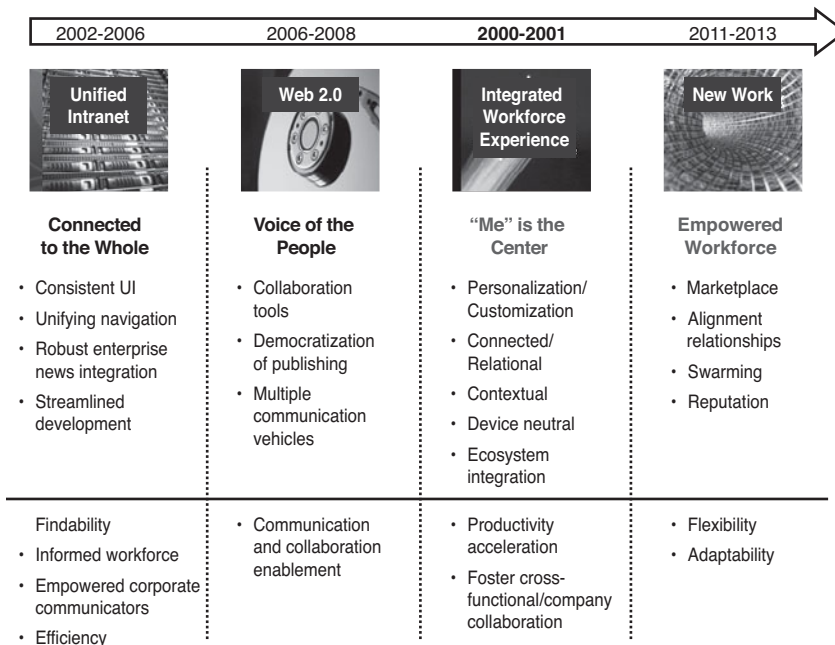
Other Web 2.0 technologies, such as blogs and wikis, and new business models, such as social networking, folksonomies, and even virtual realities, are enabling the company to increase peer-to-peer collaboration and ideation, and to transform key business processes. The capability to connect people, information, and communities is leading to a more collaborative and connected company, where technologies such as discussion forums, wikis, and WebEx Connect are seeing explosive growth and adoption. Cisco is also leveraging new technologies to interact with its customers with evolutionary new approaches such as “Digital Cribbs,” mentioned earlier.

Cisco provides customers with insight into the key business trends, such as collaboration through the <http://www.cisco.com/en/US/netsol/ns870/index.html> link on its Cisco.com site, a part of its Five Ways to Thrive initiative described in Chapter 11. Cisco has even had a presence in the web-based virtual world, Second Life, since December 2006, offering a way for Cisco to interact with the public and broaden brand awareness in a virtual environment that is creative and fun.[56][57] Although recent news reports tout the end of

Second Life, it has afforded Cisco a set valuable learning experiences in this new medium, being leveraged by Cisco in other virtual environments.[58] Cisco's Partner Space, a Cisco-sponsored virtual community for example, is discussed in Chapter 11, which is focused on Cisco's approach to Sales 2.0.

Cisco's intranet evolution, depicted in Figure 10-17, is enabling an agile and collaborative workforce. Between 2002 and 2006, the focus was on a Unified Intranet, where employees and information are more and more connected. It began by establishing a consistent user interface, unifying navigation, integrating enterprise news, and streamlining intranet page development. This period enabled a more informed workforce, empowering corporate communications and increasing findability of content and enabling efficiency. Between 2006 and 2008, the focus was on Web 2.0 collaboration tools; the democratization of publishing; the establishment of multiple communication vehicles: blogs, discussion forums, and wikis; enabling communication and collaboration.

### Cisco's Intranet Evolution



### Enabling an Agile and Collaborative Workforce

**Figure 10-17** Cisco's Intranet Evolution.

The current intranet evolution focus, on the Integrated Workforce Experience, began in 2008 and is expected to continue into 2011. With "me" in the center, personalization and customization are key, as are the connected and relational nature of workforce experience components: people, information and communities, their contextual elements, and the importance of device neutrality. Ecosystem partners and customers are being integrated,

productivity is being accelerated, and cross-functional/cross-company collaboration is fostered as a key part of resulting business process transformation.

Between 2011 and 2012, Cisco's intranet evolution will focus on New Work. In this phase, employees will be able to find projects and initiatives they would like to work on advertised in a marketplace, swarming to participate in activities with other members of the community. Alignment and relationships will be critical to success as will digital reputation, established by what employees say and do via collaborative technologies and tools. Flexibility and adaptability will also be important elements of the empowered workforce, as communities and teams will self-organize around the work effort.

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## In Short

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This chapter began by briefly explaining why Web 2.0 and the “Web as a Platform” concept resonated so well with Cisco, the “Network as a Platform” company. Then it examined how the Intranet Strategy Group helped drive collaborative technology adoption across the company. It explored Cisco adoption of several technologies: blogs, discussion forums, and wikis, providing examples of each. It outlined some of the basic details of these implementations and shared guidelines and tips, drawn from some of the most successful implementations, Jere King's blog and Collaboratory, for example.

Next, the chapter described some of the services and tools Cisco developed using these technologies as a part of the Intranet Strategy Group vision: Directory 3.0 and C-Vision. It provided snapshots and details about these tools to provide insight into how Web 2.0 technologies and services continue to evolve and provide value to the business. As the statistics shown in the chapter indicate, these technologies and tools have been hugely successful and have enabled the organization to identify expertise and begin forming communities of interest.

Finally, the chapter identified a few of the organizational changes that have occurred as Cisco continues to place an emphasis on the importance of Web 2.0 technologies and tools in our efforts to transform the company into a more collaborative organization. The CCoE and C&C Board have begun to drive a more cohesive architectural framework for collaboration across the company. They have also consolidated many of the fragmented and sometimes redundant efforts, as teams now collaborate on collaborative initiatives.

So, what's ahead for FY09 and beyond? Much can be said for the work that's already gone into the evolution of Web 2.0 technology and tools at Cisco, but there is still much more work ahead. The goal is to continue driving productivity, growth, and innovation, leveraging Web 2.0 technologies such as Directory 3.0 and Ciscopedia, for example.

Web 2.0 technologies enable Cisco to connect to the right people, resources, and information at the right time, but also to drive a more integrated workforce experience. As Cisco continues to become more adept as a company in the use of Web 2.0 technologies, it leverages its power to communicate more effectively and efficiently and to collaborate both internally and externally with employees, customers, and partners. But above all, Cisco continues to change the way people “live, work, play, and learn,”<sup>SM</sup> with the “Network as the Platform.”

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