8

Synergistic Union of IT and Organizational Learning

Introduction

This chapter presents case studies that demonstrate how information technology (IT) and organizational learning occur in the real corporate world. It examines the actual processes of how technological and organizational learning can be implemented in an organization and what management perspectives can support its growth so that forms of responsive organizational dynamism can be formed and developed. I will demonstrate these important synergies through three case studies that will show how the components of responsive organizational dynamism, strategic integration and cultural assimilation, actually operate in practice.

Siemens AG

The first case study offers a perspective from the chief information officer (CIO). The CIO of Siemens of the Americas at the time of this study was Dana Deasy, and his role was to introduce and expand the use of e-business across 20 discrete businesses. The Siemens Corporation worldwide network was composed of over 150 diverse sets of businesses, including transportation, healthcare, and telecommunications. Deasy's mission was to create a common road map across different businesses and cultures. What makes this case so distinct from others is that each business is highly decentralized under the umbrella of the Siemens Corporation. Furthermore, each company has its own mission; the companies have never been asked to come together and discuss common issues with regard to technology. That is, each business focused on itself as opposed to the entire

organization. Deasy had to deal with two sectors of scope and hence, two levels of learning: the Americas as a region and the global firm internationally.

The challenge was to introduce a new e-business strategy from the top-down in each business in the Americas and then to integrate it with the global firm. Ultimately, the mission was to review what each business was doing in e-business and to determine whether there was an opportunity to consolidate efforts into a common direction.

IT was, for the most part, viewed as a back-office operation—handling services of the company as a support function as opposed to thinking about ways to drive business strategy. In terms of IT reporting, most CIOs reported directly to the chief financial officer (CFO). While some IT executives view this as a disadvantage because CFOs are typically too focused on financial issues, Deasy felt that a focus on cost containment was fine as long as the CIO had access to the chief executive officer (CEO) and others who ultimately drove business strategy. So, the real challenge was to ensure that CIOs had access to the various strategic boards that existed at Siemens.

What are the challenges in transforming an organization the size of Siemens? The most important issue was the need to educate CIOs on the importance of their role with respect to the business as opposed to the technology. As Deasy stated in an interview, "Business must come first and we need to remind our CIOs that all technology issues must refer back to the benefits it brings to the business." The question then is how to implement this kind of learning.

Perhaps the best way to understand how Siemens approached this dilemma is to understand Deasy's role as a corporate CIO. The reality is that there was no alternative but to create his position. What drove Siemens to this realization was fear that they needed someone to drive e-business, according to Deasy—fear of losing competitive edge in this area, fear that they were behind the competition and that smaller firms would begin to obtain more market share. Indeed, the growth of e-business occurred during the dot-com era, and there were huge pressures to respond to new business opportunities brought about by emerging technologies, specifically the Internet. It was, therefore, a lack of an internal capacity, such as responsive organizational dynamism, that stimulated the need for senior management to get involved and provide a catalyst for change.

The first aspect of Siemens's approach can be correlated to the strategic integration component of responsive organizational dynamism. We see that Siemens was concerned about whether technology was properly being integrated in strategic discussions. It established the Deasy role as a catalyst to begin determining the way technology needed to be incorporated within the strategic dimension of the business. This process cannot occur without executive assistance, so evolutionary learning must first be initiated by senior management. Unfortunately, Deasy realized early on that he needed a central process to allow over 25 CIOs in the Americas to interact regularly. This was important to understand the collective needs of the community and to pave the way for the joining of technology and strategic integration from a more global perspective. Deasy established an infrastructure to support open discourse by forming CIO forums, similar to communities of practice, in which CIOs came together to discuss common challenges, share strategies, and have workshops on the ways technology could help the business. Most important at these forums was the goal of consolidating their ideas and their common challenges.

There are numerous discussions regarding the common problems that organizations face regarding IT expenditures, specifically the approach to its valuation and return on investment (ROI). While there are a number of paper-related formulas that financial executives use (e.g., percentage of gross revenues within an industry), Deasy utilized learning theories, specifically, communities of practice, to foster more thinking and learning about what was valuable to Siemens, as opposed to using formulas that might not address important indirect benefits from technology. In effect, Deasy promoted learning among a relatively small but important group of CIOs who needed to better understand the importance of strategic innovation and the value it could bring to the overall business mission. Furthermore, these forums provided a place where CIOs could develop their own community—a community that allowed its members to openly participate in strategic discourse that could help transform the organization. It was also a place to understand the tacit knowledge of the CIO organization and to use the knowledge of the CIOs to summarize common practices and share them among the other members of the community.

Most of the CIOs at Siemens found it challenging to understand how their jobs were to be integrated into business strategy. Indeed, this is not a surprise. In Chapter 1, I discuss the feedback from my research on CEO evaluation of technology; I found that there were few IT executives who were actually involved in business strategy. Thus, the organization sought to create an advocate in terms of a centralized corporate headquarter that could provide assistance as opposed to forcing compliance. That is, it sought a structure with which to foster organizational learning concepts and develop an approach to create a more collective effort that would result in global direction for IT strategic integration.

To establish credibility among the CIO community, Deasy needed to ensure that the CIOs of each individual company were able to interact with board-level executives. In the case of Siemens, this board is called the president's council. The president's council has regularly held meetings in which each president attends and receives presentations on ideas about the regional businesses. Furthermore, there are quarterly CFO meetings as well, where CIOs can participate in understanding the financial implications of their IT investments. At the same time, these meetings provided the very exposure to the executive team that CIOs needed. Finally, Deasy established a CIO advisory board comprised of CIOs who actually vote on the common strategic issues and thus manage the overall direction of technology at Siemens. Each of these groups established different types of communities of practice that focused on a specific aspect of technology. The groups were geared to create better discourse and working relationships among these communities to, ultimately, improve Siemens's competitive advantage. The three communities of practice at work in the Siemens model—executive, finance, and technology—suggest that having only one general community of practice to address technology issues may be too limiting. Thus, theories related to communities of practice may need to be expanded to create discourse among multiple communities. This might be somewhat unique for IT, not in that there is a need for multiple communities, but that the same individuals must have an identity in each community. This shows the complexity of the CIO role today in the ability to articulate technology to different types and tiers of management. Figure 8.1 shows the interrelationships among the CIO communities of practice at Siemens.

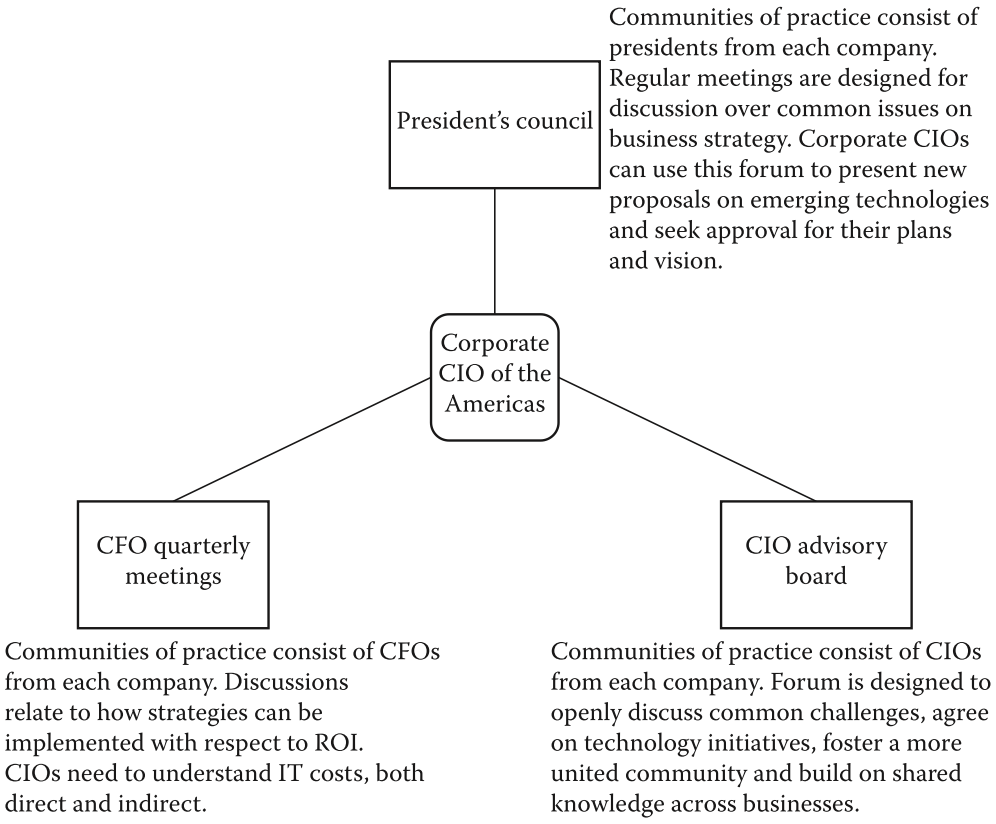

Figure 8.1 Inter-relationships among CIO communities of practice at Siemens.

Another way to represent these communities of practice is to view them as part of a process composed of three operating levels. Each level represents a different strategic role of management that is responsible for a unique component of discourse and on the authorization for uses of technology. Therefore, if the three different communities of practice are viewed strategically, each component could be constructed as a process leading to overall organizational cooperation, learning, and strategic integration as follows:

Tier 1: CIO Advisory Board: This community discusses issues of technology standards, operations, communications, and initiatives that reflect technology-specific areas. Such issues are seen as CIO specific and only need this community's agreement and justification. However, issues or initiatives that require financial approval, such as those that may not yet be budgeted or approved, need to be discussed with group CFOs. Proposals to executive management—that is, the President's Council—also need prior approval from the CFOs.

Tier 2: CFO Quarterly: CFOs discuss new emerging technologies and ascertain their related costs and benefits (ROI). Those technologies that are already budgeted can be approved based on agreed ROI scenarios. Proposals for new technology projects are approved in terms of their financial viability and are prepared for further discussion at the President's Council.

Tier 3: President's Council: Proposals for new technology projects and initiatives are discussed with a focus on their strategic implications on the business and their expected outcome.

Deasy realized that he needed to create a common connection among these three communities. While he depended on the initiatives of others, he coordinated where these CIO initiatives needed to be presented, based on their area of responsibility.

Graphically, this can be shown as a linear progression of community-based discussions and approvals, as in Figure 8.2.

The common thread to all three tiers is the corporate CIO. Deasy was active in each community; however, his specific activities within each community of practice were different. CIOs needed to establish peer relationships with other CIOs share their tacit knowledge and contribute ideas that could be useful to other Siemens companies. Thus, CIOs needed to transform their personal views of technology and expand them to a group-level perspective. Their challenge was to learn how to share concepts and how to understand new ones that emanated at the CIO advisory board level. From this perspective, they could create the link between the local strategic issues and those discussed at the regional and global levels, as shown in Figure 8.3.

Using this infrastructure, Siemens's organizational learning in technology, occurred at two levels of knowledge management. The first is represented by Deasy's position, which effectively represents a top-down structure to initiate the learning process. Second, are the tiers of communities of practice when viewed hierarchically. This view reflects a more bottom-up learning strategy, with technological opportunities initiated by a community of regional, company CIOs, each representing the specific interests of their companies or specific lines of business. This view can also be structured as an evolutionary cycle in which top-down management is used to initiate organizational learning from the bottom-up, the bottom, in this case, represented by

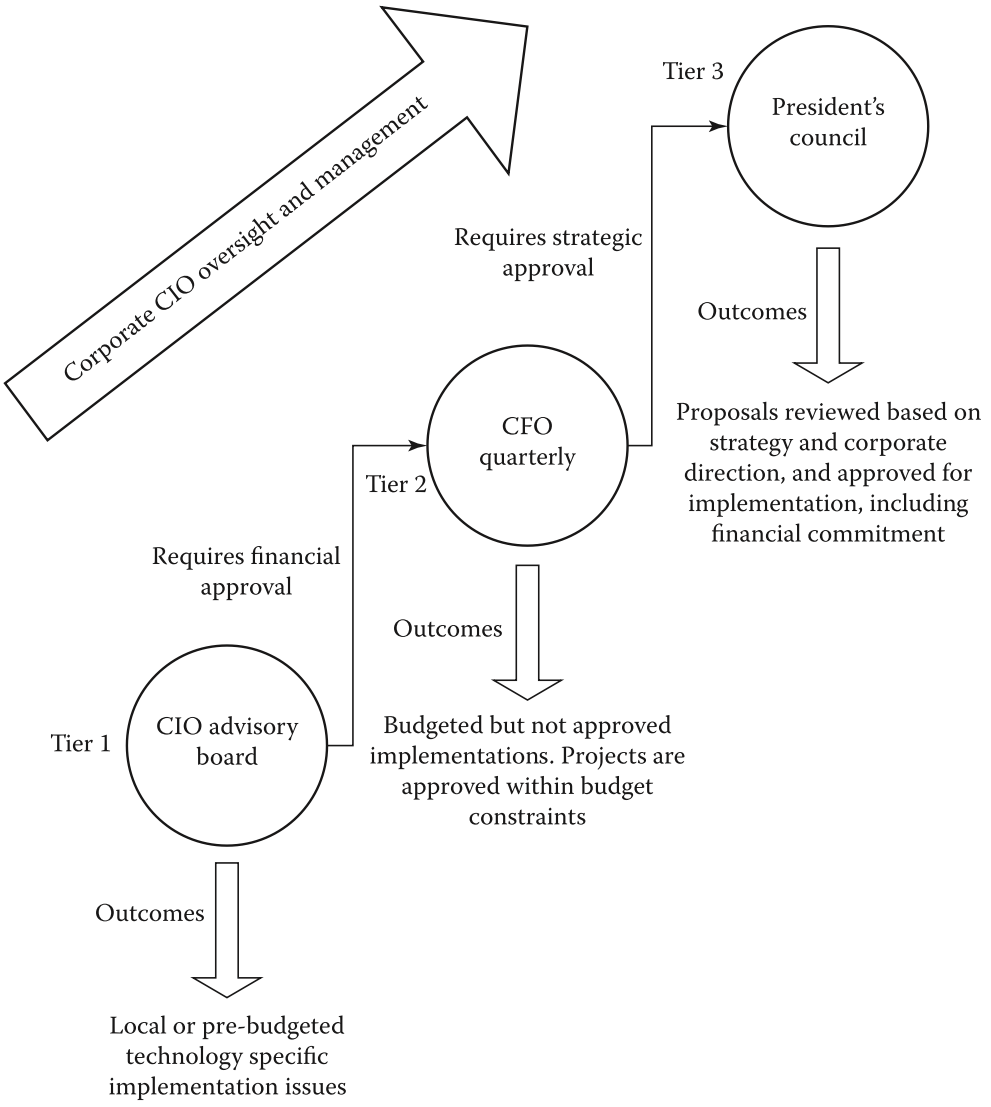

Figure 8.2 Siemens' community-based links.

local operating company CIOs. This means that the CIO is seen relatively, in this case, as the lower of the senior management population. Figure 8.4 depicts the CIO as this "senior lower level."

From this frame of reference, the CIO represents the bottom-up approach to the support of organizational learning by addressing the technology dilemma created by technological dynamism—specifically, in this case, e-business strategy.

The role of IT in marketing and e-business was another important factor in Siemens's model of organizational learning. The technology strategy at Siemens was consistent with the overall objectives of the organization: to create a shared environment that complements each

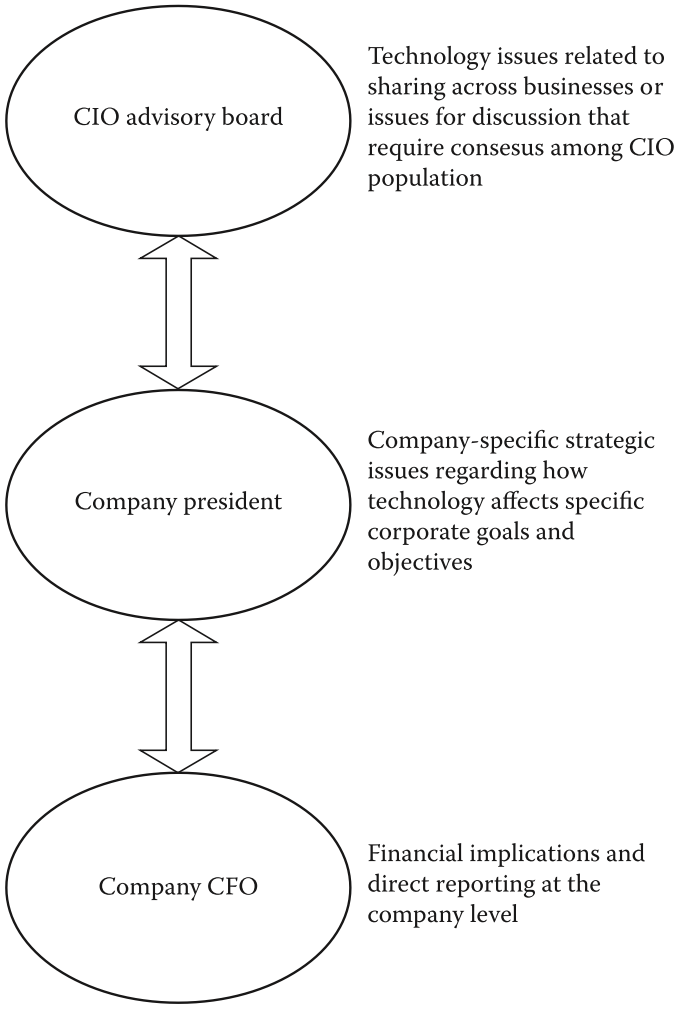

Figure 8.3 Siemens' local to global links.

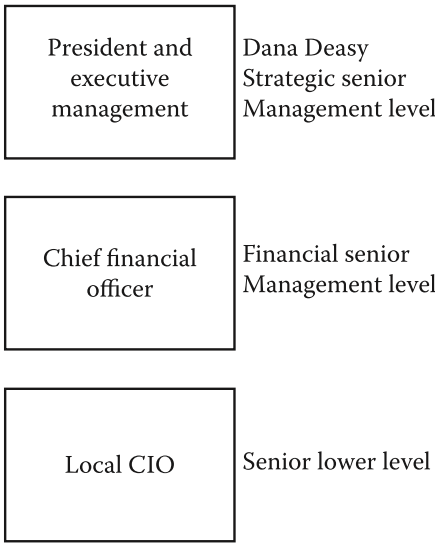

Figure 8.4 CIO as the "senior lower level."

business by creating the opportunity to utilize resources. This shared environment became an opportunity for IT to lead the process and become the main catalyst for change. I discuss this kind of support in Chapter 5, in which I note that workers see technology as an acceptable agent of change. Essentially, the CIOs were challenged with the responsibility of rebranding their assets into clusters based on their generic business areas, such as hospitals, medical interests, and communications. The essence of this strategic driver was to use e-business strategy to provide multiple offerings to the same customer base.

As with the Ravell case discussed in Chapter 1, the Siemens case represents an organization that was attempting to identify the driver component of IT. To create the driver component, it became necessary for executive management to establish a corporate position (embodied by Deasy) to lay out a plan for transformation, through learning and through the use of many of the organizational learning theories presented in Chapter 4.

The Siemens challenge, then, was to transform its CIOs from being back-office professionals to proactive technologists focused primarily on learning to drive business strategy. That is not to say that back-office issues became less important; they became, instead, responsibilities left to the internal organizations of the local CIOs. However, back-office issues can often become strategic problems, such as with the use of e-mail. This is an example of a driver situation even though it still pertains to a support concern. That is, back-office technologies can indeed be drivers, especially when new or emerging technologies are available. As with any transition, the transformation of the CIO role was not accomplished without difficulty. The ultimate message from executive management to the CIO community was that it should fuse the vital goals of the business with its technology initiatives. Siemens asked its CIOs to think of new ways that technology could be used to drive strategic innovations. It also required CIOs to change their behavior by asking them to think more about business strategy.

The first decision that Deasy confronted was whether to change the reporting structure of the CIO. Most CIOs at Siemens reported directly to the CFO as opposed to the CEO. After careful thought, Deasy felt that to whom the CIO reported was less important than giving access and exposure to the President's Council meetings. It was Deasy's perspective that only through exposure and experience could

CIOs be able to transform from back-office managers to strategic planners. As such, CIO training was necessary to prepare them for participation in communities of practice. Eventually, Siemens recognized this need and, as a result, sponsored programs, usually lasting one week, in which CIOs would be introduced to new thinking and learning by using individual-based reflective practices. Thus, we see an evolutionary approach, similar to that of the responsive organizational dynamism arc, presented in Chapter 4; that is, one that uses both individual and organizational learning techniques.

Deasy also understood the importance of his relationship and role with each of the three communities of practice. With respect to the CEOs of each company, Deasy certainly had the freedom to pick up the phone and speak with them directly. However, this was rarely a realistic option as Deasy knew early on that he needed the trust and cooperation of the local CIO to be successful. The community with CEOs was then broadened to include CIOs and other senior managers. This was another way in which Deasy facilitated the interaction and exposure of his CIOs to the executives at Siemens.

Disagreement among the communities can and does occur. Deasy believed in the "pushing-back" approach. This means that, inevitably, not everyone will agree to agree, and, at times, senior executives may need to press on important strategic issues even though they are not mutually in agreement with the community. However, while this type of decision appears to be contrary to the process of learning embedded in communities of practice learning, it can be a productive and acceptable part of the process. Therefore, while a democratic process of learning is supported and preferred, someone in the CIO position ultimately may need to make a decision when a community is deadlocked.

The most important component of executive decision making is that trust exists within the community. In an organizational learning infrastructure, it is vital that senior management share in the value proposition of learning with members of the community. In this way, members feel that they are involved, and are a part of decision making as opposed to feeling that they are a part of a token effort that allows some level of participation. As Deasy stated, "I was not trying to create a corporate bureaucracy, but rather always representing myself as an ambassador for their interest, however, this does not

guarantee that I will always agree with them." Disagreements, when managed properly, require patience, which can result in iterative discussions with members of the community before a consensus position may be reached, if it is at all. Only after this iterative process is exhausted does a senior overarching decision need to be made. Deasy attributed his success to his experience in field operations, similar to those of his constituents. As a prior business-line CIO, he understood the dilemma that many members of the community were facing. Interestingly, because of his background, Deasy was able to "qualify" as a true member of the CIO community of practice. This truth establishes an important part of knowledge management and change management—senior managers who attempt to create communities of practice will be more effective when they share a similar background and history with the community that they hope to manage. Furthermore, leaders of such communities must allow members to act independently and not confuse that independence with autonomy. Finally, managers of communities of practice are really champions of their group and as such must ensure that the trust among members remains strong. This suggests that CIO communities must first undergo their own cultural assimilation to be prepared to integrate with larger communities within the organization.

Another important part of Deasy's role was managing the technology itself. This part of his job required strategic integration in that his focus was more about uses of technology, as opposed to community behavior or cultural assimilation. Another way of looking at this issue is to consider the ways in which communities of practice actually transform tacit knowledge and present it to senior management as explicit knowledge. This explicit knowledge about uses of technology must be presented in a strategic way and show the benefits for the organization. The ways that technology can benefit a business often reside within IT as tacit knowledge. Indeed, many senior managers often criticize IT managers for their inability to articulate what they know and to describe it so that managers can understand what it means to the business. Thus, IT managers need to practice transforming their tacit knowledge about technology and presenting it effectively, as it relates to business strategy.

Attempting to keep up with technology can be a daunting, if not impossible, task. In some cases, Siemens allows outside consultants

to provide help on specific applications if there is not enough expertise within the organization. The biggest challenge, however, is not necessarily in keeping up with new technologies but rather, in testing technologies to determine exactly the benefit they have on the business. To address this dilemma, Deasy established the concept of "revalidation." Specifically, approved technology projects are reviewed every 90 days to determine whether they are indeed providing the planned outcomes, whether new outcomes need to be established, or whether the technology is no longer useful. The concept of revalidation can be associated with my discussion in Chapter 3, which introduced the concept of "driver" aspects of technology. This required that IT be given the ability to invest and experiment with technology to fully maximize the evaluation of IT in strategic integration. This was particularly useful to Deasy, who needed to transform the culture at Siemens to one that recognized that not all approved technologies succeed. In addition, he needed to dramatically alter the application development life cycle and reengineer the process of how technology was evaluated by IT and senior management. This challenge was significant in that it had to be accepted by over 25 autonomous presidents, who were more focused on short and precise outcomes from technology investments.

Deasy was able to address the challenges that many presidents had in understanding IT jargon, specifically as it related to benefits of using technology. He engaged in an initiative to communicate with non-IT executives by using a process called *storyboarding.* Storyboarding is the process of creating prototypes that allow users to actually see examples of technology and how it will look and operate. Storyboarding tells a story and can quickly educate executives without being intimidating. Deasy's process of revaluation had its own unique life cycle at Siemens:

1. Create excitement through animation. What would Siemens be like if ... ?
2. Evaluate the way the technology would be supported.
3. Recognize implementation considerations about how the technology as a business driver is consistent with what the organization is doing and experiencing.

4. Technology is reviewed every 90 days by the CIO advisory board after experimental use with customers and presented to the president's council on an as-needed basis.
5. Establish responsive organizational dynamism with cultural assimilation; that is, recognize the instability of technology and that there are no guarantees to planned outcomes. Instead, promote business units to understand the concept of "forever prototyping."

Thus, Siemens was faced with the challenge of cultural assimilation, which required dramatic changes in thinking and business life cycles. This process resembles Bradley and Nolan's (1998) *Sense and Respond*—the ongoing sensing of technology opportunities and responding to them dynamically. This process disturbs traditional and existing organizational value chains and therefore represents the need for a cultural shift in thinking and doing. Deasy, using technology as the change variable, began the process of reinventing the operation of many traditional value chains.

Siemens provides us with an interesting case study for responsive organizational dynamism because it had so many diverse companies (in over 190 countries) and over 425,000 employees. As such, Siemens represents an excellent structure to examine the importance of cultural assimilation. Deasy, as a corporate CIO, had a counterpart in Asia/Australia. Both corporate CIOs reported to a global CIO in Germany, the home office of Siemens. There was also a topic-centered CIO responsible for global security and application-specific planning software. This position also reported directly to the global CIO. There were regional and local CIOs who focused on specific geographical areas and vertical lines of business and operating company CIOs. This organization is shown in Figure 8.5.

Deasy's operation represents one portion (although the most quickly changing and growing) of Siemens worldwide. Thus, the issue of globalization is critical for technologies that are scalable beyond regional operating domains. Standardization and evaluations of technology often need to be ascertained at the global level and as a result introduce new complexities relating to cultural differences in business methods and general thinking processes. Specifically, what works in one country may not work the same way in another. Some of these

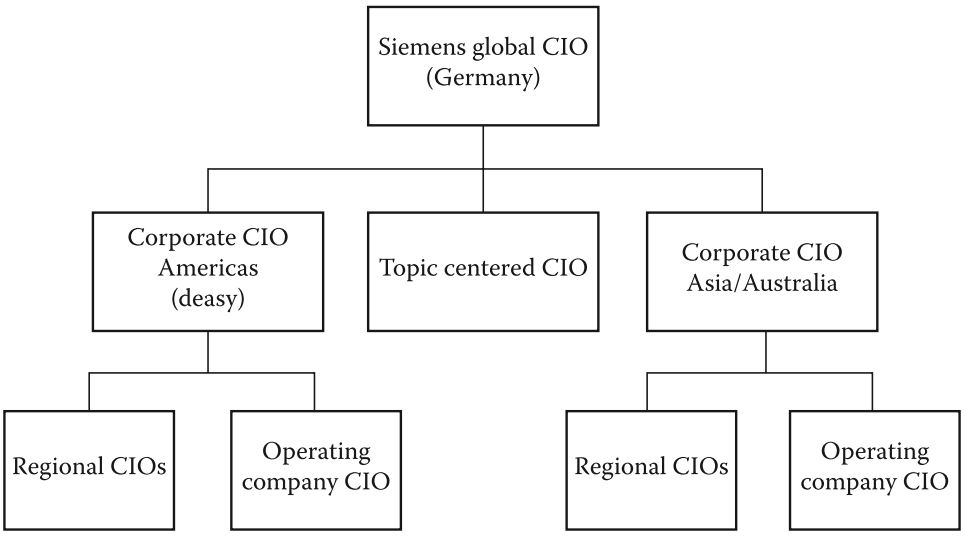

Figure 8.5 Siemens' CIO organization.

matters can be legally based (e.g., licensing of software or assumptions about whether a technology is legally justified). To a large extent, solving legal matters relating to technology is easier than cultural ones.

Cultural assimilation matters about technology typically occur in global organizations with respect to acceptability of operational norms from one country to another. This becomes a particularly difficult situation when international firms attempt to justify standards. At Siemens, Deasy introduced three "standards" of technology that defined how it could be used across cultures, and communities of practice:

1. *Corporate services*: These are technologies that are required to be used by the business units. There are central service charges for their use as well.
2. *Mandatory services*: Everyone must comply with using a particular type of application; that is, mandatory software based on a specific type of application. For example, if you use a Web browser, it must be Internet Explorer.
3. *Optional*: These are technologies related to a specific business and used only within a local domain. There may be a preferred solution, but IT is not required to use it.

This matrix of standards allows for a culture to utilize technologies that are specific to its business needs, when justified. Standards at Siemens are determined by a series of steering committees, starting

at the regional level, that meet two to three times annually. Without question, implementing standards across cultures is, as Deasy phrased it, "a constant wrestling match which might need to change by the time a standard is actually reached." This is why strategic integration is so important, given the reality that technology cannot always be controlled or determined at senior levels. Organizations must be able to dynamically integrate technology changes parallel to business changes.

Deasy's longer-term mission was to provide a community of CIOs who could combine the business and technology challenges. It was his initial vision that the CIO of the future would be more involved than before with marketing and value chain creation. He felt that "the CIO community needed to be detached from its technology-specific issues or they would never be a credible business partner." It was his intent to establish organizational learning initiatives that helped CIOs "seize and succeed," to essentially help senior management by creating vision and excitement, by establishing best practices, and by learning better ways to communicate through open discourse in communities of practice.

Three years after his initial work, I reviewed the progress that Deasy had made at Siemens. Interestingly, most of his initiatives had been implemented and were maturing—except for the role of e-business strategy. I discovered, after this period, that the organization thought that e-business was an IT responsibility. As such, they expected that the CIOs had not been able to determine the best business strategy. This was a mistake; the CIO could not establish strategy but rather needed to react to the strategies set forth by senior management. This means that the CIO was not able to really establish stand-alone strategies as drivers based on technology alone. CIOs needed, as Deasy stated, "to be a participant with the business strategist and to replace this was inappropriate." This raises a number of questions:

1. Did this occur because CIOs at Siemens do not have the education and skills to drive aspects of business strategy?
2. Did the change in economy and the downfall of the dot-coms create a negative feeling toward technology as a business driver?

3. Are CEOs not cognizant enough about uses of technology, and do they need better education and skills to better understand the role of technology?
4. Is the number of communities of practice across the organization integrated enough so that IT can effectively communicate and form new cultures that can adapt to the changes brought about by emerging technologies?
5. Is there too much impatience with the evolution of technology? Does its assimilation in an organization the size of Siemens simply take too long to appreciate and realize the returns from investments in technology?

I believe that all of these questions apply, to some extent, and are part of the challenges that lie ahead at Siemens. The company has now initiated a series of educational seminars designed to provide more business training for CIOs, which further emphasizes the importance of focusing on business strategy as opposed to just technology. It could also mean the eventual establishment of a new "breed" of CIOs who are better educated in business strategy. However, it is inappropriate for non-IT managers to expect that the CIOs will be able to handle strategy by themselves; they must disconnect e-business as solely being about technology. The results at Siemens only serve to strengthen the concept that responsive organizational dynamism requires that cultural assimilation occur within all the entities of a company.

Aftermath

Dana Deasy left Siemens a few years after this case study was completed. During that time, the executive team at Siemens realized that the CIO alone could not provide business strategy or react quickly enough to market needs. Rather, such strategy required the integration of all aspects of the organization, with the CIO only one part of the team to determine strategic shifts that lead or use components of technology. Thus, the executives realized that they needed to become much better versed in technology so that they also could engage in strategic conversations. This does not suggest that executives needed technology training per se, but that they do need training that allows them to comment intelligently on technology issues. What is the best

way to accomplish this goal? The answer is through short seminars that can provide executives with terminology and familiarize them with the processes their decisions will affect. The case also raised the question of whether a new wave of executives would inevitably be required to move the organization forward to compete more effectively. While these initiatives appear to make sense, they still need to address the fundamental challenges posed by technology dynamism and the need to develop an organization that is positioned to respond (i.e., responsive organizational dynamism). We know from the results of the Ravell case that executives cannot be excluded. However, the case also showed that all levels of the organization need to be involved. Therefore, the move to responsive organizational dynamism requires a reinvention of the way individuals work, think, and operate across multiple tiers of management and organizational business units. This challenge will continue to be a difficult but achievable objective of large multinational companies.

ICAP

This second case study focuses on a financial organization called ICAP, a leading money and securities broker. When software development exceeded 40% of IT activities, ICAP knew it was time to recognize IT as more than just technical support. Stephen McDermott provided the leadership, leaving his role as CEO of the Americas at ICAP to become CEO of the Electronic Trading Community (ETC), a new entity focused solely on software development. This IT community needed to be integrated with a traditional business model that was undergoing significant change due to emerging technologies, in this specific case, the movement from voice to electronic trading systems.

This case study reflects many aspects of the operation of responsive organizational dynamism. From the strategic integration perspective, ICAP needed to understand the ways electronic trading could ultimately affect business strategy. For example, would it replace all voice-related business interactions, specifically voice trading? Second, what would be the effect on its culture, particularly with respect to the way the business needed to be organizationally structured? This study focuses on the role of the CEO as a pioneer in reexamining his own biases, which favored an old-line business process, and for developing