Within and Beyond: Understanding the Role of the CIO

By Stuart Robbins and Al Pappas

Bringing a variety of special skills and experiences, Stuart Robbins and Al Pappas provide two perspectives on the role of the Chief Information Officer (CIO) in business today. Each expresses a unique view of what it means to be a CIO.

The CIO is a relatively new executive management position in many organizations. Introduced in the early 1980s to address the special needs of enterprises in maintaining the critical IT infrastructures that support their business processes, the CIO's role has grown in importance as it has evolved through the 1990s and into the new millennium.

In the previous decade, a major CIO role shift was needed to address the impact of the Internet on the business environment. This is being now superseded by another transformation: in the 2000s, the role and responsibilities of the CIO are extending beyond normal IT boundaries to encompass key partnerships with customers, businesses, and suppliers.

Comparing and contrasting the views of Robbins and Pappas, you will notice that some common threads and key messages emerge.
CIOs play many different roles in a variety of organizations today.

The role of the CIO continues to evolve as the business environment changes.

CIOs have become key members of the senior management team.

CIOs continue to move from traditional technical roles to more strategic roles.

CIOs are assuming a special responsibility to ensure that investments in IT really provide value to their organizations.

CIOs will be key change agents, mentors, leaders, protectors of business assets, and technologists, among their others roles.

This chapter provides an excellent foundation for the chapters that follow. As you read on, you will see that each author provides new and more detailed perspectives on these key messages.

In 1981 a new executive title was introduced into business: Chief Information Officer. Designed as a response to the ever-increasing need to maintain the internal technology infrastructures upon which corporations relied, the role was transformed in the late 1990s as the Internet introduced dramatic changes into our business environment.

Like the railroads and telephone systems of earlier decades, the Internet altered business processes, management methodologies, and product strategies—and with them, the role of the CIO. By 2000, the CIO’s responsibilities extended beyond the corporate boundaries to include e-business partnerships, mirroring institutional changes. With an emphasis on business relationships and cross-institutional data exchange, the CIO’s role evolved into a primary relationship with customers, suppliers, and partners.

The economic downturn of late 2001 and the abrupt reversal of fortune for many technology giants brought another shift in the role of the CIO. Those executives who had become business partners in a net-based system of interrelated services were now at risk, as the emphasis

on that extended network diminished. Those executives who had focused on the technology were now at risk, as they represented (to their executive teams and directors) an irrational investment that had not yet produced the promised dividend. And those executives who remained “hands-on” managers of their institutions’ infrastructure operations found themselves without budgets, losing employees, and now directly supporting their internal customers, who had come to expect a high level of service. As the recession impacted revenue streams, numerous companies removed the position of CIO entirely.

In each business and historical phase, the position of CIO can be seen as a mirror of the broader environment within which it operates. To better understand this phenomenon, we present two CIO perspectives, each of which examines the role from a very particular point of view, reflecting a profession that has transformed and been transformed by the rapid development of new technologies and economies.

An adage that is well-known within the IT community is worthy of note as we introduce these essays: Ask 10 CIOs what they think, and you will get ten very different answers. It is one of the quintessential challenges of “selling to the CIO,” because we are a community of unique personalities. Any strategy for accomplishing this task must be constructed with that individualized approach.

As you listen to our various and sometimes conflicting points of view, however, some consistent themes emerge. It is often valuable to combine these contrasting perspectives to allow those underlying truths to emerge.

We therefore offer our two perspectives on the role of the CIO, with great respect for the unique ideas represented by each. Together, they provide a glimpse of what it means to be a CIO, an outline for success amid turbulent times.

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**Perspective 1: The Extended Enterprise CIO**

*by Stuart Robbins*

One of the many transformations in our business institutions during the past decade has been the growing importance of the extended enterprise. As our businesses have changed, so have the information
systems that support them; indeed, the information systems are mirrors of that change. As the networks of our businesses have changed, so have the mandates of those responsible for managing them.

Therefore, the changing roles of those systems and of the executives responsible for them become a map for the broader transformations—in our commerce, in our culture, and in our socioeconomic relationships. By better understanding the changing role of the CIOs in these institutions, we can better understand the institutions themselves. Indeed, the changing landscape of the CIO’s charter becomes an excellent metaphor for commercial society, including the business leaders, citizens, and participants in the broader communities these institutions serve.

Examples can be found in every segment of our economy. Financial institutions now rely upon 24/7 derivative calculations and zero-latency reporting, federal institutions are tasked to become interoperable with state and local efforts because of eGovernment requirements and “homeland security” imperatives, technology vendors are constructing virtual (electronic) marketplace networks, and manufacturing companies are refining their supply chains and service provider networks. In every business and every social organization, we are witnessing a dramatic shift in the universe of our jobs. Parents send urgent messages to kindergarten teachers via alphanumeric pagers. Salespersons find a special color or size in their franchise locations around town. Craftspeople in Africa can sell their wares directly into New York homes. Midwives in China can obtain immediate triage assistance from the emergency pediatrics specialist at the University of Maryland. The “extended enterprise CIO” is a partner in a networked community designed to deliver systems and services with and between customers, vendors, and partners, a matrixed role in a network of associations for which some executives are suited and others are not.

CIOs at every level of business and trade have become responsible for managing and maintaining this interconnectedness of daily life. These

2. For the purposes of this essay, let us define the extended enterprise as the metropolitan view of the institution: all external systems, processes, alliances, and customer/user interactions in combination with the (internal) operations of the institution taken together as the amalgam of all internal and external functions, the full geography of the institution’s reach, both by design and by necessity.
new responsibilities influence every aspect of our daily activities and have become central to the definition of “success” in our profession.

- The “eTransformation” that has occurred in our business is reflected in our charter and daily responsibilities: CIOs for corporations large and small are now directly involved with customers, becoming advisors to venture capital firms, constantly interviewed by analysts and the press.

- A major percentage of our time—in some cases 60 to 70 percent of our time—is now dedicated to issues “beyond the firewall,” with internal issues assigned to subordinates in our IT organizations. The top issues within this “extended” responsibility include supply chain integration and data flow, network distribution and globalization, corporate intellectual asset management, and strategic alliances.

- As our institutions have been influenced by the shift from a commodity-based economy to a knowledge-based economy, the impact on our professional development, and our organizations’ professional growth, changes have been required in our management approach and philosophy. We have become business partners with our suppliers, our service providers, our customers, and our executive team. The essential values of that partnership at the CIO level are based upon this central attribute: We tell the truth.

- As “our” systems become more dependent on “their” systems (and as our processes become more dependent upon theirs), the impact can be seen in the renewed emphasis on technology standards such as XML and SOAP, in which the exchange of information not only between legacy systems but between institutions must be automated in real time and accessible 24/7, the data integrity must be unquestioned and completely auditable, and yet the systems supporting that analysis are transparent.

- As mentors to junior IT professionals who aspire to become CIOs, our advice and teaching has changed in response to the extended responsibilities of our office. Additional skills and attributes are encouraged for our teams and managers to become successful in the extended enterprise. We now teach our managers to listen—to their internal customers, to their employees, to each other—and to better understand the essential business problem.
Some of these changes, indeed, are temporary (driven by budgets and the economy), and others have introduced a fundamental shift back to operational fundamentals, such as cost containment and support. However, the core responsibilities of the IT executive now extend beyond the corporate boundaries, and those responsibilities—for supply chain management, vendor control, data center operations, customer information (accumulation, analysis, distribution) and network security—are not going away. Rather, they are the fundamental building blocks of an integrated information technology environment.

Who are some of the successful eTransformation or e-business CIOs, and why? As Bud Mathaisel, VP and CIO for Solectron, reminded me during a recent lunch and discussion of this topic, responsibility for the extended enterprise is not a new phenomenon. Indeed, companies such as Solectron have long established successful business networks in order to maximize supply chain, manufacturing, and procurement issues. Our profession is populated with individuals who have incorporated this approach during the past decade.

Two individuals, however, come to mind as key examples of success in the extended enterprise—Mohamed Muhsin, VP and CIO for the World Bank Group, and Phil Thompson, VP of eTransformation and CIO for IBM.

I first met Mohamed Muhsin several years ago at an IT conference sponsored by The Economist. There, he presented the World Bank’s mission of ending world poverty and emphasized the fundamental role that information and communications technologies must play in the realization of that lofty goal. The objectives of the Bank, according to Mohamed, are not met simply by loans and grants, but rather by leveraging knowledge among the bank’s many customers through a clearly articulated coordination of expert support systems and a fully globalized network of technology resources, from servers in Washington to teletraining facilities in Africa or portals in Palestine, Zambia, and India.

For Mohamed’s exceptionally dedicated IT staff, the role of IT cannot be separated from the role of the financial institution that it enables, nor can it be separated from the broad network of intellectual assets in dozens of languages that are now provided via the Web, allowing villagers in one hemisphere to directly benefit from the cumulative knowledge of subject matter experts around the world. ICT (Information and Communications Technology) is a fundamental aspect of the World
Phil Thompson of IBM is responsible for a broad range of internal and external functions that extend far beyond the direction of IT investment for the company. He sets the company’s business transformation strategy, leads overall business process reengineering and e-business initiatives, and aligns e-business investments and collaborative processes with all of IBM’s customers, partners, suppliers, and employees. At IBM, moreover, the CIO is a partner to the company’s strategy team, increasingly involved in an ongoing effort to share transformation insights with customers.

The emphasis on knowledge sharing among IBM and its customers and partners is epitomized by Phil and his team and should be seen as a critical aspect of success in the extended enterprise. According to Phil, who emphasized this point to the Federal CIO Council last year when they met with CIOs from around the country to discuss business transformation, information is becoming the primary source of competitive advantage. A knowledge-based economy empowers people inside and outside the company, multiplying their contributions in ways that would not be possible in a commodity-based economy. Indeed, this may be the central difference between those CIOs who focus exclusively on internal operations and those, such as Mohamed and Phil, who are responsible for the entire end-to-end business process and the technologies that enable it.

More and more, CIOs are the executives who are forging alliances and ensuring alignment with critical owners of business relationships, both within and outside the corporate boundary. For many years, successful CIOs have been business strategists, capable of translating the value of technology in terms that can be understood by the business leaders of the institution. Now that skill set is being externalized.

Subsequently, standard IT “best practices” and management principles, once the key to success for internally focused CIOs, are being supplemented by an additional set of values and requisite skills. The new CIO must be an entrepreneur, a matrix manager of teams that do not report into IT and may not even belong to the company, an architect and e-business visionary, an evangelist, a relentless recruiter, a mentor, and an expert in the psychology as well as the implementation of (constant) change management.
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The capacity of the successful extended enterprise CIO to serve as both visionary and customer advocate, someone who is both a consumer and a supplier of services, is directly proportional to his or her ability to migrate to an externalized system of services and foundational infrastructure. This CIO must be able to comprehend, and then teach, the essential importance of intellectual property that resides on a corporate intranet, even if that intranet exists on another company’s servers and is maintained by another company’s employees.

Successful CIOs must be able to transform the old “federal versus state” funding analogy—the politics of centralized versus decentralized control that erupt annually in budget cycles often requiring months to resolve—into a new variation: the “global versus personal” requirements of net-based messaging and information delivery. They must deliver core internationalized architectures that can be translated into dozens of languages, yet offer individual views of information that are unique to each business role.

Struggling CIOs will continue to be distressed about who is paying for what, and why 80 percent of what is being asked is simply impossible. Forward-thinking CIOs will initiate conversations within their companies about how they must architect products and services to serve a multicultural, multilingual Internet community on desktops that are unique for each user.

Struggling CIOs, if they can retain their jobs in difficult economic times, will be challenged to explain why they need ten people instead of five, or five instead of two, to support their systems. Forward-thinking CIOs will be educating their executives and their customers about customized Web services and how new standards such as XML and SOAP can help them deliver additional revenue or additional value to their partners, customers, and employees.

Struggling CIOs will be asked to once again explain why so much money has been spent on technology in the past year. Forward-thinking CIOs will be reminding their executive teams of the substantial accomplishments that were enabled by information technology, and they will be building upon that framework to continually refine business processes within and beyond the corporation.
Perspective 2: Back to the Basics—What is a CIO?

by Al Pappas

Overview of the CIO Role

Originally, the position of CIO was derived from the data processing leaders of the past. The title is less than 20 years old, but represents the culmination of the significant impact that technology has had in most of the modern world’s business communities. The evolution of the CIO role has mirrored the dependencies of business upon information technology and its associated operational functions.

Recent surveys have found that the average IT executive has many years of experience in fields other than IT and many have substantial international experience. And contrary to the “techie” stereotype, more appear to be extroverts, not introverts. Technology still takes up more than half of their time, but not much more; IT executives devote a substantial portion of their working lives to business issues. CIOs were once the consummate corporate insiders, focused on internal systems, internal customers, and internal IT staff, but today’s CIOs are out in the wider world, doing work that has more in common with a secretary of state than a systems developer.

Leadership and communication are two of the most critical capabilities that modern CIOs must master, not least because most need to deal with more people across the entire organization than other executives. Today’s CIOs recognize the importance of these skills, and many are still developing and honing them.

The following paragraphs portray the variety of styles and behaviors that many CIOs have developed to become successful in a variety of unique business situations. Because each enterprise’s business leadership—CEO, COO, board of directors, and so on—is unique, and because this business leadership establishes both the corporate culture and eventually the expectations imposed upon the CIO, there is no one-size-fits-all approach for ultimate CIO success. CIOs need to fully comprehend the requirements of their positions, their incentives, and the expectations of their direct reports to ensure that they remain as closely aligned as possible.
Background of the CIO—Technology Versus Business

The role of the CIO has become as varied as the business models in place today. Many of us have evolved into these roles from a variety of early disciplines, such as technology, finance, manufacturing, service, and so on. The particular expertise that a CIO has developed over his or her career becomes a determining factor in the roles he or she fulfills, but is equally a key determinant of the type of business that might employ him or her. I believe that the corporate leadership determines the type of CIO required based upon their own expectations of the CIO role, which often include the following:

The Technology Leader: Traditionally, leaders of IT were drawn from information systems departments with which they were applications, operations, or business analysis leaders. This avenue of growth continues to provide the largest number of CIOs. There are alternatives, however. As an example, I received my initial CIO assignment when the leaders of a large software organization asked me to consider assuming the role of the CIO (as well as vice president of information systems). I was then a director of engineering, with numerous responsibilities, including engineering infrastructure services. This new role incorporated the various engineering and information technology functions within a common functional area. The business of software technology clearly mapped my technology background, which enabled improved business and technology relationships. I believe that this experience has been replicated in many high-tech environments in which leaders from engineering, software development, and the like have successfully transitioned their careers into the IT arena.

The Business Leader (with a technology bent): Business leaders from services, manufacturing, or marketing have also transitioned into CIO roles, a phenomenon that has become more commonplace over the last 10 years. The need to comprehend the specific business needs of the corporation has led to the emergence of the business-driven CIOs. At the same time, leaders in the areas noted have taken ownership of some IT-based tools and systems to satisfy their business requirements, which required that they become more knowledgeable about the these tools and systems. These CIOs have assumed their positions not only to leverage the technology skills
they developed as business leaders, but also because it has provided a vehicle for promotion to a CXX position.

The Strategist and Mentor: The strategist and mentor type of CIO operates in a fashion similar to that of a Chief Technology Officer (CTO) in a high-tech environment. These individuals can be characterized both by their focus upon strategic directions for the corporation and by the roles that they perform as mentors and advisors to the corporate staff members (that is, other CXOs).

These CIOs are typically grounded in strategic thinking and play an active role in the product or service development side as well as the marketing and sales side. By focusing on issues such as business and IT alignment, they attempt to uncover IT-enabled business opportunities and apply IT initiatives to streamline business processes. These CIOs are the best candidates to become the CEOs or COOs of their organizations. They have developed an all-encompassing view of the enterprise and therefore become key mentors to both the CEO and COO in particular. An excellent example of such an individual is the president of eBay Systems, Maynard Webb; he came from the CIO ranks and was recently promoted to COO of eBay.

The Corporate Influencer: The role of the CIO is directly shaped by the type of business environment he must support, and his influence is driven by the characteristics of the business, including their relative maturity levels. The two areas of focus are likely to be strategy and execution, and most CIOs are expected to play an equally important role in both arenas. The strategic side of the CIO requires a focus on business and IT alignment and IT-enabled opportunities, while the execution side requires active participation in the execution of major projects in areas like ERP, CRM, and so on. (The role of the CTO has evolved over the last few years to further delineate between an execution-based CIO role and a strategic-based one rather than combining these aspects. The CTO has been more focused on operations, technology, and product development. This role has not evolved significantly and remains doubtful in this author’s opinion.)

Business Environments and the CIO’s Role

The following paragraphs elaborate upon the way various business environments affect the CIOs role.
The Startup IT Environment: The startup business model requires a CIO who can literally roll up her sleeves and build an IT organization while the business evolves. This requires understanding of the key business demands associated with strategies and plans and the ability to delineate the IT-specific functions required to enable them. In addition, a fundamental understanding of basic IT infrastructure usually becomes the early focus area, quickly followed by business-specific applications or initiatives that enable the growth of various business units (such as sales automation, customer service call tracking, and so on).

The High-Tech Environment: High-tech businesses require a CIO who is well grounded in the technology products or services provided by that type of enterprise. The CIO needs to be aware of the technical challenges faced by the development organizations as well as the associated marketing, sales, and services required to promote and sustain the customer communities. The IT support expected by the technology teams emphasizes a secure and highly integrated infrastructure and the ability to relate to these needs and to sustain a highly productive and communicative work environment is key. Therefore email, networking, video conferencing, development labs, and like elements are a given.

The Brick-and-Mortar Environment: The brick-and-mortar businesses are characterized by a more traditional business approach and associated IT infrastructure. I would place financial, health care, and government institutions in this category. The CIO focus in these businesses can be quite varied and diverse based upon the business models, the existing IT infrastructures, and the focus upon IT to enable business changes.

The Internet Environment: The Internet phenomenon changed the methods and practices that most CIOs follow. The term “Internet speed” became the byword that most companies in this arena were expected to emulate—get the products to market before competitors at all costs, and eliminate the processes followed by most traditional businesses. This placed substantial burdens upon CIOs who wanted to apply the best practices of good business processes before embarking upon technological solutions; the technology was expected to be deployed and functional while the business models were evolving, and in many instances before any real business existed. My role at an Internet business encompassed more than the traditional IT requirements but actually included product develop-
ment for the site’s operations as well the enablement of all Internet-based business functions. This is the typical model for Internet companies today; the CIO is more engaged in business enablement than is ever expected at the more traditional companies, including even the high-tech variety.

The Established Business Environment (over 10 years): CIOs at more established corporations (such as AT&T, Lucent, HP, and so on) have a more traditional business focus for IT than those mentioned previously, characterized by more established business models that require minimal investments in innovative technologies. They deal with established infrastructures and applications, and focus most of their attention on cost reduction and improvement of existing business processes. The CIOs in these environments are well-grounded in the basic business practices of the corporation and typically spend a great deal of time with the executive staff, while their direct reports focus on the specific entities that support divisional or business unit needs. HP and Lucent are good examples, since their dedicated IT personnel support a variety of divergent business needs from both a business analysis and operations perspective. The major challenges facing these CIOs are the significant focuses on streamlining operations and reducing overall costs.

Reporting Relationships, Hierarchy, and the CIO’s Role

The role of the CIO is significantly affected by the reporting relationships involved. The following paragraphs delineate some of the possibilities.

The Chief Financial Officer (CFO): The CIO who reports to a CFO is typically part of the administrative side of the business and is always expected to focus on cost reduction as a key strategy for the IT organization. The utility role of the CIO is a key expectation of the CFO as it is for his direct reports in finance, human resources, facilities, and related administrative business functions. In some instances, the CFO has eclipsed or eliminated the CIO role and has subsumed the responsibilities entailed. This is done partly to reduce costs and partly because the CFO wishes to drive the IT agenda directly.

The Super-CIO (a la Lucent and HP): A business unit or divisional business model typically drives the CIO that resides in this environ-
ment within which either a centralized and decentralized IT model can exist. Two of my closest CIO associates are CIOs within the Lucent family, and I became a CIO within the HP family as a result of an acquisition. Our experiences differed somewhat due to our varying business climates.

For HP, decisions about business independence directly affected the degree of incorporation within the HP corporate infrastructure (that is, the adoption of all HP systems, the use of HP networks, HP email, and so on). As an independent business unit, these adoptions were deemed unnecessary, but as an integrated division of HP, they became absolutes; the strategies adopted by the parent directly affected the IT practices needed. We began as an independent company and then migrated into a divisional operation; then that same division was spun off for sale. At Lucent, my peers faced a more difficult reduction and downsizing scenario, and their focus was clearly consolidation and cost reduction.

Higher authorities and the current business climates clearly drove the role of the CIO at both HP and Lucent. The need to collaborate with the various centralized IT organizations as well as the various business units supported by them was paramount to success. The super CIOs in these environments were absolutely expected to be business aligned and focused exclusively on strategy as opposed to execution.

The Chief Executive Officer (CEO) and Chief Operating Officer (COO): The CIO who reports to either the CEO or COO possesses a higher degree of freedom and responsibility than a comparable CIO who reports to the CFO. The CEO/COO usually has a broader base of responsibilities for the overall business, and the CIO is expected to play an equally critical role in applying IT strategies to assist the CEO/COO’s directions to the fullest. In this reporting relationship, the CIO’s role is focused upon managing a project portfolio for business results instead of upon whether those projects are within a given time line or within budget. These CIOs are expected to work very closely with other business units, including the CFO, to ensure that projects are selected to bring the highest value to the corporation.

In particular, CIOs who report to the CEO differ from other IT executives in two significant ways: Their corporate role is more centered on business issues, yet they are far less likely to find themselves focusing on correcting misalignment between the IT environment
and the business. It may be that the reporting relationship has helped to create, or is a sign of, a better-aligned IT function.

Others: Board of Directors, Engineering, Services, Business Units: CIO reporting relationships to other entities are a rarity in most corporations today. The exception that stands out most significantly is that of the reporting relationships at Cisco, where the CIO reported to the executive responsible for services. This was clearly intended to build a customer service environment that utilized all the latest technologies available for the Internet and led to a breakthrough application that enabled Cisco to provide the optimum interaction with its customers while reducing the need for direct contact.

The CIO for 3Com reported to the chairman of the board and possessed the highest degree of business focus that I have encountered. His strategies and associated activities resembled those of a CEO. This brand of CIO must develop and have the ability to create and manage the highest level of external and internal relationships.

Understanding the Dynamic Role of the CIO

The current economic downturn has created a crisis for IT professionals as business leaders begin to question the value of the investments they have made in technology. The downsizing of IT organizations, initiatives, and salaries, as well as the role of IT executives in the overall business, has placed the CIO at a critical juncture in the brief history of the position. Three distinct developments have been noted in the press:

1. The CIO has been able to navigate the economic crisis and has become a central member of the executive team in businesses that are dependent upon IT partnerships and value.

2. The CIO has returned to an operational focus, in many cases assuming a hands-on role in the tactical aspects of the infrastructures she supports.

3. The role of the CIO has been eliminated, replaced by corporate operational executives, finance systems experts, or sales opera-

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tions professionals. In such cases, actual IT organizations are decentralized and become part of the functional units that they support.

The CIO is a mirror of the institution; each of these trends in the CIO’s role reflects the changed direction of the broader institutions that employ him or her and of our technology and economy.

The CIO is a mirror of a global economy. As such, the technology executives who are responsible for information flow in an information-based economy will continue to be central to an institution’s success.

The CIO is at the center of our cultural crossroads. As business people, we are responsible for zero-latency information that drives executive decision making and critical alliances. As technologists, we are responsible for business continuity and availability. As individuals, we are responsible for telling the truth and doing what is right. The CIO is therefore an architect and a plumber, a strategist and a tactician, a communicator and a craftsperson, an employer and a service provider.

The CIO is a change agent for business processes and cultural norms. The limitations of our institutions are often the reasons for our lack of success, and in order to prevail, we must address them.

The CIO is a mentor and a leader. We must lead and teach by example and by the accumulation of best practices as we have learned them over the years.

The CIO is the gatekeeper of the company’s intellectual assets and operational resources, taken for granted when things go well and blamed when things go badly. It is a career that no one should ever seek—yet so many of us cherish it, seated at the center of our institutions’ failures and successes.