PART I

The Basics
Accurate and timely financial information is essential to managing a modern corporation. Investors and regulators require periodic disclosures, while managers and executives rely on financial data for decision making and strategy. Businesses have no shortage of such information—in fact, the very volume and complexity of their financial data often presents a significant challenge to their ability to use it wisely. This financial data is maintained in a wide variety of information systems, ranging from sophisticated enterprise resource planning (ERP) systems, to single-purpose tools such as financial consolidation systems, to the individual database on someone’s personal computer that generates an important journal entry each quarter.

In most companies, this array of financial systems and databases has been built up over time, sometimes with great foresight and planning and other times as an expedient reaction to a specific business need. As a business grows and becomes more complex, the difficulty in managing its financial information can also grow, often disproportionately. It can become more difficult to provide appropriate financial controls as transactions become more complex and new business models evolve.
Duplicate systems can arise due to mergers, which often leads to inefficient operations and inconsistent data between systems. Responding to management requests for information can become more difficult as reporting databases and spreadsheets proliferate.

The task of managing these complexities largely falls on the information technology (IT) department. However, the chief financial officer (CFO) and the Finance function also play an important role in this process. They are not just passive users and producers of financial information. They must also be actively involved in financial system planning and decisions. This chapter will discuss some of Finance’s roles and responsibilities with respect to information systems—in particular its role in information technology planning.

Finance and Information Systems

The role of the CFO and the Finance function has evolved over time. From mere bookkeepers who played a purely supporting role, Finance has evolved to become an integral part of the strategy and management of most companies. Regulations adopted in the shadow of Enron’s collapse, such as Sarbanes-Oxley, require CFOs to exert more control over financial data and to take responsibility for its accuracy. In order to assume that responsibility, which includes personally attesting to the accuracy of publicly reported financial results, CFOs have realized that they cannot simply accept financial data that they do not control. As a result, CFOs generally “own” their companies’ numbers: They have the primary responsibility for the data in financial systems, if not responsibility for the financial systems themselves. More important, Finance has become a strategic player in most companies, requiring it to analyze and understand the financial data to provide insights and strategic
recommendations. This, of course, means that the appropriate data must be available, accurate, and accessible.

Every part of a company's business processes ultimately impacts Finance. Certain processes, such as order-to-cash and procure-to-pay, are primarily the domain of Finance. But other processes, like procurement, customer management, manufacturing, and so on, also impact Finance, because it either uses or generates financial data. Thus, the systems that these processes use are at least indirectly financial systems as well. As the primary stewards and important consumers of the company's numbers, the CFO and the Finance function are key stakeholders in the vast majority of a company's information systems.

To better understand the linkages between Finance and information systems, it is useful to look at a conceptual model of a company's systems and information environment. In this way, we can examine the role that Finance plays as both steward and consumer of information. Figure 1.1 shows a simple systems and information model.
In this model, *information* takes its rightful place as the central focus. This collection of financial data consists of three major components:

1. **Master data.** This is the set of codes and structures that identify and organize the data. Data elements such as customer codes, customer names, general ledger account numbers, employee IDs, and business unit codes and names are part of master data. All transactions and other business processes use this master data to identify the business entities impacted by the transactions. Most transactions use several different master data elements. For example, taking an order from a customer will involve (or create) such master data elements as customer number, address, order number, stock-keeping unit, salesperson ID, and so on. Master data elements can be arranged into hierarchies, such as a legal entity structure showing the ownership of each legal entity within a corporation, which is used for financial consolidation and external reporting.

2. **Transactional data.** This is the set of records of individual business activities or events. Transactions are associated with specific business entities (defined by the master data) and record the economic impact or value of the activity. A single activity may create a number of transactions or accounting records. Continuing the customer order example, taking an order will generate records in the order system and, upon shipment, will record revenue and a receivable as well. This transactional data is the heart of any financial system, and maintaining its accuracy and timeliness is a key Finance responsibility.

3. **Reporting and analytical data.** While the transactional data contains all of the financial records of a company, it is often difficult to use that data for reporting. A large company may have millions of transactions, which could make
filtering and aggregating the data very time-consuming (not to mention slowing down the transactional systems). In addition, some reports or analyses will likely require data from multiple systems, which often have differing sets of master data, making it difficult to link data from one system to another. As a result, most companies have a data warehouse, or possibly a series of data marts, or some other type of reporting database to facilitate reporting and analysis. These reporting databases extract and, in some cases, transform data from the source (transactional) systems, and store it in a way that permits easier reporting. Data in these reporting systems can be aggregated using master data hierarchies to allow reports on rollup data to process more quickly. In addition, these databases can further support reporting and analysis by calculating and storing key performance indicators or other metrics, as well as by aggregating the data across a variety of dimensions, or slices of data (e.g., by legal entity, business unit, and geography).

In this model, the term information is preferred to data, because in addition to the transactional data, the model allows for the reporting and analytical data, to which some degree of financial intelligence and business rules have been applied. Just as Finance is the main steward of transactional data, it is a major consumer of financial data as well, and much of the value it adds to the strategic and management functions of the business derives from its ability to use this reporting and analytical data transformed into information.

All of this financial information is maintained and managed by a variety of systems. The systems and applications layer of the model includes all of the hardware, software, and network infrastructure that support business operations. The primary financial systems are generally part of an ERP system, and would include the general ledger, the receivables and payables
modules, procurement, order entry, payroll, and others. However, most companies have other financial systems beyond their primary ERP, such as legacy systems from acquired companies and homegrown systems written to support specialized business situations. In addition, most companies have \textit{best-of-breed} applications to support specific business processes, such as financial consolidation, budgeting and planning, reporting and analysis, and treasury management. Finally, in an uncomfortably large number of cases, companies maintain important financial information in desktop databases and spreadsheets. In fact, it is likely that most companies use spreadsheets to perform at least part of some key business processes, such as budgeting and planning.

The systems and applications are used to define and implement a number of important elements that go into maintaining financial information. These \textit{foundational elements} are shown in the bottom row of Figure 1.1 and include:

- \textbf{Data management}. This represents the maintenance and management of master data, including the definition of links between systems. Master data management has become an area of emphasis for IT departments in recent years, and it is particularly valuable in environments with multiple interrelated systems. It also includes the mappings and interface rules required for one system to feed data to another or to a reporting database or data warehouse.

- \textbf{Business requirements}. This represents the rules implemented within the financial systems to process transactions and implement business logic. Business requirements can include implementation of accounting rules (such as elimination of intercompany transactions at the lowest common parent), definitions of business processes (such as the approval routing before a payment is issued), and specifications for outputs (such as regulatory or management
reports). These business requirements are implemented through the configuration of the ERP or other financial system and through system and database code.

- **Governance and controls.** With the increased scrutiny of financial results and the need for greater transparency and governance in the wake of Sarbanes-Oxley, companies have built more automated controls into their financial processes. In some cases, these controls are implemented within the financial systems, such as requiring different individuals to enter and approve journal vouchers. Financial system governance and controls are an important part of a company’s larger risk management efforts.

- **Data definitions and standards.** As noted earlier, despite their best efforts, most companies have a somewhat fragmented financial system environment, due to legacy systems from mergers, one-off solutions, and desktop applications. In order to effectively manage and use financial information, consistent data definitions and data standards are required. This is particularly an issue with desktop reporting and analysis, where it is not uncommon for two analysts to walk into a meeting with two completely different sets of numbers for what is supposed to be the same report. Similarly, financial systems in separate divisions or business units may have been implemented differently, leading to inconsistencies in transaction processing and reporting. For example, one large payment-processing company conducted a worldwide ERP implementation with minimal corporate guidelines for data definitions and standards. As a result, it ended up with different and irreconcilable charts of accounts in each business unit, requiring a costly and time-consuming process to map business unit data to another, separate consolidating instance of the general ledger. More explicit and well-enforced data standards would have eliminated the need for this effort.
These foundational elements, along with the system and application environment and the information that they support, must serve the broader business needs and objectives. Many executives complain that despite an array of financial and business systems, they do not have the information they need to run their businesses. Well-managed enterprises, however, generally have a system environment that can support their strategic and operational objectives.

To further the objective of developing financial systems that provide timely and accurate information to support the business, most companies periodically develop an information systems strategy. This strategy then supports an Information Technology Plan that guides the company along the path of developing the appropriate system environment. The sections that follow describe the information technology planning process and Finance’s role in that process.

**Information Technology Planning Process**

Despite the best efforts of information technology departments, most companies' information system environments are anything but stable and predictable. Business needs change. New companies are acquired and integrated. Laws and regulations change. Disruptive technologies (such as the Internet) or external forces (such as the “Year 2000” problem) mandate changes. Through it all, the need for business and financial data remains unchanged—or grows.

Managing this complex environment and trying to accommodate future needs is an ongoing process. Each technology decision, whether it is a new system, an upgrade, or a change in the hardware environment, is made with an eye toward compatibility with the existing environment, meeting business needs, and providing a path for future growth. Unfortunately, a series of such decisions made individually and in isolation will rarely
result in an optimal technology environment, just as a series of isolated business decisions related to pricing, markets, product development, and acquisitions cannot be expected to maximize the value of the business. Executives generally rely on a strategic planning process to set a direction for the company and to coordinate tactical business decisions and investments. In much the same way, a strategic Information Technology Plan can be used to establish a technology vision for a company and to coordinate system development efforts and investments. Developing an IT plan is one way to break down the various silos and provide a more coordinated approach to information systems. More important, it provides an opportunity to engage the business side, to make sure that the key business needs can be met, and to gain consensus for the systems approach across the organization.

Systems planning should be a regular process, not unlike the annual business planning process. A large-scale strategic Information Technology Plan could be undertaken periodically or in response to some triggering event. There are many events that might provide a good opportunity for a systems plan, such as a need to replace a core business system (such as an ERP system), a large merger and the corresponding need to standardize the IT environment, or even the presence of a new chief information officer (CIO) who wants to take a fresh look at the company’s IT strategy.

Developing an Information Technology Plan

An Information Technology Plan is the result of a comprehensive review of an organization’s systems and technical architecture, the business processes that they support, and a desired future state. It includes a description of where the company is with respect to its IT environment and where it needs to be. It also includes a strategy for achieving these future-state goals.
Developing an IT plan is necessarily a collaborative exercise. Gaining participation from both the IT and business sides of the organization is crucial to developing a good plan that is accepted across the organization: All of the key stakeholders must feel that they have skin in the game. Many companies use an outside consulting firm to help them drive the development of the plan, to gain an outside perspective, and also to help gain participation and cooperation from both business and IT.

There are generally four phases to the development of a plan: initial preparation, review of business processes, inventory and review of the technology environment, and development of the future-state goals and roadmap. These phases are shown in Figure 1.2.

Depending on the size of the organization and the depth at which the processes and technology are reviewed, developing the plan would generally be expected to take from one to three months. This assumes part-time involvement for those developing the plan. Assigning full-time staff to the project or using outside resources could reduce the time to develop the plan or allow greater depth of analysis.

During the initial preparation stage of the plan process, the company will define its objectives for the plan and lay out...
its approach, which could include a formal project plan. The most important activity in this phase is to get buy-in from both senior management and the key business and IT stakeholders to undertake the activity. Management buy-in is needed to get the necessary stakeholders engaged and to lay the groundwork for eventually gaining their authorization to implement the plan. Stakeholder buy-in is needed for them to invest the time and effort to participate in the planning activity.

The first major activity in developing the plan is to review the company’s key business processes. This may sound somewhat counterintuitive: There is a natural tendency when doing an IT plan to dive immediately into an analysis of the company’s systems. However, that approach ignores the most important context that must be considered in the plan. After all, the primary purpose of most information systems is to manage some part of an operational business process. Therefore, in order to assess a company’s IT environment and plan for the future, a thorough understanding of the major business processes is needed. One common cause of issues in business processes and technology is designing (or forcing) the business processes to accommodate the supporting technology, rather than designing and implementing the technology to support optimized business processes. So, a review of business processes and business-side requirements must be a component of the IT plan. The planning team will develop (or utilize existing) process maps, highlighting the systems involved and touch points with other processes and systems. Business requirements and issues with the current processes and technology would be documented through interviews and small-group workshops.

Following the business process review, or roughly in parallel with it, is the documentation of the company’s technology environment. This will include both the hardware and applications used to operate the company. Most companies have system
architecture documents, but these become outdated quickly as new systems come online or acquired companies add their own systems to the environment. In addition, most existing system architecture documents concentrate on enterprise-level systems like ERP systems. They often omit department-level systems and desktop applications and databases. These systems can be troublesome, since they do not necessarily adhere to corporate IT standards and some of them, especially any desktop applications, may lack proper controls, security, or data standards. The IT plan should go out of its way to document such systems, not only to understand potential sources of risk, but more important to identify potential opportunities for improvement. These departmental and desktop systems are obviously addressing some previously unmet business need; if that need is sufficiently important, the company should consider an enterprise-class solution as part of the future-state environment.

After the business processes and technology environment have been reviewed and documented, the planning team can turn its attention to the future state. They should start by developing a set of high-level goals and objectives for the future state to provide direction to the future-state design. They can then assess how well the current environment meets those objectives. The prior review activities will most likely have identified issues or improvement opportunities with either business processes or technology, which is a good starting point for the future-state gap analysis. From there, the team can begin to explore different approaches to the major business processes and the technology required to support them. Achieving alignment between the business processes and the supporting systems should be a primary goal of the future state. The planning team should also give attention to future-state systems or applications to support reporting, especially across the various systems and processes. At this point, the team should be able to develop a high-level system architecture to meet the future-state goals and objectives.
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The final step is to develop an implementation roadmap and develop a business case.

Once the IT plan is complete, the hard work of gaining a consensus among all of the stakeholders and getting the approval of management can begin. Having participation from all of the stakeholder groups during the development of the plan will go a long way toward having them sign off on the plan. Developing a realistic business case will greatly enhance the chances of management approval.

Components of an Information Technology Plan

The prior section outlined the major steps in developing an Information Technology Plan. In this section, we will look in a little more detail at what should be included in such a plan.

It is essential that the company’s IT strategy complements its business strategy. Similarly, changes in a company’s business strategy or environment must be reflected in an updated IT strategy and environment. Therefore, the IT plan must incorporate elements from both the business (functional) side of the organization as well as the technology side of the organization. The contents of the IT plan reflect these dual requirements, which are then brought together in the final strategy and future-state roadmap.

BUSINESS PROCESS REVIEW The initial component of the business process review is the documentation of a company’s core business processes. These could include operational processes, such as order fulfillment, as well as financial processes. The most common way to document business processes is to develop process maps, which are relatively high-level flowcharts showing the major steps in a process, who is responsible for them, and what information is collected or handed off. Many companies already have some level of business process documentation, often as the
The result of some prior reengineering effort or process documentation projects to support Sarbanes-Oxley requirements or similar needs. These process maps can then be reviewed to identify potential bottlenecks, manual processes, inadequate controls, and other opportunities for improvement.

The other major component of the business process review is an assessment of the current processes and identification of additional process requirements. The assessment would identify issues, report on stakeholder satisfaction with the process, identify additional steps or controls required by the process, and identify any data issues (such as missing or invalid data). During the future-state design efforts, this assessment will be useful in identifying needed improvements.

**SYSTEMS AND ARCHITECTURE REVIEW** The systems and architecture review will identify and assess the major elements of the company’s technology environment. Two main elements of this section include diagrams of the company’s application architecture and of the hardware/network architecture. The application architecture is an inventory of the company’s systems, including all of the ERP modules and other business systems. The architecture diagram would also identify data interfaces between systems. There also should be supporting detail to identify the purpose of each system, the data it collects or generates, and the data it feeds to (or is fed by) other systems. The application architecture also should include any data marts, data warehouses, or other repositories used for reporting and analysis, even if they are not a part of any specific business system—and even if they are not managed by the corporate IT department.

The hardware and network architecture diagrams would show the underlying technical architecture, including servers and communication hardware. The software running on each server, including operating systems and applications, should be identified as well.
The interfaces between systems can be very complex, so these should also be documented in the systems and architecture review. The inbound and outbound systems should be identified, along with the type of data being interfaced and the frequency of update. Supporting technologies, such as extract, transform, and load (ETL) tools, should also be indicated.

Since most IT functions are constantly developing or deploying new software or hardware, the systems plan must take into account ongoing projects and other initiatives. These should be summarized and their impact on the existing technology environment should be identified.

The final part of the systems and architecture review is an assessment of the current systems and hardware environment. This assessment would identify system issues, such as performance or reliability, and identify opportunities to retire obsolete systems or otherwise optimize the technology environment.

**FUTURE-STATE ROADMAP** The business process and technology environment assessments are only preludes to the main attraction of the Information Technology Plan, which is the development of a *future-state vision* and a roadmap for achieving that vision. This future-state vision should represent a stretch goal for the organization, but it must also be practical and achievable.

The first element of the future-state vision is a statement of the company’s high-level information strategy and objectives. In other words, the company must outline the context in which decisions on the future-state direction will be made. These objectives could include goals such as increased standardization of applications and processes, cost efficiencies, or greater availability of specific financial data to support business decisions. It is important, when outlining information systems strategies and objectives, to take into account potential changes in the business strategy and potential changes in the technology landscape.
With the information strategy and objectives in place, a high-level future-state process and application architecture can be developed. This would include identifying optimized business processes and the required systems and infrastructure to support them. The future-state environment would be necessarily somewhat high level or directional, but it must be detailed enough to provide a useful guidepost for future development.

The achievement of the future-state environment will likely require several years to achieve, and it will be built out in a series of individual initiatives. As a result, there must be a roadmap that lays out an approach to building out the future-state environment and achieving the overall objectives. The roadmap would likely outline a series of programs and individual initiatives within these programs. The roadmap must take into account the potential availability of resources (both people and funding), especially when any of the initiatives overlap and compete for resources. In addition, there should be specific deliverables or milestones identified to be able to track progress.

In order to even get approval of the future-state vision and to be able to proceed with the implementation, there will need to be some type of business case or justification for the investment. Business cases can vary in terms of detail and rigor. At a minimum, they must identify the anticipated benefits to be derived from the future-state environment. These benefits can be hard-dollar savings from efficiencies and improvements in business processes as well as “softer” yet no less important benefits such as better information for decision making, reduced risk, and greater employee satisfaction. The other side of the equation is the identification of estimated costs for building the future-state environment. The costs should be broken down by major program or system, as in many cases approval can be obtained for only a partial achievement of the future-state vision. Ideally, some level of benefit can be quantified and a payback period and return on investment can be calculated. Most companies will
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not approve significant system investments without a business case showing an adequate return on investment.

The Role of Finance in the Systems Planning Process

As one of the key consumers of a company’s information technology, Finance will be one of the key stakeholders in developing the Information Technology Plan. In addition, its role as steward and “owner” of the numbers further reinforces the need for Finance to be central to the planning efforts. Nevertheless, it would be very easy for Finance to abdicate its role, thinking that an IT plan is solely concerned with hardware and software. Similarly, the IT shop could operate in its own silo and neglect the perspectives and potential contributions of Finance. At the very minimum, Finance would be a key constituency in supporting the adoption of the IT plan and socializing it within the organization. But Finance must play a larger role in developing the plan, not merely be a stakeholder in the final result.

In reality, Finance and IT should operate largely as partners in the information technology planning effort. While there are some areas that are logically the sole domain of IT, such as the hardware and software inventory and the data interface mappings, developing the rest of the plan would be largely impossible—or at least very inadequate—without the active participation of the Finance staff. This section will outline some of the main contributions that Finance can make to the IT planning process.

The fundamental contribution of Finance is its knowledge of the business, the company’s major business processes, and the specific requirements of financial management and reporting. The individual business units or other operating entities obviously have the most detailed knowledge of their own processes.
Finance, however, as it takes on a larger, more strategic role in most organizations, is the one unit that has some functional understanding of processes across the organization. Finance has to understand the organization’s business models and functional processes in order to account for business activity and establish the appropriate controls. In addition, it must understand the interrelationships among business units and between the business units and corporate. In addition, Finance, as a consumer of financial data from across the organization, is well positioned to understand the data and reporting needs across the organization, identify differences in data definitions or business rules, and identify opportunities for standardization. For example, the Finance group in one large consumer business company was able to identify differences among the ERP implementations at its various business units as it struggled to standardize the data-gathering process for its periodic financial consolidations. Since the company’s operations—including IT—were very decentralized, the corporate IT group was unaware that local variations had been introduced to the standard ERP template, potentially making support and upgrades more complicated.

The areas of the Information Technology Plan that would most concern Finance are those outside the detailed analysis of hardware and software. If we refer back to the information model from Figure 1.1, the areas of interest to Finance would be the business goals and objectives, the quality of the information itself, and the foundational elements that support the technology environment.

As a major consumer of information, Finance has a major stake in the quality and timeliness of financial information and, to a lesser extent, other operational information as well. It would be a significant source for functional requirements for data to support reporting and analysis. This would include all information required for a number of reporting processes:
Financial statement preparation. This includes the standard profit and loss (P&L) and balance sheet, but also the cash flow statement and footnotes, which often require data not usually recorded in the ledger or other ERP modules.

Management reporting. This includes business unit or product-level P&Ls, operational reports, and key performance indicators.

Planning, budgeting, and forecasting. In addition to the standard financial statements, these processes often require data related to specific planning drivers, such as commodity prices, interest rates, or other internal and external data.

One of the most frequent complaints heard in Finance departments is that they do not have the information that they need to help managers and executives run the business. It is important to note that information in this sense is not just data from the financial systems. Good, useful financial information often requires some level of transformation, aggregation, or manipulation by some set of business rules to meet end-user needs. A crucial element of any IT plan must be to understand the organization’s information needs and to incorporate the means to meet these needs in the future-state design.

While on the topic of reporting, it is important to understand the different perspectives that Finance and IT bring to the question of what constitutes an effective reporting environment. Finance is primarily concerned with the availability, accuracy, timeliness, and ease of access to financial and business information. While it understands the need for a sound technical environment and it appreciates the role of IT in developing and maintaining its reporting capabilities, Finance is mainly interested in what the end results are. The IT department, however, is responsible for maintaining what is likely a hodgepodge of reporting tools, databases, and source systems. It is
primarily concerned with maintaining a scalable environment with appropriate data integrity and proper design (such as properly normalized data and conformed dimensions in the data marts). The IT department is not always aware of what business questions are being asked; it primarily provides a means to ask them.

Clearly, each of these perspectives is limited and incomplete. Finance brings the business perspective and the reporting requirements, but has limited understanding of the technology environment. The IT organization brings the deep expertise in the technology, but cannot really be sure if its design is providing the needed answers. A collaboration between both of these organizations can provide the most complete picture of the company’s reporting needs and capabilities, and facilitate the most effective design of a future-state environment.

Finance also has a considerable stake in the foundational elements of the information model: data management, business requirements, governance and controls, and data definitions and standards. While Finance is not primarily concerned with the mechanics of data management, such as maintaining master data, it is very interested in the quality of the master data. For example, Finance usually has an interest in standardizing, to the extent possible, master data such as customer codes and the chart of accounts. For example, in order to perform customer-level reporting from multiple business units or multiple systems, either customer IDs must be standardized or there must be some type of central customer master with mappings from the various feeder systems. Similarly, in order to consolidate financial data, a standard corporate chart of accounts must be available with mappings from local ledgers. Maintaining these mappings and ensuring the consistency of these mappings across business units is very important to Finance. Thus, Finance is a stakeholder whose data management needs must be accounted for in the IT plan. Similarly, while Finance is not very interested in the
technical details of how specific controls are implemented in the ERP system, it is very concerned that the proper controls are in place and are effective. To the extent that the IT plan will incorporate strategies for controls and other governance features, Finance will have an important say in those requirements. In addition, having consistent definitions for data elements is important for reporting and control functions. The future-state design must ensure that standardized data definitions and business rules are enabled.

Another role that Finance would play in the development of the IT plan is to help to ensure that it is aligned with the company's overall strategy. We noted earlier that the Information Technology Plan must complement the company's business strategy. Given Finance's strategic role, and its centrality in the planning and budgeting process, Finance would be expected to have considerable insights into the future direction of the organization and thus its potential future information systems needs.

Finally, much of the IT plan will be impacted by future-state processes. We indicated earlier that a prerequisite to developing the future-state systems architecture is an understanding of the future-state business and financial processes. Ideally, the plan will not envision applying improved technology to existing, often suboptimal, processes. As part of its involvement in developing the IT plan, Finance should be responsible for identifying process improvements and driving improved performance of both the individual processes and the organization as a whole.

Conclusion

The information technology planning process is an opportunity for the organization to take the first steps to optimize both its technology environment and the processes that the technology
supports. Finance has a unique position in the organization, with its increasingly strategic role and its involvement with processes and business units across the company. It should have a central role in working with IT to develop the IT plan and to ensure that optimized processes and information are delivered along with an enhanced technology environment.