THE ROLE OF ORGANIZATIONAL FACTORS IN REALIZING ERP BENEFITS

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Today, enterprise resource planning (ERP) software systems are one of the fastest growing segments of the business–software industry. They offer a single system linking all corporate operations, including planning, manufacturing, sales, vendor relations, inventory control, human resources, and accounting. Companies around the world spent billions of dollars and expended untold man-hours installing vast ERP systems.

As with many new technologies, ERP systems have near-magical effects when they work as promised. For example, Singapore-based Flextronics International, a $1.1 billion custom manufacturer, rolled out an ERP to its 26 locations around the globe. Based on this implementation, the company was able to improve the speed with which it turns over inventory. Flextronics’ managers now shop first in their own internal online store, which contains a dynamic listing of parts and materials available anywhere within the company. The consolidated supply inventory also helps Flextronics’ purchasing managers to negotiate better terms with suppliers (Plotkin, 1999).

Yet today, ERP systems implementations fail more often than not. They cost more than estimated, take longer than planned, and are often scaled back in midstream. One horror story of a failed ERP implementation occurred at Foxmeyer Drug, a $5 billion pharmaceutical company. The company filed for bankruptcy in 1996 and argued that the primary cause of its difficulties was a failed ERP implementation that crippled the business. Bankruptcy trustees filed suit against the systems implementer consulting company and the ERP software supplier, seeking to recover damages of $500 million from each. The systems implementer had allegedly claimed that Foxmeyer would save $50 million annually by using ERP software. Both the systems implementer and ERP software supplier companies called the suit “preposterous.” Trustees claimed that the ERP software “messed up” orders and “could handle no more than 10,000 orders per night” compared to the old system that “could process 420,000 orders” (Escalle and Cotteler, 1999).

Despite the challenges associated with the implementation of ERP systems, they are still very appealing to top management. ERP systems promise to increase productivity by standardizing processes, enhance decision making by sharing information throughout the organization, and create more cooperation among organizational entities by linking them together seamlessly. They can also provide organizational design and process improvement options that can enable a company to maintain its competitive advantage (Applegate et al., 1988; Davernport, 1993). However, ERP systems that do enable these types of significant organizational
changes tend to be complex, with the resulting systems emerging from the interaction of technical, personal, political, and social issues (Barley, 1986; Markus and Robey, 1988). The dilemma to be addressed here is that ERP systems typically reinforce the organizational status quo, rather than contributing to significant organizational change when successfully implemented (Child et al., 1987; Cooper, 1994; Kimberly, 1987; Orlikowski, 1991). For example, Markus (1983) describes an attempt to use a financial information system to accomplish radical organizational change. Markus found that significant change was not accomplished due to political resistance. Orlikowski (1991), in another study of a large systems implementation, found that information technology was unable to loosen the hierarchical stranglehold on organizational practices required for significant organizational change. Both of the systems implementations examined by these researchers were successful in the sense that they were technically correct, operationally used, and at least some of the stakeholders believed that the information system added value.

A case study of an ERP systems implementation at a large utility company will be used to illustrate the important role that organizational factors play in realizing business benefits. The case, highlighting this organization’s experience with implementing a new ERP system to enable significant organizational change, found that process reengineering and organizational alignment activities did not occur. Although significant top management support and user participation took place, the implementation lacked a powerful change champion as well as creativity-fostering elements such as risk-taking reward structures. These organizational factors contributed to the development and implementation of an ERP system that automated existing manual tasks within the constraints of existing functional department boundaries, job descriptions, and workflows. Although its implementation was technically successful (it works), is being used, and has garnered some benefits, the hoped-for significant organizational changes were not attained.

A creativity framework that has been adapted from the organizational literature will be used to examine the implementation efforts at the company presented in the case. This framework is based on the interactionist principle that creativity is the complex product of a person’s behavior in a given organizational situation. This situation is characterized in terms of the contextual and social influences that either facilitate or inhibit creative accomplishments (Woodman and Schoenfeldt, 1989 and 1990). Insights gained from this examination will then be offered to help improve future implementations of ERP systems.

**CREATIVITY FRAMEWORK**

Creativity is the key for overcoming the organizational inertia that typically inhibits the significant organizational changes required to fully realize the benefits associated with the implementation of an ERP system. For example, Cooper (2000) suggests that creative systems requirements and logical designs result from group characteristics as well as from characteristics of individuals in the group. Others have shown that creativity can be important in all aspects of the systems implementation process (Couger, 1996).

In the following discussion, a creativity framework is adapted from the organizational literature (Woodman et al., 1993) and used to develop propositions regarding organizational characteristics that can improve the development and implementation of ERP systems. The premise of this framework is that individual, group, and organizational characteristics have an impact on the creative process and situation, resulting in the creative output or product (see Exhibit 1). In other words, individual, group, and organizational characteristics create the ERP implementation context — the creative situation — within which individual and group behaviors are exhibited. Before discussing the organizational creativity framework in more detail, it is necessary to define what is meant by creativity.

Organizational creativity results from individuals working together in a complex social system on a heuristic rather than algorithmic task, with an outcome consisting of a useful and novel product, service, procedure, or process (Amabile 1983; Newell and Simon, 1972; Woodman et al., 1993). Heuristic tasks do not have clear and readily identifiable paths to a solution and might not have clearly defined goals. Useful outcomes are those appropriate for the task and task goals (Amabile, 1983). Novel outcomes are those that require modification or rejection of previously accepted ideas (Newell et al., 1962). Novelty can be thought of as a continuum, from the lowest “garden variety” levels, where ordinary individuals are doing everyday things that are somewhat novel, to the highest levels, where geniuses are producing...
notable work that transforms fields and even societies (Amabile, 1983).

**Individual Characteristic**

Amabile (1979, 1983, 1988, 1990, 1996) conceptualizes individual creativity from a componential framework. This framework of creativity includes three major components — domain-relevant skills (task knowledge), creativity-relevant skills (cognitive abilities), and task motivation (intrinsic and extrinsic). The componential framework describes the way in which an individual on an ERP project might assemble and use information in attempting to arrive at a solution, response, or product.

In information processing terms, task motivation is responsible for initiating and sustaining the creativity process. It determines whether the search for a solution will begin and whether it will continue, and it also determines some aspects of response generation. Within the componential formulation, task motivation includes two elements: the individual’s baseline attitude toward the task (intrinsic motivation), and the individual’s perceptions of his reasons for undertaking the task in a given instance (extrinsic motivation).

Intrinsic motivation comes from within an individual and results from interest, enjoyment, satisfaction, and challenge of the work. Intrinsic motivation can result from increased autonomy (allowing individuals to be more in control of their work) as well as increased opportunity for professional growth (Amabile, 1988; Deci, 1971; Lepper et al., 1973). For example, if project managers manage too tightly at the procedure level (day-to-day execution of specific tasks), then team members may become de-motivated and their efforts uninspired. On the other hand, energy and exploration during problem solving can also increase when the process itself is fun (Cooper, 2000). From an intrinsic motivation perspective, the development and implementation of ERP systems can be improved by fostering motivation through tasks that provide for increased autonomy, opportunity for professional growth, and are enjoyable to project team members.

Creativity can be enhanced with extrinsic motivation if intrinsic motivation is low (Amabile, 1988 and 1996). Extrinsic motivation comes from the presence or absence of salient extrinsic rewards within the organizational environment, such as money and advancement. Appropriate reward structures for promoting creativity should recognize and reward risk taking whether it is successful or not (Kuratko et al., 1990; West, 1990). However, care should be taken to ensure that group members do not feel that every move they make is tied to rewards, because this will tend to reduce their motivation to take risks. In other words, high levels of extrinsic motivation can be dysfunctional because it tends to cut problem exploration short and directs energy into very narrow thought patterns that focus attention on the technical or rule-bound aspects of task performance, in pursuit of the extrinsic goal (Amabile, 1996; Hogarth, 1987; Woodman et al., 1993). Thus, the development and implementation of ERP systems can be improved by fostering appropriate levels of extrinsic motivation through reward structures that provide for increased money or advancement and reward risk-taking behaviors regardless of success.

Domain-relevant skills or task knowledge are the material drawn upon during operations; they determine what pathways will be available during the search for a response and what criteria will be used to assess the response possibilities...
If managers fail to provide clear direction for the project, and if they fail to carefully conceptualize and communicate the overall mission, members of the project team may make fragmented and disjointed efforts.

That are generated. This component includes familiarity with the knowledge of the domain in question: facts, principles, and opinions about various issues in the domain; knowledge of paradigms; performance “scripts” for solving problems in the domain; and aesthetic criteria. The component of domain-relevant skills also includes technical skills that may be required by a given domain (Amabile, 1996).

ERP systems domain knowledge is important for creative development. When more is known about the potential of ERP systems in terms of what they can do and what their impacts are, then group members are better able to creatively develop and apply this knowledge within the organizational context. In addition, ERP task-specific knowledge is important because creative development requires knowledge about procedures, processes, and the context in which the system is applied. This information suggests that the development and implementation of ERP systems can be improved by acquiring team members with significant depth and breadth of knowledge concerning the potential ERP capabilities and tasks (procedures, processes, and context).

From the component point of view, creativity-relevant skills (e.g., cognitive abilities) act as an executive controller during response generation, influencing the way in which the search for responses will proceed. According to Amabile (1996), an individual’s use of creativity-relevant skills determines the extent to which their output will surpass previous products or responses in the domain. Assuming an appropriate level of motivation, performance will be good, adequate, or acceptable if the requisite domain-relevant skills exist. However, even when these skills are at an extraordinarily high level, an individual is incapable of producing work that is considered creative if creativity-relevant abilities are lacking. The creativity-relevant skills component includes, first, a cognitive style characterized by a facility for understanding complexities and an ability to break cognitive sets during problem solving (Quinn, 1980). It also involves knowledge of heuristics, which can be defined as any principle or device that contributes to a reduction in the average search to a solution (Newell, Shaw and Simon, 1962). Skills also include a work style that concentrates effort and attention for long periods of time, abandons unproductive search strategies, temporarily puts aside stubborn problems, persists in the face of difficulty, maintains a high energy level, works hard, and maintains high levels of productivity (Amabile, 1996).

Everyone has creativity-relevant skills to some degree (Gordon, 1961; Rogers, 1970), with creativity normally distributed within the population (Shallcross, 1985; Tardiff and Sternberg, 1988). Furthermore, different kinds of organizations attract, select, and retain different kinds of people (Schneider, 1987; Tom, 1971; Vroom, 1966). Regardless of the level of creativity within an organization, individual creativity can be improved by creativity-enhancing techniques (Parnes, 1987; Geschka et al., 1973; VanGundy, 1988). Couger and associates (1996) provide an extensive summary of individual creativity techniques that are appropriate for improving the level of creativity in large information systems development efforts. Other researchers have demonstrated that non-computer- as well as computer-aided tools and techniques can be employed to enhance the creativity of individuals involved in large information systems development projects (Couger et al., 1992 and 1993; Snow and Couger, 1991; Telem, 1988a and 1988b; Elam and Mead, 1987 and 1990; MacCrimmon and Wagner, 1994; Massetti, 1996). This information suggests that the development and implementation of ERP systems can be improved by using creativity-improvement techniques or tools to improve individual creativity-relevant skills.

Group Characteristics

Group creativity is not the simple aggregate of all group members’ creativities, although group creativity is clearly a function of the creativity of individuals in the group. Group creativity, however, is influenced by organizational factors such as group leadership, group norms, group composition, group processes, and contextual influences stemming from the organization (Woodman et al., 1993).

One group leadership factor — clear project goals — is essential for creativity (Cooper, 2000). Managers should know where they are going and why. If managers fail to provide clear direction for the project, if they fail to carefully conceptualize and communicate the overall mission, members of the project team may make fragmented and disjointed efforts (Amabile, 1988). However, there should be considerable uncertainty as to how to get there (Souders, 1987). Participative and collaborative interaction between managers and team members enhances creativity, because it provides an opportunity for the exploration of alternative
frames of reference and new cognitive paths. It also involves people in the change process, thus increasing the opportunities for producing creative outcomes (Kanter, 1983; King and Anderson, 1990; Kolb, 1992; Payne, 1990). These research findings indicate that the development and implementation of ERP systems can be improved by clearly articulating development goals along with providing opportunities for project team members to participate in the development of processes that ensure those goals are met.

Creativity also flourishes in groups where power plays and gamesmanship are kept to a minimum (Amabile, 1988; Souder, 1987). Group norms of coherency and consistency foster this type of environment because they reduce the uncertainty surrounding roles and responsibilities (Kuratko et al. 1990; Souder, 1987). A coherent and consistent normative structure facilitates seeking out assistance and collaboration as well as helping to understand who needs to be kept informed. These norms also help to promote a supportive atmosphere that encourages cooperation and trust (Cooper, 2000). Thus, the development and implementation of ERP systems can be improved by establishing clear roles and responsibilities that foster group norms of coherence and consistency.

Communication within and between groups has also been shown to influence creativity. Groups provide an arena in which members can use others as resources to augment their own knowledge. In this manner, group members do not only add to their own knowledge but use the knowledge of others to stimulate the usefulness of their own skills (Woodman et al., 1993). Organizational research in this area suggests that the free exchange of information is crucial for creativity in social settings, and norms that promote open information exchange should facilitate creative performance (Amabile, 1988; Kanter, 1988; King and Anderson, 1990). Furthermore, group norms that inhibit divergent thinking and encourage conformity behaviors would constrain creativity (Amabile, 1988; Kanter, 1988). These findings indicate that the development and implementation of ERP systems can be improved by establishing group norms that encourage and support the open sharing of information and divergent thinking.

Group diversity also plays an important role in creativity because creativity thrives on the cross-fertilization of ideas (Staw, 1990; Thernburg, 1991). Creativity can be enhanced by group diversity such as when group members are drawn from diverse fields or functional backgrounds (Andrews, 1979; King and Anderson, 1990; Payne, 1990). Such diversity can increase the “network of possible wanderings” for problem solving at a group level (Newell and Simon, 1972). Kanter (1988) also found that cross-functional research and development teams with high levels of autonomy provided the diversity needed for creativity and innovation. These types of teams enhance creative performance by creating social and technical interaction between developers and implementers, and they broaden the spectrum of perspectives and values to be considered. Since diversity seems to foster group creativity, it is expected that the development and implementation of ERP systems can be improved by ensuring that team members have diverse backgrounds in terms of work-related experiences and functional training.

Group characteristics can also influence important aspects of group processes, such as how creatively a group approaches problem solving. Various aspects of the problem-solving process and interaction among members of a work group might place restraints on how the task is approached as well as the amount of attention given to heuristic aspects of the task (Woodman et al., 1993). Group problem-solving techniques, such as brainstorming and synectics, were developed with the belief that rules or norms that restrain evaluation of ideas generated would allow members to build off others’ ideas and would result in a greater number of novel ideas (Gordon, 1961; Hogarth, 1987; Osborn, 1963). Other types of problem-solving techniques, such as systems analysis and prototyping, were designed to facilitate the development of information systems (Cooper, 2000; Davis and Olson, 1985). This research leads to the proposition that the development and implementation of ERP systems can be improved by employing systems analysis and design methods appropriate for high levels of uncertainty as well as group creativity improvement techniques and tools.

Organizational Characteristics
Organizational characteristics create the contextual influences that operate on both individuals and groups to influence creativity. Organizational creativity, the creative outcomes of a complex social system, is a function of group creativity and contextual influences such as leadership, reward systems, availability of information, and so on (Woodman et al., 1993).
Leadership has been shown to influence organizational creativity. For example, Katz and Allen (1985) studied the relationship between project performance and relative dominance of project and functional managers in matrix-managed project teams. They found that appropriate separation of roles between project managers and functional managers in R&D matrix structures promoted overall R&D productivity. Katz and Allen’s findings indicated that the most important role activities for project managers were centered on influencing the larger organization, interacting with other components of the organization, and acquiring critical resources. The role of acquiring critical resources has also been shown to increase creative outcomes for organizations by other organizational researchers (Cohn and Levinthal, 1990; Damapour, 1991; Farr and Ford, 1990; Tushman and Nelson, 1990). Therefore, it is expected that the development and implementation of ERP systems can be improved by acquiring the appropriate number and type of organizational resources for each phase of the project.

Katz and Allen (1985) also found that functional managers are responsible for the control of decisions related to the technical content of the projects. Although the functional manager has knowledge about the technical expertise of people and can make appropriate assignments, Katz and Allen’s results suggest that control over rewards for performance is either best held by the project manager or shared between the project and functional managers. This last point has implications for organizational risk taking. For example, even though new developments might appear to be violations of the current state of technical knowledge, they may lead to valuable new product developments. According to Katz and Allen, when functional managers control rewards, engineers fear that nonroutine behavior will be evaluated negatively. However, when project managers control rewards, the overall outcome is evaluated regardless of the means used to accomplish the task. Considerable research exists that supports the notion that creativity is enhanced in an environment were risk taking is encouraged and supported (Amabile, 1988; Arad, Hanson and Schneider, 1997; Burns, 1990; Nystrom, 1990). These findings suggest that the development and implementation of ERP systems can be improved by establishing a group reward system that recognizes creative accomplishments.

Evidence suggests that the availability of information is a crucial variable in the creative process and that information exchanges with the broader organizational environment can influence creativity (Woodman et al., 1993; Damapour, 1991; Kanter, 1988; Paolillo and Brown, 1978, Payne, 1990). For example, Allen, Lee and Tushman (1980) studied the interaction of locus of communication and project type on overall technical performance of R&D work groups. Technical service projects were found to have significantly more intraorganizational communication than research and development projects. Additionally, there was greater variability in the amount of intraorganizational communication among members of research project teams than among technical service project teams. Furthermore, Allen and his colleagues (1980) found that overall technical performance of engineers working on developing new products or processes obtained greater benefits from technical communication with the lab than engineers who worked on other projects. Thus, the development and implementation of ERP systems can be improved by enabling information exchanges between information systems development staff and business leaders to better understand strategic business requirements.

Another way to improve organizational creativity is through structure (Burgelman, 1983 and 1984; Nielsen, Peters and Hisrich, 1985; Tornatzky et al., 1983). Results from studies in the innovation and creativity literature generally indicate a link between higher levels of organizational creativity and more organic structures characterized by decentralization, lack of formalization, and high levels of complexity. Mechanistic organizational designs, in contrast, constrain the ability of the system to produce creative outcomes (Burns and Stalker, 1961; Pierce and Delbecq, 1977; Tornatzky et al., 1983). Thus, the development and implementation of ERP systems can be improved by creatively aligning organizational structures and processes to more effectively realize the benefits associated with the enabling technology.

In summary, the creativity framework presented in this section suggests that individual creativity can be viewed as a function of contextual influences and social conditions, cognitive abilities, motivational factors, and knowledge. The group in which individual creativity occurs establishes the immediate social influences on the individual’s creative performance. Individual creativity, in turn, contributes to creativity in groups. Organizational characteristics create the contextual influences that operate on both individuals and groups to influence their creativity. Organizational creativity — the creative...
outcome of a complex social system — is then a function of group creativity and contextual influences, including those that come from the environment. The creativity framework developed in this section will now be used to guide our review of the ERP systems implemented presented in the case that follows (see Exhibit 2).

ERP IMPLEMENTATION

Project Overview

As the United States electric energy industry restructures, the vertically integrated utility will be a business design with a glorious past. The people of Large Electric Utility corporation (LEU) perfected that design as no other, creating one of the largest integrated energy production, transmission, and distribution companies in the nation. To increase their energy generation, business size, and diversity, LEU merged with the Small Electric Utility (SEU) corporation. As a result of the merger, LEU became one of the largest electric utility holding companies in the United States, with total combined assets of $30 billion and a generating capacity of 37,498 megawatts (AEP, 1999).

LEU provides service to more than 4.8 million customers in 11 states — Arkansas, Indiana, Kentucky, Texas, Virginia, and West Virginia. LEU also operates one of the largest transmission and distribution systems in the world, encompassing 38,000 circuit miles of transmission lines and 186,000 miles of overhead and underground distribution lines in its service territory. The company’s distribution service area covers 197,500 square miles. Furthermore, with an ownership interest in 89 generating facilities, LEU is one of the largest generating companies in the United States. The company’s domestic generating capacity is more than 38 million kilowatts, and it is also a leading wholesale energy marketer and trader, ranking second in the nation in electricity volume (AEP, 2000).

In its 1999 Annual Report, LEU outlined some aggressive steps that they would be taking to ensure that their performance in 2001 and beyond would meet, if not exceed, their shareholders’ expectations. One of these steps was to “…complete the merger and work through restructuring in several of our states as quickly as we can. We will dig in and make the changes and process improvements necessary to begin returning merger savings to you …” To facilitate and enable the process improvements required for realizing merger synergies and cost savings, LEU decided to standardize its business systems across the organization by implementing an ERP solution that they called the Enterprise Application Solution (EAS). EAS was a Web-based system comprising two primary ERP software suites: Indus Passport and PeopleSoft (see Exhibit 3).
EAS turned out to be a three-year initiative that provided an integrated technology framework that supported the information and business intelligence needs of LEU. The new system helped to align information from strategic and operational planning to the execution of day-to-day business decisions. The EAS project enabled the standardization of four primary business work processes: work management, supply-chain management, financial cost management, and human resources management.

In a meeting with LEU senior managers, the Vice President of the EAS Project, discussed a scenario that highlighted some of the process-enabling benefits associated with the EAS system. For example, “Let’s imagine that a work order to fix a turbine pump has been entered into the Indus Passport Work Management System and assigned to a mechanic. A few days before the job is scheduled to begin, the mechanic orders the required parts using the Indus Passport Supply Chain System. When the parts are delivered to the plant, the mechanic picks them up and begins his work. He, of course, has the work order, with the project and accounting information already entered. Let’s say this job took eight hours to complete. The mechanic would enter the time it took into the Indus Time and Labor System. In the Indus Time and Labor System, the accounting area is automatically populated with the correct codes, and all the mechanic has to do is enter his time information. After the mechanic enters his time, the Indus Time and Labor System validates the information and sends a file to the PeopleSoft Payroll System. The Payroll System calculates the correct pay, prints a check, and then sends the information to the PeopleSoft Financial Cost Management Systems to be recorded in the General Ledger System and Projects System. These systems then correctly enter the financial information in the company’s books and management reporting system.”

Although the example is simple, it demonstrated how the EAS PeopleSoft and Indus Passport ERP systems enabled the integration of data from supply chain, work management, finance, and human resources business processes. In fact, when the EAS business case was developed during the LEU — SEU information systems review process, it was determined that $354 million in business benefits could be realized through the consolidation of systems as well as the development of new standardized business processes (see Exhibit 4). Three years later, the EAS system was successfully deployed and is able to handle large volumes of transactions. Business processes, however, were not redesigned to enable the realization of merger synergies and cost savings. Thus, the EAS systems implementation reinforced the organizational status quo, rather than contributing to significant organizational change.

**Change Governance Structure**

The Enterprise Application Solution (EAS) Program began in 1999 with the development of its business case and was made available to business users in 2002. The project management and communication structure was based on a number of key roles (see Exhibit 5). The overall sponsor of the EAS Program was the executive vice president of shared services. He provided the executive guidance, leadership,
and support to the EAS Program and chaired the EAS steering committee, which was comprised of senior leaders from LEU’s work management, supply chain, finance, and human resource business areas. The major responsibilities of the EAS steering committee were to provide sponsorship, support, and overall strategic direction to the program; ensure that EAS activities were integrated with other LEU initiatives; and provide direction on key issues that could not be resolved by EAS program management.

The former vice president of SEU’s operations services led the EAS effort. Reporting to the vice president were functional, technical, and consultant leads from each of the four business areas.

**EXHIBIT 4** EAS Five-Year Benefits Summary

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<tr>
<th>Area</th>
<th>Benefits</th>
<th>Improvement Objectives</th>
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| FCM  | $24M     | - Improved performance management process and decision making  
|      |          | - Maximize vendor integration of systems  
|      |          | - Centralize project costing and asset management  |
| HRM  | $60M     | - Process data in a cost-efficient and effective manner  
|      |          | - Manage processes in a cost-efficient and effective manner  
|      |          | - Sustain a successful workforce  
|      |          | - Consolidate additional systems into EAS  |
| SCM  | $82M     | - Improve processes for material service and optimize inventory levels  
|      |          | - Standardize supplier catalogue across the organization  
|      |          | - Provide well-distributed supplier base  
|      |          | - Reduce process costs  |
| WMS  | $49M     | - Improve scheduling, work planning, and crew utilization processes  
|      |          | - Reduce duplicate data entry into multiple systems  
|      |          | - Resource optimization  |
| IT   | $139M    | - Consolidate systems  
|      |          | - Fewer interfaces and hardware platforms  
|      |          | - Reduce support labor  |
| Total| $354M    |                        |

**EXHIBIT 5** EAS Change Governance Structure
Aspects of the program — financial cost management (FCM), human resources management (HRM), and work management systems and supply-chain management (WMSC). Functional leads were responsible for providing expertise regarding LEU user requirements, business processes, and business rules. Technical leads provided knowledge of the LEU systems environment, current applications, application design, and so on. Consultant leads provided expertise regarding PeopleSoft and Indus Passport software capabilities, as well as best practices in the area of project management for ERP systems implementations. A project support team also assisted the vice president and his staff.

Similar to the structure of the EAS program management team, each individual team within the FCM, HRM, and WMSC programs contained a functional, technical, and consultant lead. Team members were subject matter experts drawn from within LEU business units and were supplemented by contractor resources. In addition, the EAS program also contained three teams — global design, change management, and technical infrastructure — who played an integration role across the program and spanned all teams. The global design team was chartered with identifying “touch points” between various systems and facilitating the resolutions of those issues. The change management team helped to align people and processes with the new systems, while the technical infrastructure team assisted in hardware and software specification and implementation activities.

Advisory groups were also established for FCM, HRM, and WMSC programs. Program advisory groups were comprised of senior managers from each program’s respective business area. Its members provided input and direction on business issues, identified business unit concerns with changing existing processes, and facilitated communication within their business units to help build commitment to EAS-related changes.

**Implementation Approach**

The PeopleSoft and Indus Passport ERP solutions chosen for the EAS program provided extensive functionality. For example, core processes were provided together with screen/window, reporting, and file creation software such as report writers and query languages. But these ERP systems also contained a large number of options, parameters, features, and modules to select or create that required a large amount of EAS program team effort. To minimize the risks associated with the implementation of these ERP systems, the EAS program utilized a standard systems implementation methodology that was broken down into the plan, assess, design, build, and implement stages (see Exhibit 6).

During the plan stage, the EAS program’s approach, scope, and primary objectives were confirmed with the EAS steering committee. EAS program management worked with FCM,
The decision not to reengineer business processes at this stage impacted the organizational readiness activities performed by the change management team.

EAS program development activities during the assess stage focused on analyzing LEU’s then-current business processes and systems in order to determine the new PeopleSoft and Indus Passport functional and systems requirements. EAS program teams analyzed financial cost management, human resources management, supply-chain management, and work management systems business practices and policies to determine the functional and system requirements of the new EAS system. Existing reports were collected, and existing interfaces were identified. High-level gaps were determined, reviewed, and compiled into a combined list of process requirements. Requirements for data conversion were also started in the assess phase with a focus on identifying legacy systems that would interface with the new EAS system. The technical infrastructure and global design teams focused on establishing controls and security as well as determining the necessary client/server technical requirements for the new ERP applications. During this phase, the change management team’s organizational readiness activities continued. Their main task was the assessment of LEU’s organizational readiness for change. Other tasks involved a preliminary assessment of training requirements and development of a communication strategy and plan.

In the design stage, EAS program teams developed high-level designs of how AEP could improve the performance of their business processes utilizing the PeoplesSoft and Indus Passport ERP systems. Industry best practices were reviewed and analyzed to determine if they met LEU’s business requirements. Processes, however, were not designed from start to completion across the full business life cycle, as would normally be the case when reengineering business processes. Best practices information and high-level designs were used as a guide for configuring the EAS system. Gaps between best practices process designs that were enabled by the PeopleSoft and Indus Passport ERP systems and current LEU business process designs were documented. These gaps also identified where ERP customizations were necessary. The decision not to reengineer business processes at this stage impacted the organizational readiness activities performed by the change management team. Rather than beginning to work on the “new” organization design that would enable LEU business process improvements, the change management team organizational readiness tasks became more tactical and began to focus on communications and training go-live activities. The change management team then focused on the development of a change plan and the implementation of their communications plan. Work was also started on the development of end-user training.

The objective of the build stage was to configure the EAS system and develop required data conversions, interfaces, and reporting programs. Customized ERP systems changes that were approved during the design stage were also developed in this stage. In addition to building the EAS system, program teams developed and executed test scenarios that were created based on current LEU business processes. Program teams also tested customizations, interfaces, conversions, and reports. The technical infrastructure and global design teams continued their infrastructure design activities by defining, building, and executing stress and volume tests. They also prepared AEP’s IT staff for system transitioning and ownership of the new PeopleSoft and Indus Passport systems. The change management team’s organizational readiness activities continued in this stage with an emphasis on managing communications, preparing and delivering end-user training, and planning the development of an EAS help desk.

Finally, during the implementation stage, the composite parts of the EAS program were aggregated and assembled into a working system. This stage of the EAS program proved to be the most difficult because this was the first time that all of the working deliverables were combined and tested as a whole. During the integration testing process, a number of cross-program issues were uncovered that delayed
the implementation of the system for about three months. In this stage, EAS project teams were executing their integration, cycle, and user acceptance tests as well as transferring the systems over to LEU end users. LEU end users were readied for their new roles by completing EAS training and through go-live targeted communications — such as how to obtain security access to the production environment — that were sent out by the change management team. The change management team was also involved with the implementation of the EAS help desk.

**LEU ORGANIZATIONAL CREATIVITY PROFILE**

**Organizational Assessment**

During the assess stage of the project, the change management team developed a half-day organizational readiness assessment workshop that was designed to accommodate 12 to 15 people. Organizational readiness was defined as the ability and willingness to adopt new processes, systems, technologies, skills, organizational structures, behaviors, attitudes, and other changes to realize EAS business benefits. Organizational readiness to change applies to individuals, work groups, organizational levels, and LEU as a whole. The EAS organizational readiness workshop evaluated employees' readiness to change by exploring their perceptions of past change projects and identifying potential organizational alignment barriers and enablers to the EAS project. Over 300 LEU employees from finance, human resources, supply-chain and work management business areas participated in these workshops. Information obtained from these workshops was used by the change management team to develop system implementation change management, communications, and training plans.

During the first part of the workshop, participants completed an organizational readiness survey (see Exhibit 7). This survey documented workshop participants' assessments of their organizations' readiness with respect to six critical dimensions (e.g., leadership, vision, change strategy, building employee commitment, managing performance, and organizational alignment) associated with any significant ERP change initiative. The results obtained on this survey were used as the basis for discussion during the remainder of the workshop.

**Change Vision**

The organizational readiness assessment indicated that LEU employees did not fully understand the need for EAS or how they would be personally impacted by its installation. LEU business leaders typically viewed the implementation of EAS as just another information systems project and did not develop a view of how the EAS system could enable their strategic business process improvement objectives. As one HR employee put it, “… leaders don't seem to understand the real changes that could result for the Web-based self-service aspects of the EAS system. We are currently organized into three support centers that process employee information changes. Allowing employees to process their own information online could eliminate our jobs.” This view of the EAS system — as just another information systems project — made it difficult to obtain functional business resources during the assess and design stages of the project. When business resources did arrive on the EAS project, they were often required to complete work tasks associated with both their current job and EAS. This situation had a negative effect on EAS program team creativity because it resulted in EAS schedule delays as well as feelings of ongoing fatigue for individuals on the EAS program team.

**Change Strategy**

The lack of a clear EAS operational vision for how the program would enable LEU’s business strategies resulted in the measurement of success to be redefined in terms of technical success. When the EAS business case was approved by the leadership of LEU, it was determined that $354 million in business benefits could be realized over a five-year period through the consolidation of duplicate systems and systems-enabled process improvements. As the EAS system was developed, LEU merged with SEU; and functional business process owners became focused on consolidating processes and systems within the two companies. They were concerned with meeting immediate business performance targets within a tight budget — not on process improvement opportunities that would address LEU’s more strategic business objectives. As one manager put it, “… the compelling business reason for LEU to initiate and implement the EAS program was to bring the two companies, with different systems and needs, together to conduct business more efficiently. We need to focus on developing an information systems plan to leverage information from these systems so we can
make better business decisions.” Another manager defined success as “… getting everyone’s buy-in at all levels on system functionality.” The EAS steering committee reflected these views and re-focused the EAS program’s measure of success to one of “on time and on budget.” This new emphasis significantly reduced the creative ability of the EAS program to enable significant organizational changes that would be necessary to realize identified business processing reengineering benefits.

The lack of a clear EAS operational vision also impacted the EAS program’s ability to resolve problems quickly with its advisory groups. EAS financial cost management, human resources management, supply-chain management, and work management systems advisory group members worked to ensure that the EAS

### EXHIBIT 7 LEU Organizational Readiness Evaluation

<table>
<thead>
<tr>
<th>Organization Factors</th>
<th>Survey Assessment Topic Areas</th>
<th>Untrue</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leadership</strong></td>
<td>Leaders share a common EAS change vision</td>
<td></td>
<td>*</td>
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<tr>
<td></td>
<td>Leaders demonstrate personal resolve for EAS by their actions</td>
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<tr>
<td></td>
<td>Leaders create a sense of business urgency for EAS changes</td>
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<tr>
<td></td>
<td>Leaders understand, trust, and respect each other</td>
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<tr>
<td><strong>Vision</strong></td>
<td>A clear vision for EAS changes has been articulated</td>
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<tr>
<td></td>
<td>Employees understand EAS operational vision and what it means</td>
<td></td>
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<tr>
<td><strong>Change Strategy</strong></td>
<td>Appropriate approaches are being taken to implement EAS changes</td>
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<td></td>
<td>EAS changes are happening fast enough to sustain interest</td>
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<td></td>
<td>Authority and responsibility to achieve EAS changes are clear</td>
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<td>Appropriate structures are in place to effectively guide EAS changes</td>
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<td>Decisions are made on time and do not slow down EAS changes</td>
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<td>Problems emerging during EAS changes are solved quickly</td>
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<td>Sufficient time to implement EAS changes allowed</td>
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<tr>
<td><strong>Building Employee Commitment</strong></td>
<td>Employees believe EAS changes will succeed</td>
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<td></td>
<td>Employees will learn and apply necessary new skills and behaviors</td>
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<td>Employees can be constructively critical of EAS changes</td>
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<td></td>
<td>Managers have necessary change skills for EAS implementation</td>
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<td></td>
<td>EAS requires changes in attitudes and behaviors</td>
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<td>Certain employees (groups or individuals) may lose job status</td>
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<td>Appropriate EAS performance rewards are applied</td>
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<td>Employees are well informed and kept up to date on EAS changes</td>
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<td></td>
<td>People know how EAS changes will impact them personally</td>
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<td>EAS commitment being built, not forced</td>
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<td></td>
<td>Managers’ commitment to EAS won, not forced</td>
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<td></td>
<td>Managers are getting EAS change things done</td>
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<td><strong>Manage Performance</strong></td>
<td>Existing organizational process will not block EAS changes</td>
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<td></td>
<td>Processes, policies, and rules have been aligned with EAS changes</td>
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<td>Cross-functional cooperation sufficient</td>
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<tr>
<td><strong>Organization Alignment</strong></td>
<td>EAS changes are supported by current AEP management behavior</td>
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<td></td>
<td>EAS changes supported by current AEP organization structure</td>
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<tr>
<td></td>
<td>EAS changes are supported by AEP current job structures</td>
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</tbody>
</table>

1 – 4 High Risk
5 – 7 Medium Risk
8 – 10 Low Risk
Building Employee Commitment

The organizational readiness assessment also revealed that building commitment to new LEU information systems is usually forced, rather than built, through employee involvement and communication. As one employee put it, “... people often feel that they’re being ‘done to’ when LEU implements a new information system.” Another employee indicated, “... information was communicated on a need-to-know basis very late in the implementation process. The communications we do receive are delivered through e-mails.” Employees wanted more face-to-face communication opportunities with their functional managers to understand the impact of EAS on their jobs as well as to provide feedback on proposed changes. This type of two-way dialogue, however, did not typically occur between functional managers and their employees. As one employee pointed out, “... our managers demonstrated support for EAS at their level, but they don’t understand all the things that go on in the levels below them.” This lack of two-way communication had a negative effect on EAS program team creativity and played a key role in leading to the development of an EAS system that reflected the status quo. Through more frequent information exchanges with functional managers and employees, advisory group members could have gained a better understanding of potential process improvement opportunities that could significantly reduce costs. Creative process approaches could have been developed by EAS program teams to meet these opportunities.

Organizational Alignment

The organizational readiness assessment found that any significant EAS-related process improvement proposals would not be readily supported by the existing organizational structures. To understand this finding, it is important to review how LEU is currently organized. LEU has a functional organizational structure designed to support its production, transmission and distribution energy businesses. Units of divisions and departments have been formed according to the major technical or professional functions (e.g., financial cost management, human resources management, supply-chain management, and work management systems) performed by the unit. LEU’s functional structure makes it easier to manage work within the group because supervisors and subordinates share the same job-related knowledge. Each group also contains people who “speak the same language” and who share and nurture each others’ technical expertise. One of the main drawbacks of LEU’s structure is that it needs more than one department to complete the various steps associated with EAS-enabled horizontal process improvements. These structural influences exerted a negative effect on the EAS program team’s ability to creatively align organizational structures and processes to more effectively realize the benefits associated with enabling ERP technology.

EAS PROGRAM TEAM CREATIVITY PROFILE

Our creativity framework leads us to believe that EAS program team creativity is not the simple aggregate of all its members, although it is clearly a function of the creativity of individual technical and functional team members. EAS program team creativity is influenced by group organizational factors such as clearly developed team goals, participation in the development of processes to ensure that goals are met, defined team roles and responsibilities, team norms that encourage open sharing of information and divergent thinking, and team diversity in terms of work-related experiences and training. Information to understand the impact of these group organizational creativity factors was gathered through kick-off meetings at the
The lack of goal specificity resulted in conflicting interpretations among the EAS program team and their advisory groups.

Program Goals
The lack of a clear EAS operational vision for how the program would enable LEU’s business strategies resulted in the development of ambiguous EAS goals. Essentially, the “… ultimate goal of implementing the new software is to consolidate to one common set of solutions to be used by everyone in LEU not different solutions for different business units,” said the vice president of the EAS project. There are many advantages to having common systems, he added, including “… the ability to ‘speak the same language’ and eliminate the duplicate data entry that often occurs in many work processes. The project will also allow LEU to take advantage of emerging E-business technologies and positively position the company for many changes that are taking place in the energy industry today.” The EAS vice president’s goal statements focused on the ability of EAS to change LEU in an unspecified manner, making a “big deal” concerning the “many possibilities” that ERP software offered and the associated “potential for significant organizational change” in order to cope with its future growth.

The lack of goal specificity resulted in conflicting interpretations between the EAS program team and their advisory groups. During the assess and design stages, EAS program teams developed proposals for simplifying processes and reducing costs. Their advisory groups would often reject these proposals because they resulted in less staff or changes in power relationships within business units. For example, the human resources organization had an existing process where HR field offices entered employee change information into a Lotus Notes database system; and this information was then sent to an HR service center for verification. After verification of the information, the HR service center would enter the employee change information into their current HR systems. Using the “employee self-service” Web-based functionality available in the new PeopleSoft Human Resources ERP system, the EAS program team developed a process that would have HR field offices enter employee change information directly into PeopleSoft. The resulting process improvement would eliminate duplicate data entry and reduce the number HR service center staff required. This process improvement proposal was rejected by the EAS human resources advisory group, and the EAS program team implemented the existing process in the new ERP system.

In EAS lessons-learned sessions, it was discovered that the lack of clear project goals also reduced the collaboration between functional and technical EAS program team members. Technical staff focused on gaining system efficiencies, at the expense of effectiveness, and functional staff focused on maintaining existing ways of doing things at the expense of efficiencies. This general goal disagreement between these EAS team members resulted in the two factions working at cross-purposes.

From the technical staff perspective, the EAS program was their only job. Their performance was judged based on the timely development of the ERP solutions that garnered the cost economies stated in the IT portions of the EAS business benefits case. In contrast, functional team members were on loan from AEP business units; and their job was to process transactions in a timely and accurate fashion, as was currently happening with their existing systems.

As one functional team member put it, “… my current system may not be integrated with other systems across the company, but it works.” Thus, the technical staff wanted to go “full force” while functional staff wanted to proceed cautiously, attempting to provide at least the previous level of customer service at all times. This led to reduced EAS program team collaboration with functional team members resisting new ways of doing things that could significantly disrupt their existing processes and workflows.

Group Norms
In order to achieve its “on time and on budget” measurement of success, the EAS program team needed to establish clear roles and responsibilities that facilitated the execution and completion of tasks. From a creativity point of view, clear roles and responsibilities help to foster group norms of coherency and consistency. These norms are important because they promote behaviors concerned with collaboration and information sharing. During the program planning stage, the change management team conducted a series of team development workshops that helped to establish the EAS change governance structure. Roles and responsibilities were initially defined during these workshops and communicated throughout the program team. Unfortunately, LEU organizational factors had a negative impact on EAS
roles and responsibilities as well as coherence and consistency group norms.

One of the organizational characteristics that had a negative impact on coherent and consistent group norms was the view that EAS was just another information systems project. This view of EAS made it difficult to obtain adequate resources, and it also resulted in multiple changes to team members during the various stages of the project. As a result, a lack of trust developed between FCM, HRM, and WMSC EAS program teams as they struggled to meet development and implementation deadlines. In addition, during the development of the EAS system, LEU merged with the SEU. The organizational turbulence associated with assigning staff to the “New LEU” organizational structure led to uncertainty concerning EAS functional team member roles and responsibilities; and the roles of advisory group members changed as the project progressed. As a result, a lack of trust also developed among the EAS program team and LEU business units.

At the end of each project stage, lessons-learned sessions were held; and they repeatedly indicated a need for improved cross-program team communication and collaboration. According to one team member, “… EAS program teams should communicate problems, concerns, and issues in a timely fashion. We should hold mandatory coordination meetings daily, keep them short and issue-based.” Another team member pointed out that “… the EAS program team could have improved its coordination by following standards. During our last project review meeting, we heard a lot of concerns that we can’t do this or that because we are behind schedule. But as it turned out, it’s alright to take twice as long to fix and clean up the mess that resulted from not doing it right the first time.” These findings indicate that group norms were developed that limited the free exchange of information between FCM, HRM, and WMSC EAS program teams and reduced the overall creative performance of the program.

**Group Diversity**

Functional diversity existed on the EAS program team because LEU business units had representatives on the team. For example, the program team consisted of 180 individuals drawn from LEU’s finance, human resources, work management systems, supply-chain management, and information technology business areas. Over 80 ERP development consultants supported LEU’s EAS resources. In theory, the diversity of the program team could have significantly improved the team’s creativity. However, only moderate degrees of creativity were obtained because the functional and technical team members that represented business unit interests were from low-level management positions and had been with LEU for a long time. LEU’s team members also tended to be somewhat conservative in their approach and took a “don’t-make-waves” approach to system design and development activities.

**Group Problem Solving**

The ERP consultants, hired by LEU to develop and implement the EAS system, had a relatively structured problem-solving methodology that was appropriate in highly uncertain system development and reengineering contexts. Their problem-solving approach was based on business unit stakeholder interviews, systems analysis, and prototyping. For example, when the EAS payroll team leader wanted to examine some functionality changes that were proposed during the design stage, an experimental prototyping system was developed to test PeopleSoft Payroll System processing functionality. This prototyping system provided real-time feedback concerning alternative uses of the PeopleSoft Payroll system and made the EAS payroll team more comfortable with recommending novel changes to the HR advisory group. Brainstorming techniques were also employed to generate a variety of ideas that increased the technical creativity of the team. Thus, the ability of the EAS program team to meet its “on time and on budget” performance measures was greatly enhanced by following a creative technical problem-solving approach that involved brainstorming, systems analysis, and prototyping.

**EAS Individual Team Member Creativity Profile**

Our creative framework suggested that motivation (intrinsic and extrinsic) was responsible for initiating and sustaining the individual creativity process. It determined whether the search for a solution will begin and whether it will continue. LEU organizational and EAS program characteristics had a negative impact on the motivation of EAS team members. For example, the lack of a clear EAS operational vision led LEU business leaders to view the program as just another systems project. This view made it difficult to obtain required business unit resources and resulted in the development of ambiguous
EAS program goals. Furthermore, business unit resources that were assigned to EAS continued to work on tasks associated with their current functional jobs. This situation resulted in ongoing fatigue for individuals on the EAS program team.

**Intrinsic Motivation**

Intrinsic motivation can result from increased autonomy as well as increased opportunity for professional growth. LEU business unit functional resources on EAS had little control over the program and little autonomy in their program-related tasks. Though initiated by the executive vice president of shared services, the program seemed to be driven by ERP consultants and LEU technical staff. They developed the roles, came up with project plans, and developed cost estimates. In addition, many times, when EAS functional team members objected to design suggestions by EAS technical staff, their objections were appealed to the EAS program executive and were usually overturned. According to one EAS program director, “… technical staff members found the new ERP technologies very interesting and believed that becoming familiar with them would be helpful in their professional growth.” He also went on to say, “… some functional staff were intrigued by our ERP technologies, but none felt that it was important for their professional growth at LEU.” Because of the organizational pressures to complete EAS on time and on budget, there was little time for EAS functional staff to enjoy the process of learning about and exploring the use of ERP technologies to improve the way they currently do their work. The lack of autonomy and minimal perceived impact on professional growth reduced the time and effort that EAS functional staff spent on identifying and exploring process improvement alternatives.

**Extrinsic Motivation**

LEU functional staff members on the EAS program team were rewarded based on their current jobs, with no obvious incentives for participating in the program. As one member of the change management team pointed out, “… EAS functional team members that were involved with the PeopleSoft Human Resource System were required to work at their normal jobs in addition to being involved with the EAS development process. They received no pay incentives for the time and effort they were required to work in order to meet tight EAS Program milestones.” This sent a message that business unit managers were not really interested in EAS, and it led to a lot of conservatism on the part of EAS staff members. According to another member of the change management team, “… there was little motivation to do anything other than merely automate current work processes.” Thus, EAS functional team members were motivated, by existing LEU performance reward structures, to mitigate the impact of the program on their daily activities.

**Knowledge**

During the development of EAS, ERP consultants contributed a great deal of knowledge concerning the potential capabilities of PeopleSoft and Indus Passport software. They also used on-the-job training approaches to educate EAS functional and technical staff on the potential capabilities of these ERP solutions. EAS functional staff obtained a high-level understanding of how the selected ERP solutions could improve existing work processes, and they creatively used this knowledge to develop process improvement recommendations. This understanding was evident in a presentation by the EAS human resources program director to the human resources EAS advisory group. His presentation focused on the organizational impacts that would result from implementing new PeopleSoft “self-service” functionality. As he pointed out, “… under self-service, business unit managers would be able to initiate transactions concerned with salary forecasting and expense approval processes online. Employees could also initiate a number of transactions online that were concerned with benefits and personal information changes. Under these new process scenarios, HR managers and the HR service center would no longer be involved in these administration transactions.” Knowledge of ERP software capabilities enabled EAS program teams to make creative process improvement recommendations. EAS advisory groups, however, often rejected their recommendations because they usually impacted existing organizational structures and staffing levels.

**Cognitive Abilities**

According to a member of the change management team, “… LEU employees tend to be conservative in their work approaches, and it reduced their willingness to be creative when completing their EAS development tasks.” LEU’s relative conservatism was evident in the
Although there was significant top management support and user participation, there was a lack of organizational creativity-fostering elements.

standardized forms and templates that the EAS program team required its members to fill out. These forms inhibited divergent thinking and focused attention primarily on gathering technical information required for configuring the system and developing interfaces. As previously mentioned, the EAS program team employed a relatively creative structured problem-solving approach that was based on prototyping. They used this approach to test new ERP systems functionality. EAS problem-solving prototyping tools had a modest impact on technical team members’ abilities to break mindsets and take on new perspectives, thereby increasing individual creativity.

CONCLUSIONS
In response to the increasing competitiveness of the electric utilities environment and ongoing consolidations that are taking place (McCann, 1999), radical organizational changes were increasingly necessary for organizational survival. This was the situation that LEU faced. The EAS business benefits case showed how the installation of an ERP solution and its associated process reengineering could help in this regard. Questions concerning the ability to use information systems to enable significant organizational change have been raised elsewhere in terms of the constraining effects of politics (Markus, 1983) and culture (Cooper, 1994), as well as other social issues (Barley, 1986). However, even if these issues are overcome, successful information systems-enabled reengineering can only result when creativity is present (Cooper, 2000).

The LEU case demonstrated how the implementation of their PeopleSoft and Indus Passport ERP systems reinforced the status quo rather than contributing to achieving the significant organizational changes that were described in the EAS business benefits case. The creativity framework used to examine LEU’s ERP implementation efforts helped to illustrate the powerful effects that organizational contextual influences had on the EAS program and its team members. Although there was significant top management support and user participation, there was a lack of organizational creativity-fostering elements — a clear EAS operational vision and program goals, risk-taking performance reward structures, interorganizational communication exchanges, and alignment of organizational structures with horizontal processes.

The traditional IT-structured development approach used to implement EAS was focused on managing risk. Measurement and reward structures were put in place to increase control and ensure that program milestones were met on time and on budget. The success of EAS was further supported by technical staff autonomy, opportunity for professional growth, and salaries based on the program’s technical performance. All of these organizational factors increased the motivation of EAS technical staff to make the program a success. In contrast, EAS functional staff had a lower level of motivation for making EAS a success. Their professional growth and future salaries were not based on the EAS program. Furthermore, functional staff members were often viewed as problems by EAS technical staff because they created roadblocks that slowed down decision-making and reduced the chances of the program’s delivery on time and on budget. In a way that reinforced the status quo, the implementation of EAS helped to mitigate functional staff implementation roadblocks. From a traditional IT development point of view, this, combined with the existence of a powerful champion (the executive vice president of shared services), established the conditions for program success.

Although creativity is not a natural part of the traditional IT-structured development approach, it can be improved by incorporating the use of change management techniques that focus on organizational, group, and individual characteristics (see Exhibit 8). To have a successful ERP implementation and improve its ability to contribute to significant organizational change, here are recommended steps:

- **Develop an ERP change vision to set and manage expectations.** Communicate this operational vision so all know what the ERP system will and will not do. A good communication plan for managing expectations will include a list of target audiences, key messages, multiple delivery mechanisms, and a timetable.

- **Create leadership resolve by framing the ERP project as a business change.** Leaders need to realize that the implementation of an ERP system is not merely another computer project. ERP systems introduce new ways of working, such as cross-functional teams, greater accountability, and more information for management decision making. Upper management may lack the knowledge of the technology that is employed, but now is the time to educate them on the necessity to overhaul any broken business processes and practices.
Develop and empower an effective ERP implementation project structure. Give business users and technical staff an equal say when it comes to customizing an ERP system. Clearly define the boundaries for decision making and establish a project structure where business users can learn what the ERP experts know. Assess the change readiness of the organization, and develop change management activities to help people deal with change and build these into project plans.

Ensure that two-way feedback potential exists to build commitment to the new ERP system. Since people often feel they are being “done to” on ERP projects, ensure two-way communication by involving stakeholders in the development process. Commitment can also be built through training. People learn the most when they teach others. They also learn best through experiential learning. Assign team business users and ERP technology people to develop experiential learning about the new system and processes.

Establish special compensation plans for ERP team members. People skilled in ERP systems implementations are in high demand. Consider providing bonus incentives for meeting project milestones and remaining after implementation.

Restructure around ERP capabilities and business strategy. There are natural work groups suggested by a new ERP system, and these — combined with the organization’s business strategy — provide a great start for a reorganization effort. Approach the structure with an open mind about what might be best with the new system.
Avoid the tendency to underestimate the time needed to change the culture of the business once the ERP system is in place. It is important to remember that many rollouts of a new ERP system are the first attempts at homogenizing diverse business unit cultures. Since ERP systems generally cut across “functional silos,” they usually generate fear and resistance.

Build clear ERP links to business objectives and track benefits throughout the transition process. The ERP project does not end with “go live” because many of the business benefits will take time to accrue. Develop a balanced scorecard for implementation success and tie organization and process changes to it.

Celebrate success. Help people feel good about what they have accomplished and motivate them to do more by recognizing what they have done.

References


