Chapter 16

EUIS Project Management: Implementing, Monitoring, and Aligning Business Processes

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Learning Objectives

Upon completing this chapter, you should be able to:
Describe the roles of implementing, evaluating, and institutionalizing new business processes in the EUIS project management model.

- List steps an organization could follow as a guide to implementing EUIS projects.
- Given a situation in which new technologies are planned, suggest strategies for their implementation.
- Identify major facility changes that must be considered in preparing a site for new technologies.
- List ten ways to conduct an EUIS evaluation and explain when they might be used.
- Develop an equipment feature analysis form, an interview guide, and an attitude questionnaire appropriate for EUIS evaluation.
- Explain the importance of the final step of the EUIS project management model: institutionalize business processes.

16.1 INTRODUCTION

Technology planners must remember that technology is useless unless it is used. The best-designed information system in the world will have value to the organization only if users are convinced of its value, are motivated to use it, and are adept in its use. Thus, the goals of the last three steps of the EUIS project management model go beyond the correct technical implementation of technology~ These steps are intended to ensure that new technologies are used effectively at the desktop and are integrated into business processes. Significant cost savings are seldom achieved without specific strategies to tie use of technology to achievement of business objectives. Chapter 15 explained Steps 1 through 5 of the EUIS project management model. This chapter presents the last three steps:

Step 6 Implement EUIS projects
Step 7 Evaluate results
Step 8 Institutionalize new business processes

it is auncuit to put definite beginning and ending points on steps of the EUIS project cycle. Many of the tasks discussed here depend on deliverables produced during the

assessment or design stages. Moreover, even if the tasks were not actually started, they were planned prior to the "Implementation" or "Evaluation" target date. Each step in the cycle is related to other steps. If the system does not address the right problem (assessment) or support the required business tasks (design), then efforts in implementation are doomed to fail.

The implementation step covers a broad range of activities required to convert from the existing operating environment to new systems and business processes. In EUIS projects, installation of hardware and software is often just the beginning of the implementation phase rather than the end. Unlike the traditional systems development life cycle, where implementation usually ends with initial training, end-user systems require ongoing framing and support to promote infusion and assimilation of new end-user technologies. As pointed out in the discussion of innovation in chapter 13, the learning curve for users to master new software, apply it effectively to their jobs, and change ingrained behaviors is lengthy.

The evaluation step is critical in EUIS project management. In a sense, it is a continual process, and its outcomes are feedback to all of the other steps. Under the concept of continuous quality improvement, the result of an evaluation is often the input necessary to begin an entire investigative cycle again (see Figure 16-1). However, in terms of a project—which by definition has a definitive beginning and ending—it is important that EUIS projects have specific strategies for evaluating results in relation to project objectives and following through with necessary training, modifications, and business process changes required to achieve the intended results. This is the purpose of the last two project steps, evaluating and institutionalizing new business processes.

This chapter is divided into three main sections corresponding to the final three steps of EUIS project management. After an overview of the role and importance of an implementation plan, the first section discusses the tasks involved in implementing a new system. The second part of this chapter discusses specific ways to evaluate systems once they are in place. The third part discusses strategies for using evaluation feedback to align business processes.

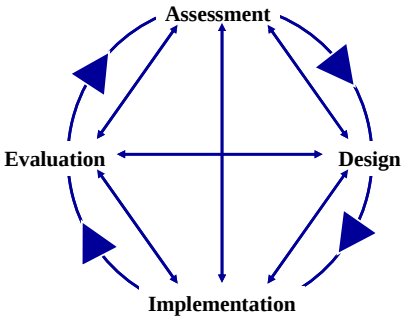

Figure 16-1 The action research model

16.2 STEP SIX: IMPLEMENTING EUIS PROJECTS

Purpose: Ensure that all technology is installed and operating properly. Ensure that new business processes and organizational changes are implemented as planned and that all employees are prepared properly to perform their jobs in the new environment.

Deliverables:

- Fully operational system.
- Applications installed to handle tasks and business processes.
- All users trained in initial skills required to operate new technology and use new applications.
- New procedures and work flows are operational.

The focus of systems implementation is threefold: job performance, business processes, and customer value/business results. People who will be using the system need to be eased into it, which means being aware of how the system will affect their jobs. It means more than users knowing how to use the system. It means restructuring job tasks, procedures, and business processes to use the new technology to best advantage. Some issues relate to hardware and software security The technology itself mandates changes in the physical workplace. Technology may require special lighting, cooling, or ventilation. It needs a physical location and proper furniture to support it. These changes in work behavior and facilities can result in crisis if not managed properly. (See chapter 8, "Management Issues" and chapter 10, "Human Factors".)

Whenever technology is implemented, people's work and workplaces change. An implementation plan may be small (e.g., to install a spreadsheet package for a department manager) or large (e.g., to install PCs on every desk in the loan department). Even the simple project of installing a spreadsheet package, however, involves several considerations. The user must be trained to operate the software and be trained in developing proper spreadsheet applications. Department management must modify department operations to incorporate use of the new spreadsheets, ensure that applications are backed up regularly, and see that proper security is maintained. Managers also must identify and arrange training for a backup person to maintain the applications if the primary user is out or leaves the department.

The Spotlight, Palm Computers Help Emergency Room Physicians, provides a good example of a project involving significant changes in processes and individual behavior. Although the technology is critical to the solution, implementing the process and behavioral changes was the most challenging part of the project. Expanding on the success of the initial application poses ongoing challenges. Chapter 11 discussed concepts related to organizational change. This section is more pragmatic; it presents techniques that apply to introducing new technologies to users. Applying the concepts of Lewin's force-field analysis, the project team tries to reduce or eliminate forces that are counter to the change efforts and increase forces that are pushing for the change. In every enterprise, these forces are different, and the project team must select specific strategies to fit the situation at hand. A number of implementation strategies that have been used successfully by various enterprises are described in these actions that follow. These strategies work best in enterprises where:

1. The enterprise has a history of involving workers in making decisions that affect their jobs.

SPOTLIGHT ON SULUTONS → Technology, People, Structure, Processes

PALM COMPUTERS HELP EMERGENCY ROOM PHYSICIANS

Two patients enter the emergency room of St. Joseph's Hospital in Phoenix complaining of chest pain. The doctor who treats the first decides she's at high risk for a heart attack and requires ICU admission; the second doctor assesses his patient as low risk and keeps him for further observation before discharging. On the surface there's nothing unusual about this scene, which is played out in hospital emergency rooms every day. But at St. Joseph's there's a new twist: Palm computers help the doctors make better decisions, and that means both lives and money are saved.

This approach to diagnosing patients may be novel, but the problem it addresses is as old as emergency rooms themselves With medical research constantly underway, it's impossible for every doctor to remember and access the results of every study. Taking outside information into account is particularly tricky in the area of heart attack assessment, which requires quick decision making.

As medical director of the ICU and other pulmonary and cardiac units at St. Joseph's, Dr. Philip Fracica was painfully aware of the abundance of medical literature that didn't always make it into doctors' hands. "Every physician's experience can be colored by the unique characteristics of the particular patients that they have cared for," he says. "But are those experiences truly representative of all patients?" When one of the hospital's monthly educational sessions introduced him to an objective scoring system for assessing heart attack risk, Fracica built a Web-based application so that doctors in the ER could access the system with a PC. The procedure was simple: After evaluating a patient, doctors would use the PC in the emergency department to answer a series of questions about the patient. The doctor could then incorporate the results of the studies into the diagnosis Some people have spent their lives studying this says Fracica Now we can [use that m formation to] weed out patients that don't need admission to the hospital."

The remote application proved handy, but doctors still had to leave the patient s side, wasting critical seconds. So Dr. Fracica teamed up with AvantGo Inc., based in San Mateo, Calif., which specializes in delivering enterprise applications to handheld computers.

Now doctors can follow a link on the handheld's text-based browser to a Web page residing on St. Joseph's Web server, which in turn contains the risk assessment evaluation. The Avant Go software allows the Web page to transfer the information right on to the Palm computers—literally at the doctors' fingertips. The Web pages used in the application are then stored on the user's handheld, until doctors decide to delete them. This way, they can access the Web pages on subsequent occasions without having to download them again, which saves even more precious minutes.

Now when someone comes into the ER complaining of chest pain, the doctor performs the traditional assessment and examines the cardiogram. Then the Palm computer program takes him through a series of questions, which vary from patient to patient depending on the results of their cardiogram. At the end, the program delivers a percentage of heart attack risk, and the doctor can treatthe patient accordingly. Avoiding unnecessary hospital admissions has benefits beyond the patient: It can help keep HMOs' bottom lines healthy.

All 14 of St. Joseph's emergency room physicians have been using the remote PC application for several months and have had access to the Palm application since June. And while it's difficult to quantify the value of lives saved, Fracicia believes that doctors are acting faster and making more informed decisions.

But it doesn't stop with chest pain. The software's flexibility means unlimited potential for targeting different illnesses. Fracica has introduced a similar program for treating pneumonia, though it had not been converted to a Web-based application at press time. But he stresses that these applications are meant to supplement, not supplant, doctors' judgment. Technology will never replace years of medical school, but it may just help make more study results common knowledge.

To Think About How important was the support of the emergency room physicians to the success of this solution? What would be the incentives for physicians to participate? How significant do you think it is that the application was built by a physician (Dr Philip Fracica ICU Medical Director)? What does making the application available on handheld devices add to the process? Do you think that additional applications will be added as the spotlight suggests?

Source: Meg Mitchell, St. Joseph's Hospital's Heart Attack Risk Assessment. *CIO,* 12 (September 1, 1999): 72. Accessed on 10/31/00 a*thttp://www.cio.com/archive/O9O199 smartjitml.*

2. EUIS is an identifiable function within the IS organization that supports business units in the enterprise.
3. EUIS is viewed as a continuous process rather than a one-shot remedy.

16.2.1 Managing Project Implementation

The *project implementation plan,* an important deliverable of Step 5, becomes the working project plan for Step 6. Like the work plans used throughout the project, it identifies all activities and tasks to be completed and should specify how long each activity/task will take, who is responsible for carrying it out, and target dates for completion. This detailed project implementation plan is an essential tool for coordinating tasks as well as communicating with everyone involved. It helps keep everyone on the same page.

The project manager, using the project plan as a guide, works with all individuals charged with implementing the new technology and gets their commitment to perform given activities in the required time frame. It is important that everyone involved understand what is expected of them, how to accomplish assigned tasks, and by what date tasks need to be complete. Managing and controlling implementation involves continually following up with everyone involved in the project, from vendor to committee members. As tasks are completed, the project plan is updated and, if necessary, modified. Meetings sho1d determine that the project is on target and also identify any problems that may arise.

16.2.2 Staffing for the Implementation Step

As discussed in chapter 14, the EUIS project team brings together a mix of skills required to complete identified tasks and deliverables successfully. As the project progresses, the required skill mix and staffing levels may need to be adjusted. The implementation step is often a point at which such adjustments are necessary. In addition to planning the implementation process, the roles of project team members during implementation include the following.

- Coordinating dates, times, and places with systems vendors and users for specifics on delivery and use.
- Preparing the facilities.
- Preparing a conversion plan.
- Compiling test cases.
- Developing and testing end-user applications.
- Writing and disseminating status reports on the progress of implementation.
- Interfacing with the EUIS assessment task force (if the two groups are different).
- Writing new procedures or documentation.
- Implementing new business processes and work flows.
- Developing training materials.
- Developing computer-based training courses.
- Developing performance support systems or job aids.
- Training users to operate new software.

- Installing hardware and software.
- Customizing software, creating menu or other interfaces.
- Implementing change strategies.

The implementation team may appoint subcommittees with delegates from each department affected by the new system. Subcommittee members aid in coordinating plans and carrying out all necessary tasks in their own operational units. The implementation team also may call on other resources for completion of some tasks. For example, a facilities department may be responsible for ordering and installing new furniture and the network operations department may be responsible for installing the wiring for a local area network.

16.2.3 Selecting Pilot or Model Office Installations

Pilots or model office installations, which may sometimes be used as prototypes during the design stage, are also useful as a strategy when implementing large projects. A *pilot* or *model office* is a planned and managed installation of end-user computing support that serves as a model for providing the same support on a larger scale (e.g., multiple offices or the entire organization). Although the terms are often used interchangeably, a pilot generally is thought of as focusing mainly on installation of technology while a model office suggests a broader scope that focuses on redesign of tasks, business processes, work flows, and jobs. The distinction in terms is unimportant as long as the objectives and plans for the pilot or model office are understood clearly by everyone involved.
As an implementation strategy pilots are used as a trial run prior to full-scale implementation of a project. The results from the test can be useful for diagnosing learning problems and acceptance of the technology by its users. Such information can be valuable to the project manager or task force in determining appropriate implementation strategies. Sites for pilot or model office installations should be selected carefully. A well-planned pilot installation can play a key role in design and implementation. The following are some rules of thumb.

1. ***Choose a site with high visibility***. The pilot installation is a trial run of the new system. Placing the new technology in a area where people see it, use it, and talk about it can help build acceptance: "Yes, we've been using the new knowledge management system for 6 months; it has increased the number of customer inquiries that we can resolve on the first call by 50 percent!" On the other hand, a high-visibility location also may have ramifications if a pilot goes poorly. The test site's success is dependent upon meeting technological standards and gaining users' acceptance.
2. ***Choose a site with a high likelihood ~~success***. Selecting a locale where the installation has a high probability of success—where users are enthusiastic about the technology or where its success can be calculated by a large return on investment—is recommended. Find innovators—those who are willing and wanting to use the new system. Find high-payoff areas: "Desktop publishing saved the personnel department $200,000 the first quarter!"

Guidelines for choosing pilot applications likewise include selecting applications with a high potential for success. A pilot installation often will change the way people work, even if it is scheduled for a short period of time. Removing model office technology that appears not to be the best solution requires the same care as installing it. One planner whose pilot failed said, "Removing the pilot from the department was worse than curing people of a drug addiction! No one wanted to return to their former way of doing work, yet the system itself wasn't living up to expectations."

16.2.4 Preparing the Facilities

Critical to effective implementation is proper site preparation. Before a new system can be installed, the implementation team must ensure that facilities are appropriate for the new technologies. This step often involves deinstalling old equipment as well, for which adequate planning also may be required. The planner needs to ensure that the equipment is (1) installed correctly, (2) installed conveniently, and (3) installed to contribute to comfortable, safe employee use. Safety and correctness are discussed in chapter 10, "Human Factors," and security is discussed in chapter 8, but some key points are reviewed here.

16.2.4.1 Ensuring a Correct Installation

Correct installation requires that the equipment be put into place, keeping in mind power needs, space needs, and other conditions such as humidity and security. Installation may require physical alterations in buildings. In some instances, walls mustbe knocked down or put up. Air conditioning requirements must be evaluated. Also, wall configurations or high wall panels can impact airflow and ventilation.

Furniture and storage needs must be addressed. New furniture must be assembled and set up, wiring must be installed, and telephones have to be moved. Furniture must be placed conveniently, as well as near appropriate power and lighting sources. Supplies will need to be stored; the new copier will need paper and toner. Where will these supplies be? Where will computer supplies such as disks, printer paper, cartridges, backup disks, and other needed items be stored? How will old equipment be disposed?

As an example, a local area network installation requires cable wiring. The cables, in turn, must meet fire and safety regulations applicable to the building in which the LAN is installed. How far apart are desktop installations? In addition, a location must be determined for the server. Will access be restricted? To whom? Security issues (discussed in detail in chapter 8) also must be addressed. If, for example, portable PCs are part of the LAN installation, how will the organization address theft-protection concerns? In short, getting the physical site ready for installation requires careful preparation.

16.2 .4 .2 Ensuring a Convenient Installation

Convenient installation, though related to corr~ct installation, has physical demands that are coupled with practical, usable designs. For example, the planner who intends to install shared laser printers throughout the organization needs to consider not only where they can be installed in keeping with their technological demands, but also where they can be installed *to meet the needs of users.* Laser printers placed in the middle of a busy office can be a source of aggravation for employees located near them—not only from added traffic, but also because the individual closest to them often is considered the resident expert on their operations. However, laser printers need to be located conveniently so that users can access them easily. Consideration needs to be given to factors such as who needs special forms and envelopes and how often they are used.

Inconvenience is a disincentive to using new technology and often leads people to stay with familiar manual methods.

16.2.4.3 Ensuring a Comfortable and Safe Installation

Comfortable and safe installation mandates not only that the equipment be technologically aesthetic and properly installed, but also addresses ergonomic concerns (see chapter 10). Comfortable installation may require new or adapted furniture to ensure ease of use. The traditional desk was not designed to accommodate a personal computer. Health problems such as carpel tunnel syndrome can be avoided by following simple guidelines for correct placement of equipment. Is there room for the printer on the desk? Will windows or lights create glare on the screen? In other words, facility planning should be addressed prior to installation and should be completed before the equipment arrives.

16.2.5 Obtaining and Installing the System

The project manager should verify that all hardware, software, and required documentation have been ordered. It is also important to verify that special supplies such as cables, power-surge controls, wire management systems, and the like are ordered. Sometimes systems do not arrive with these necessary extras. Getting technicians to install the cable requires advance planning to ensure that cables and other supporting devices are in place when the system arrives. If part of the system, telephone service also must be arranged.

Installation includes setting up and testing all equipment. The amount of time required will vary, depending upon the complexity and scope of the system. All software must be installed and tested. Problems should be resolved and the stability of the system verified before it is used.

Systems arrival is another challenge. Who keeps inventory of goods that have arrived? Which box goes to which floor and to which workstation? What should be done with the refuse? Where should documentation be placed? What about employees who may not be at their desks on arrival day? Work goes on, but delivery of the technology can disrupt the entire business process. Without security measures in effect, how will the systems be secured?

16.2.6 Installing Security Measures

Security measures include protection of equipment and access to software. For example, will the server be in a locked room, or will it be accessible to everyone? Usually, the systems administrator has access to system and administration programs. Who else needs access? How will backup be handled? Who will provide support in the administrator's absence? The systems administrator needs thelist of authorized users, along with the applications they will be authorized to use. Some users may have only "read" access, whereas others are authorized to both "read" and "write" to files and applications. *Read* means that one can access files but cannot make changes *(write).* These and other security considerations are discussed in chapter 8.

16.2.7 Developing Solutions

The project team will need to confirm requirements for new applications. Plans and schedules to design and implement applications must be established. Which applications must be ready for initial installation and which need to be phased in later? Does work need to be converted from manual systems or other computer systems? Who will do this work, and how? Is documentation available or does it need to be developed? Who will assist personnel with using or developing applications?

For example, it may be unrealistic to expect a user just learning a new database program to develop a complex database to manage customer inquiries. It would be more realistic for an analyst or experienced database user to develop this initial application for the department. The new user would learn basic database skills, learn to use the application, and gradually build database development skills starting with smaller applications. The user might then be expected to build additional applications later.

The task force (or an appointed committee) should arrange periodic meetings with users to review the implementation of new applications, get their ideas, and encourage "ownership" and acceptance of the application.

16.2.8 Delivering User Training

Perhaps the most important implementation strategy for new technologies is a strong training program. Study after study has shown that applications that a user understands and can apply with expertise to the job at hand are the applications that are used most. A manager, for example, who knows nothing of word processing is not likely to use word processing. Likewise, an administrative assistant who does not understand spreadsheets will not use spreadsheets. Although these two examples are simplistic, the point is clear: Effective, creative use of new technologies mandates user expertise.

When users seem reluctant to use technologies, it is generally because they feel insecure or uncomfortable with their use. Remember that users generally must maintain ongoing production during installation of new projects and may be working under tight schedules. They will be reluctant to use their newly acquired skills when they do not feel confident that they will be able to complete the work to meet deadlines. They would rather play it safe and do it the old way "just this time."

The planning team, the vendor, user departments, and even top management must decide on the right mix of training strategies: orientation seminars, product demonstrations, systems training, applications training, and so on. Because of its importance to the success of EUIS, training issues and strategies are described in chapter 6 and performance support and help desk management in chapter 7.

16.2.9 Establishing New Procedures

Work procedures should have been addressed during the design step. If not, they may need to be redesigned at the implementation step. The introduction of a new system does not automatically lead to acceptance of the system or improved work procedures. Left to chance, the tendency will b~ to adapt the technology to old ways of doing things.

The approach for establishing new procedures will depend on the extent to which work procedures must change. Whereas minor modifications may be handled with careful documentation and short training sessions, major transformations generally require considerable time and effort. During the transition phase, it is often necessary to run tandem activities; that is, work is done under both the old and the new systems concurrently. This allows for not only a comparison of systems but also for modifications. It also provides backup for the new system until all the bugs are worked out.

When major transformation is required, caution should be exercised to minimize the overload caused by too many new activities at the same time. It is important to avoid disruptions and inconvenience for clients during a transition period.

Balancing the demands for transforming work while avoiding chaos and disruplion can be a major challenge. It can be rather like trying to change the tires on a car while racing down the highway at *65* miles per hour.

Other functional procedures include establishing who is to be responsible for the maintenance and repair of the system. Even tasks as seemingly straightforward as procedures for ordering supplies need to be addressed. Establishing departmental or unit responsibility for operation of the new system is important.

16.2.10 Managing the Change Process

Orchestrating significant organizational changes is a complex process. Chapter 11 discusses various strategies that are critical to success. When an EUIS project involves redesigning jobs and business processes, the implementation plan should include specific strategies to involve those affected, gain their commitment to the success of the project, and keep the words and music in synch. Line managers, not analysts, are ultimately responsible for the success of a project. Their commitment and cooperation is essential to the success of a change effort. Therefore, project sponsors should be involved in communicating business objectives and a vision for change, explaining precisely how implementation of the project will help achieve those goals and what is expected from those involved.

In summary, effective implementation of EUIS projects requires careful coordination of a broad range of activities to make the transition from an existing operating environment to a new system. Moreover, implementation usually needs to be accomplished while normal production is maintained.

16.3 STEP SEVEN: EVALUATING RESULTS

Purpose: Determine whether the results from implementation of the EUIS project match the established objectives. Identify problem areas and opportunities for additional improvement.

Deliverables:

- Inventory of performance problems.
- Inventory of additional training needs.
- Inventory of system problems.
- Inventory of bottlenecks, tasks, business processes, and work flows that need improvement.
- Measures of user acceptance, problems, and applications.
- Inventory of ideas and insights for additional improvements.
- Measures of actual results against planned results.

Evaluation is the seventh step of EUIS project management. After implementation is completed, it is important to determine how well new systems are working and to what extent project objectives have been met. The analyst or project team evaluates actual results against planned results in the domains of technology, job performance, business processes, and structure. Thus, the objectives established during Step 1, defining project scope, provide the basis for evaluation. This is why it is important to state objectives in quantifiable and measurable ways. The findings of the evaluation are used to make modifications in project implementation and to determine what additional action is needed to institutionalize new business processes.

Early planning for evaluation is important because the crux of evaluating information technologies is determining whether the technologies met their objectives. Why were the technologies installed? To improve the quality and quantity of written documents? To provide management with more information—or more timely information—on which to base decisions? To speed up order handling? Evaluation always involves knowing the original objective of the technology solution, as identified in the requirements assessment stage. That objective serves as a standard by which to say "Yes, the technology has met our expectations" or "No, the technology is not working out as we expected." Preestablished methodologies for evaluation also enable evaluators to be more objective.

Traditional systems evaluation usually takes the form of a post-audit review intended primarily to examine the effectiveness of the systems development process and to determine whether the system needs to be changed in any way. Although these are valid objectives for EUIS evaluation as well, they are not sufficient. With regard to EUTS, it is more important to determine how the technology is being used to improve performance and to what extent th~ project has achieved the planned business results. Chapter 9, "Assessing the Value of Information Technology," provided suggestions for developing performance measures.

This section addresses the following questions: Who should do the evaluation? When should it take place? What should be evaluated? How should it be done? In addition, some specific evaluation strategies are presented.

16.3.1 Who Should Do the Evaluation?

Whether planned or not, system evaluation is done by everyone who has contact with the system. The CEO who uses the new phone system, the vice president who reads the report that was published using desktop publishing, the administrative assistant who uses electronic calendaring to schedule appointments, the customer who receives an order—all are potential evaluators of the system. The overall responsibility of formal evaluation,

however, rests with the project manager or task force that implemented the system. The project manager or team is charged with determining the evaluation strategy and carrying it out. Users may be one source for providing evaluation data.

16.3.2 When Should Evaluation Take Place?

In essence, informal evaluation of new technologies is taking place constantly. From the day the technology is introduced, its users are critiquing its value. Before project results are evaluated formally or users are rated on job performance using the new technologies, however, sufficient time should be allowed for learning. How long this period should be depends upon the complexity of the applications. A non evaluative period allows users to be exploratory, to make mistakes, to correct them, and to gain experience using the technology.

Such a period is also important for gaining an understanding of the value of the technology. At first, work may be done more effectively with the old tools. Users need time to learn to use and appreciate the new technology, and the new technology needs time to become an accepted tool. Such a time period also allows for the Hawthorne effect, which is the tendency for people to perform better than normal when they are being observed. When inadequate time is allowed prior to evaluation, findings may be misleading because, without reinforcement, individuals tend to revert to their former behaviors once the newness of the system no longer motivates them to use it. In short, any new work tool or process should be given adequate time to have an impact on work before evaluation begins.

Although no exact time can be offered here, evaluation should be well planned. The project manager determines when evaluation should take place, depending upon the complexity of the technology and the rate at which users incorporate it into their business processes. Thus, a formal evaluation may take place any time after the technology becomes part of work.

16.3.3 What Should Be Evaluated?

The objectives established during Step 1, defining the project scope, provide the basis for evaluation. This is why it is important to state objectives in quantifiable and measurable ways. Thus, business measures are the best indicators of project success. Factors such as the following can be effective measures for evaluating business results.

- Number of customer complaints.
- Completion cycles for tasks.
- Numbers of errors.
- Response time.
- Number of hot line calls.
- Number of customers served.
- Reductions in expenses.
- Increases in revenues.
- Number of transactions handled.
- Average length of time to handle transactions.
- Reductions in questions or problems.

- Improvements in customer service.
- Additional tasks or outcomes achieved.

16.3.4 How Should Evaluation Be Done?

The evaluation process should facilitate understanding of what new technology has done for the individual, the organization, and the customer. Evaluation is both a science and an art. The evaluator must select the most appropriate data collection tool, design an instrument that follows accepted techniques, and determine what to do with the resulting data. A questionnaire designed with no view of what to do with the data that will result is pointless. Data collection techniques also must be administratively feasible, which means that while interviewing all users may be desirable, time and personnel constraints must be taken into account. The process of understanding and reporting primary data is a science/art that can be learned and is polished with every project.

Collecting and analyzing data can be streamlined with the use of group systems tools or by putting survey forms on the company Intranet.

The following strategies, which are offered strictly for illustration, have worked for various organizations. As explained earlier, any assessment tool described in Chapter 9 may be used for evaluation. The project director chooses from among these strategies, or even develops original strategies to determine whether the new system or technology is performing or being used as planned.

16.3.4.1 Feature Analysis

Feature analysis involves creating a list of the features of the new hardware or software that differentiate it from other technologies. Users can rate the features as mandatory desirable, or optional. Specific features also might be rated based on frequency of use. The analyst can develop a composite score for the hardware or software by giving a numerical value to the ratings and adding up the columns. For example, the feature rating form in Figure 16-2 could be used to evaluate word processing software.

16.3 .4 .2 User Interviews

Interviews with users, which can provide information regarding the effectiveness of the technology may be open or structured. Interviews are a means of finding out what is good and what is not so good about a system. Interviews help the project team determine how new technology is being used, where users are experiencing problems, and what additional action maybe required. By discussing project results with users, team members gain new insights for enhancements or innovations.

16.3 .4 .3 Company Files

One benefit of well-planned EUIS projects is improved quality of work life (QWL). As discussed in chapter 10, EUIS has the potential to improve motivation and job satisfaction. A review of company records may provide the director with data regarding turnover rates, personnel evaluations (did individual or department productivity go up?), or even attendance. Improvement in any of these items may be attributed to the technology available to the worker.

16.3 .4.4 Attitude Questionnaires

Rather than assess the technology itself, the evaluator may assess individuals' attitudes toward that technology Although company files may provide hard data regarding the effect of the system on work, a questionnaire can offer information

	USE FREQUENTLY (10 POINTS)	USE MODERATELY (5 POINTS)	NEVER USE (0 POINTS)	TOTAL
Spell check				
Mail merge				
Footnote generator				
Headers				
Footers				
Table of contents				
Columns				
Pagination				
Total Value				

Figure 16-2 A feature rating form for evaluating word processing software

regarding attitude and worker acceptance of the technology. Again, to be effective, new technologies need to be used. If the individual who uses the technology feels it is of little value, chances are that it *is* of little value.

16.3.4.5 Communications Audit

A conceptual communications approach to EUIS analysis was described in chapter 14. EUIS projects sometimes are implemented to improve communications within an organization, and if measurements were collected during the assessment phase, a post-communications audit can determine whether the new technology facilitated more or better communications among employees. A communications audit is a form that shows who, when, and how many communications were made with others in the organization. Although a communications audit is a time-consuming endeavor, a project manager who can show that a system improved communications within a company has verified a valuable benefit of the system.

16.3.4.6 Work-Time Measurement

Work-time measurement simply compares the before-technology time involved in doing a task with the after-technology time for the same task. Time savings, as discussed in chapters 9 and 14, can show substantiall cost savings (benefits) to the enterprise.

16.3.4.7 Cost Comparisons

An important measure that should be addressed in any evaluation report is a comparison of expected versus actual costs of the system. Such comparisons give little information about the effectiveness of a new system, but they can show that costs were reasonable or that a value is obtained when the operating costs of the current versus the previous system are compared. Figure 16-3 presents an example of a cost comparison report. Other methods for developing cost figures were discussed in chapter 9.

16.3.4.8 User Competency Testing

If individuals who are expected to use the system can use it to its fullest, chances are the system is a success. If it can be determined that users can use its features to their advantage—or have created even more ways to use it than originally outlined—the evaluator can assume a high degree of system success.

	COST SAVINGS SUMMARY		
	PROPOSED	**ACTUAL**	**VARIANCE**
Centralized Annual Operating Costs	$212,711	$227,122	+$14,411
Decentralized Annual Operating Costs	193.429	92.853	576
Annual Savings	**$ 19,282**	**$ 34,269**	**$14,987**
Development Costs	$ 12,320	$ 14,080	+$ 1,760
One-Time Equipment Costs	4.000	4.245	245
Total First-Year Development Costs	**$ 16,320**	**$ 18,325**	**—$ 2,005**
Payback	10.2 mos	6.4 mos.	3.8 mos

Figure 16-3 A typical cost comparison report

16.3.4.9 Participant Observation

Monitoring the use of new technologies is the final evaluation method to be discussed here. This technique requires selecting someone from the work environment and training that person to observe use of the technologies in question and record observations. A person who is part of a particular work environment is often in the best position to determine its effectiveness. Such an approach may conjure up images of spying; however, the purpose of the observer is to evaluate the technology, not necessarily the workers. This observer may be an outsider or a regular employee who simply fills out a technology-use observation form.

16.4 STEP EIGHT: INSTITUTIONALIZING NEW BUSINESS PROCESSES

The critical last step of *institutionalizing* new business processes is often overlooked. Yet this step is the key to making lasting changes and bringing productivity gains to the bottom line. In terms of Lewin's change theory, this is the refreezing stage in the change process.

Unfortunately, in practice, once the hardware and software are installed and some initial training is done, all too often the rest is left to chance. It has been the authors' experience that many of the important actions needed to assimilate new technologies into the organizational culture and sustain changes in job performance and business processes, in fact, are never addressed. There is a tendency in organizations for the project team to dissolve soon after implementation of the hardware and software solutions. The evaluation, if done at all, is done too early and is used primarily to justify the project. The work environment returns to "business as usual," and it is assumed that workers will assimilate and apply the new technologies automatically. This assumption more often than not proves incorrect. To achieve significant organizational changes,

project teams need to work with business managers to plan and implement appropriate intervention strategies.

Assimilating new technologies involves a lengthy learning curve. Left to chance, the need for continued training and action often gets overshadowed by demands of the business. Many workers never progress beyond the most rudimentary use of the new systems, and some even slip back into old ways of doing things. The technology tends to get adapted to the old ways of doing things rather than taking advantage of the technology to modify work. As a result, opportunities to make significant improvements in business processes may be lost. It has been found that results of EUIS projects can be improved significantly when project plans include well-planned strategies to support continued learning and involve employees in continuous quality improvement.

16.4.1 Providing Remedial and Advanced Training

For a technology to transform an organization, users must be proficient in its use. Too often, training efforts are budgeted within a given project, but once the project is considered complete, training is considered complete, as well. This is not typically the case. For users to be able to use technology creatively to change the way they work, they must be highly skilled in its use. In chapter 6 and 7, specific strategies for institutionalizing technology's use are described in more detail. This remedial or advanced training is vital to system success.

As users gain experience with new technologies, they will gain new insights into how it might be used to make further improvements. Without specific strategies to continue to enhance new systems, these new ideas are often lost. EUIS projects should plan to capitalize on these new insights to further refine computer applications and business processes. The infusion and assimilation of technology is an iterative process, not a one-shot solution.

16.4.3 Meeting Job Performance Objectives

Meeting job performance objectives generally requires a sustained period of training. Most sophisticated software provides far more functionality and more potential applications than can possibly be absorbed by even the most astute employees during a one-shot training effort. Even employees who are motivated to continue learning on their own often find that business demands crowd out the time unless their managers make training and effective application of new technology a prior ty~

Without explicit programs to reinforce and build on new skills, individual efforts may not contribute significantly to overall department results. Managers must reinforce and reward desired new behaviors. Although this may seem obvious, in an environment of change, which often borders on managed chaos, it is not uncommon for people to be working at cross-purposes.

To achieve significant results, performance goals must be clearly defined and articulated to everyone in the organization. Employees must be committed to achieving those results and participating in the process. Feedback on results must be provided on an ongoing basis, and needed training and support must be available.

Significant job changes may have to be phased in over time because production must be maintained throughout the conversion. This may take a year or more for large-scale projects with significant job redesign.

16.4.4 Meeting Business Process Objectives

When new business processes are implemented, it takes time and effort to work out the kinks. Modifications and refinements will likely be needed. Seldom can one expect to get it perfect the first time. Unanticipated problems may crop up. New bottlenecks may be created. Often, these problems lead people to believe that the new methods are not working, and pressure mounts to go back to the ld tried and true ways of doing the work. These threats should be of even more concern with professional and managerial staff because these individuals exercise more discretion over their work environment. Well-planned strategies are needed to involve staff in identifying problems early and implementing timely solutions. Moreover, some of the most innovative ideas emerge only after workers have gained experience with the technology. Significant opportunities may be missed in the absence of strategies for capturing them.

16.4.5 Meeting Business/Management Objectives

After the system is implemented, it may take several months to meet business objectives. Because of the learning curve, production can be expected to decrease during a period when new technologies and work procedures are introduced. Effective follow-up training, support, and advanced training can help to shorten the curve.

New measures of business effectiveness may be needed. If the expected business results are not achieved, it may not necessarily be due to shortcomings of the new system. It may be necessary for managers to reexamine related business practices, measures, and the reward structure. Sometimes the old reward structures have to be modified to reward different behaviors that are in line with new business practices. It may be necessary to refine business criteria and success measures.

If EU~IS projects are expected to have a significant impact on operations and business results, achieving these goals must be managed as carefully as the design and implementation of the technology. This is the goal of this final step in EUIS project management.

16.5 WHY SOME SYSTEMS FAIL

Systems fail more often because of poor planning or lack of attention to organizational issues than because of hardware or software problems. Ensuring the success of EUIS projects may mean learning from the mistakes of others. The following is a list of reasons why some projects fail.' These mistakes are divided into organizational, people, implementation, and technological *barriers.* Barriers are factors that negatively affect the implementation and use of information systems. Note that these barriers to

successful system adoption can occur at any phase of a project: assessment, design, implementation, or evaluation.

1. ***Organizational barriers***. Top management or the EUIS planners:
   - Based decisions on short-term goals/earnings.
   - Failed to understand the potential for improved operations.
   - Failed to understand productivity/cost benefits.
   - Wanted benefits without costs.
2. ***People barriers***. Users of the system:
   - Resisted change.
   - Wanted more control over selection of technologies or how they were to be used.
   - Did not understand how information systems changed their jobs.
   - Did not learn to use the technology adequately.
3. ***Implementation barriers***. Implementers of the system:
   - Were unsure of user requirements.
   - Sought ultimate solutions.
   - Lacked planning expertise.
   - Did not understand the anxiety of employees toward change.
4. ***Technological barriers***. The technology itself was:
   - Too complex to learn to use.
   - Incompatible with other technologies in the organization.
   - Based on technology incompatible with existing technology.
   - Wide open to security problems.
   - Not given adequate or appropriate space in the office.

Identifying pitfalls related to management, users, implementers, and the technology itself can be of value to a project manager in avoiding potential problems or to an evaluator in diagnosing why things went wrong. For example, if a system is not being used, the reason may be any of these barriers. Identifying and correcting the problem (barrier) is of utmost importance to systems success.

16.6 SUMMARY

This chapter explains tasks and deliverables for the last three steps of EUIS project management:

Step 6 Implementing EUIS projects
Step 7 Evaluating results
Step 8 Institutionalizing new business processes

Strategies relative to these steps were discussed as examples of techniques a project team could consider in carrying out plans for implementing and evaluating new technologies.

The implementation plan prepared in Step 5 (described in the preceding chapter) becomes the work plan for Step 6. This plan details the tasks needed to prepare the site, install hardware and software, convert applications, train personnel, and implement the planned changes in jobs and business processes. Large projects require considerable coordination, and effective communication is key. Communication reduces surprises, thereby contributing to user acceptance.

The project team responsible for analysis, design, and development may continue as the implementation team, or, more likely$_{4}$,~ some new resources may be assigned during the implementation phase. Pilot or model office installations allow users to test the technology; to prepare applications; or to test changes in job assignments, procedures, and business processes. The task force must manage and control the project and set goals and time frames.

Preparing the facility includes ensuring correct, convenient, and safe installation. The physical installation requires ensuring that the correct hardware and software arrive and are installed at the proper location. Installation also requires preplanning to see that cabling and electrical needs have been addressed. Security must be established and training provided.

Personnel must be trained in operating new technology, in using new applications, in performing new job tasks, in new business processes and procedures, and perhaps in new business knowledge, as well. All applications should be phased in gradually, allowing systems to become part of the work pattern. New procedures should be established and job descriptions updated.

The purpose of evaluation is to compare actual results against planned results. Thus, the performance, business process, management/structure, and technology objectives defined during Step 1 are the basis for evaluation during Step 7. Evaluation strategies should be well planned, well executed, objective, and verifiable and should provide information that will be useful to reinforce and institutionalize results. In addition, because the project team learns from errors, evaluation findings may mean that the next project has a higher likelihood of success. Keeping users involved at all stages also helps ensure system acceptance.

Equipment feature analysis forms allow an evaluator to determine the use (and desirability) of expensive or additional features of the new technology. Information in company files can tell the evaluator whether the technology has had an effect on employee performance and business results. Attitude questionnaires can determine, what people think of their technologies; if the new system is highly regarded, chances are it is operating as expected (or better!). Work-time measures compare the before-and-after times for completing specific tasks. Cost comparisons contrast expected technology costs with actual technology costs. Although these figures do not necessarily indicate quality performance, they can show that the system is operating as planned.

The final step, institutionalizing new business processes, although often overlooked, is critical to achieving lasting changes and bringing productivity gains to the bottom line. Assimilating new technologies requires a lengthy learning curve. Left to chance, the need for continued training and action often gets overshadowed by demands of the business. Results of EUIS projects can be improved significantly when project plans include well-planned strategies to support continued learning and involve employees in continuous quality improvement.

KEY TERMS

- Barriers
- Institutionalizing
- Project implementation plan
- Evaluation

- Model office
- Pilot installation

DISCUSSION QUESTIONS

1. List the ten tasks offered as an approach for EUIS implementation. Why is the implementation step considered the key to a system's success?
2. Given the following implementation sites, develop a project management plan. Describe the resources needed to do the implementation and estimate a time frame for the site.
   a. A large community college has a new telephone system: new operating procedures, new telephone numbers, new handsets.
   b. A government office plans to install a local area network that will connect department heads on five floors.
   c. The corporate headquarters of a large manufacturing organization is offering laptops to all of its employees.
3. What is the role of evaluation in EUIS project management? What is the primary purpose of evaluation? When should it take place? What should be done with the results?
4. If you were charged with evaluating the systems identified in discussion question 2, what questions would you need to ask yourself before you developed an evaluation strategy and timetable?
5. What is the purpose of Step 8, institutionalizing business processes? What is meant by institutionalizing business processes? Why is this step often overlooked? Why is this step critical to achieving.-project results and bringing productivity gains to the bottom line?

APPLICATION EXERCISES

1. Interview at least three people who are using information technology at their workplace. How were they introduced to the technology?
2. Write an item for a company newsletter detailing the benefits of the knowledge management system that is scheduled for implementation in three months.
3. Prepare a written questionnaire for evaluating an organization's use of groupware tools. What will you be evaluating: the technology itself or acceptance and use of the tools?

SUGGESTED READINGS

Clements, Richard Barreft. *IS Manager's Guide to Implementing and Managing Internet Technology.* (Upper Saddle River, NJ: Prentice Hall, 1999).

Gordon, Gil E. *Work Transformation: Planning and implementing the New Workplace.* (New York: HNB Publishing, 1998).

Katzenbach, Jon. *Real Change Leaders: How You Can Create Growth and High Performance at Your Company.* (New York: Times Business, division of Random House Inc., 1995).

ENDNOTE

1. Adapted from Alexia Martin, "The Human Connection: A Strategy for Making Automation Work," *Administrative Management* (February 1982): 33—35.

Case Study Tranforming to an E- culture at Nabisco Inc.

Nabisco Inc., an international manufacturer of biscuits, snacks, and other premium food products, with global revenues of $8.27 billion, consists of three major companies: Nabisco Biscuit Company, Nabisco Foods Company, and Nabisco International. More than 50,000 employees meet the needs and individual tastes of consumers in more than 85 countries. Every day over 256,000 cookies per minute exit ovens as long as football fields. Products range from cookies and crackers to candies and gum to pet snacks and mustard. With such a varied product range, you can imagine the challenges in managing the existing IT infrastructure, while also transforming to an organization-wide e-culture.

The consumer food industry is going through significant changes. Health-conscious consumers are asking for higher quality at a lower price. Moreover, the Internet is making it possible for companies to form new channels for brand promotion, consumer shopping, and supply-chain management. Nabisco needed synergy and seamless integration among people, processes, and technology to respond to these changes and transition the company to an e-culture.

Transitioning Nabisco's IT organization into a global strategic partner for its business units was critical to meeting its business objectives of improved resource utilization, global IT consistency, and revolutionizing the organization into an e-culture. To meet these business goals, Nabisco's IT team proposed .a global desktop standard of Microsoft Office 2000 running on the Microsoft Windows 2000 Professional operating system. "The Rapid Economic Justification (REJ) analysis provided the financial information to identify where we could save IT costs and how we could improve end-user productivity," said Orest R. Fiurne, Vice President of Enterprise Technology at Nabisco, Inc. "The projected payback period of between 6 months and 1 year—depending upon when we implement specific technologies—exceeded our expectations, and gave us the critical information necessary to develop an effective business case."

Currently, Nabisco has a single desktop environment in the United States and Canada, with multiple desktop configurations in its international business units. Nabisco must support its diverse multicultural environment, yet leverage the desktop standard already in place. Nabisco's goal was a single worldwide desktop that could support employees in their local environments from a global data center and centralized IT organization.

The REJ analysis revealed that Nabisco could achieve a 1.7 percent increase in productivity (see the following Figure) among its international users due to a single, familiar, and powerful Windows Multilingual User Interface (MUI), which enables seamless language transition and is automatically deployed whenever Office 2000 is deployed. "Once we achieve global desktop standardization, Nabisco's IT team will manage one operating system worldwide, support one version of Office worldwide, and develop global applications to a single desktop image," Fiume noted. "There are huge benefits in standardizing on a single technology throughout the organization. Windows 2000 is a continuation of our strategy for a worldwide standard. That allows us to roll out applications faster, minimize training, and increase productivity. All this can be accomplished

Results of Nabisco's Rapid Economic Analysis (REJ)

CRITICAL SUCCESS FACTOR	PROJECTED BENEFIT	BUSINESS ENABLER
Improve resource utilization	+2.5 percent	Flexible platform
Global IT consistency	+1.7 percent	Global desktop standard
Transformation to e-culture	+1 percent	Collaboration and communications

with a single image and managed from a central location, resulting in tremendous savings of IT resources."

Doreen Wright, Chief Information Officer for Nabisco, said, "Narrowing the list of approved technologies by consolidating our business users on a single desktop image will enable us to attract, train, develop, and deploy our staff more effectively. This is the cornerstone for successful execution of IT programs, and by definition is mission critical for Nabisco."

"To be responsive in the Internet world, aligning business processes around Web technologies is not enough," said Wayne Shurts, Vice President of North American Order Management, Nabisco Biscuits Company. "We need to become as fast as an e-company where we think and act like a dot-corn. We need a robust Web-enabled business desktop."

Nabisco wanted to use Internet technology to transition from push-style supply chain to pull-based supply chain. Rick Blasgen, VP of the supply chain in Nabisco's Sales and Integrated Logistics Company, said, "We have made great progress in the elimination of redundant data entry and multiple phone calls to confirm data integrity in most of our systems, however, we still need to improve our data reliability processes and increase information accessibility."

Nabisco also needed a more effective way of dealing with business acquisitions. "It is very critical that we create synergy, consolidation, and complete product introduction quickly and effectively to realize the potential benefits from acquisitions. Our geographically distributed and multi departmental teams need to be highly productive," says Blasgen. A Web-enabled desktop productivity infrastructure can help Nabisco reduce the time and effort required for in-store brand promotion, reuse current best practices, and improve quality and timeliness of information flow during acquisitions.

The REJ analysis identified the following potential benefits enabled by Windows 2000 Professional and Office 2000 to Nabisco's emerging e-culture:

- Conservatively increase end-user productivity by 1 percent.
- Enable users to publish directly to the corporate intranet thereby minimizing the need for additional Webmasters.
- Provide the capability to perform instantaneous publishing and sharing of documents and data.

As part of the e-culture initiative, Nabisco wanted the workforce to be able to work anywhere, anytime, have time-sensitive information when they need it, and have flexibility when accessing the corporate network remotely. With laptops running Wmdows 2000, Nabisco will be able to improve the performance of applications used

by a field organization that is currently "disconnected." The REJ analysis estimates that the combination of Windows 2000 Professional and Office 2000 can enable the sales and marketing organization to gain an additional one percent in productivity worldwide.

- Office 2000 provides native companion HTML file formats, Web publishing, in-line document discussions and collaboration, integrated Net-Meeting® conferencing software, and similar file formats to Office 97 for Excel 2000, Word 2000, and PowerPoint 2000.
- Windows 2000 Professional offers offline file capabilities as well as integrated Web technologies, such as Extended Markup Language (XML), Personal Web Server, Windows Media ™ player, advanced content indexing, and searching capabilities.

Nabisco is looking to drive the e-culture transformation to every employee. Dan Garlewicz, Senior Manager at Nabisco, noted, "The Windows 2000 desktop productivity platform allows us to develop and publish information on the company Intranet and the Internet in an easy and standardized way, thereby enabling a timely and consistent flow of information throughout the company. This has the potential to impact the bottom line by increased global sales."

Improved Resource Utilization

Nabisco needed an efficient, reliable desktop infrastructure that enabled real-time information and supported worldwide collaboration. Improving asset utilization involved directing user experience and IT functionality into areas where users spend the most time, such as the following:

- Reducing nonproductive time through increased availability and reliability of the desktop infrastructure (i.e., less downtime).
- Improving knowledge access and information sharing.
- Improving organizational productivity and decision making through real-time collaboration and real-time scheduling.

New features in Windows 2000 Professional reduce downtime, provide faster startup and shutdown, and improve performance and power management over Nabisco's current Windows NT® Workstation operating system environment. Microsoft Office 2000 provides customizable help, self-repairing applications, and install-on-demand features, all of which contribute to decreased user downtime, thereby enabling increased productivity.

"I am sure we are not alone in thinking that implementing the Active Directory™ service, IntelliMirrorTM management technologies, and Group Policy using Windows 2000 server will improve IT efficiency and business productivity. It is fantastic that Windows 2000 Professional and Office 2000 can also enable a significant improvement in our effectiveness as individuals and as an organization," says Rich Burton, REJ project manager at Nabisco.

Single Platform for Streamlined Application Development

Nabisco recognized that a uniform platform for global application development could have a huge impact on business performance and use of IT resources. Robust custom business applications could provide cost savings as well as increased sales.

We support a large number of applications that support our business processes and business units," said Bob Shannon, Manager, Client Technologies. "We spend a substantial amount of time installing and testing applications every time we deploy an application. Windows 2000 can reduce development and support requirements because we can use out-of-the-box functionality rather than writing these services ourselves."

The platform offers the scalable, secure Web services that Nabisco was looking for. Built-in development technologies, such as Extensible Markup Language (XML), COM+, component isolation, Windows Installer technology, and Windows Scripting Host (WSH) can improve the development processes and reliability.

Rich George, Manager of Application Development at Nabisco, said, "We would like to develop technologies to mine financial, frequent-shopper, sales, and marketing data, and apply tools to provide our business units with the latitude to retrieve meaningful information. The integrated data analysis in Microsoft Excel 2000, including OLAP (online analytical processing), and the ability to

reuse Office components on the Web and the desktop, can help us reduce time currently used for development, testing, and deployment."

The REJ analysis identified the following benefits for Nabisco application developers:

- Significantly improve overall development efficiency due to simplified and common application development platform.
- Eliminate up to 50 percent of integration testing that is currently necessary to ensure that applications can coexist.
- Complete selected reporting and data analysis projects as much as 30 percent sooner by leveraging development features in Office 2000 rather than creating them using other development tools.
- Reduce effort required for software deployment and hardware configuration by up to 25 percent.

Nabisco Plans Enterprise-wide Rollout of Microsoft Desktop Productivity Infrastructure

The REJ analysis identified the specific financial and business value available to Nabisco in utilizing Microsoft Windows 2000 Professional and Office 2000 to meet its business needs as it transforms to an e-culture-based organization.

Wright noted, "In an environment where cost management is critical, every drop of efficiency has impact. Establishing a global desktop standard is helping us increase IT efficiency and end-user effectiveness. The REJ study has demonstrated several areas of opportunity for improving business processes and user productivity. The combination of Windows 2000 Professional and Office 2000 has the potential to eliminate one hour per employee of nonproductive time, resulting in a company-wide productivity improvement of 1 percent. The REJ study provided us with a framework to model the business value of IT decisions."

Since Nabisco is a global organization, global desktop consistency, IT asset consolidation, and ubiquitous communications are important aspects to help Nabisco further expand market share in international markets.

For more information via the World Wide Web, go to:
http://www.microsoft.com/windows2000/
http://www.microsoftcom/office/enterprise/
http://wzvw.microsoft.com/fechnet/default asp http://zvww.nabisco.com/
http://tvurtv.gigaweb. com

Source: Microsoft Corporation, accessed 10/29/00 at *www.microsoft.com/office, evaluation/studies .htm.*

CASE STUDY QUESTIONS

1. What important people, technology, process, and organizational issues must Nabisco address in transforming to an e-culture?
2. How is adopting a global desktop standard helping Nabisco achieve its goal of transforming to an e-culture?
3. What are some of the major challenges Nabisco faces in successfully implementing the desired global desktop platform?

Appendix 1

EUIS-Related Organizations

American Management Association (AMA), 1601 Broadway, New York, NY 10019. *www.amanet.org.*

American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036. *www.ansi.org.*

American Productivity and Quality Center (APQC), 123 North Post Oak Lane, 3rd Floor, Houston, TX 77024. *www.apqc.org.*

American Society for Training and Development (ASTD), 1640 King Street, Box 1443, Alexandria, VA 22313. *www.astd.org.*

Association for Business Communication (ABC), English Building, 608 South Wright Street, University of illinois, Urbana, IL 61801. *www.cohums.ohio-state.edu/ english/organizations/abc.*

Association for Computing Machinery (ACM), 1515 Broadway, 17th Floor, New York, NY 10036. Special Interest Groups: Groupware (SIGGROUP); Computer Graphics and Interactive Techniques (SIGGRAPH); Computer-Human Interface (SIGCHI); Computers and Society (SIGCAS). *www.acm.org.*

Association for Educational Communications and Technology (AECT), 1800 N. Stonelake Dr., Suite 2, Bloomington, IN 47404. *www.acct.org.*

Association for Information and Image Management (AIIM), 1100 Wayne Avenue, Suite 1100, Silver Spring, MD 20910. *www.aiim.org.*

Association for Information Systems, P.O. Box 2712, Atlanta, GA 30301. *www.aisnet.org.*

Association for Women in Computing, 41 Sutter Street, Suite 1006, San Francisco, CA 94104. *www.awc-hq.org.*

Association of Information Technology Professionals (AITP), 315 South Northwest Highway, Suite 200, Park Ridge, IL 60068. *www.aitp.org.* (formerly DPMA).

Association of Records Managers and Administrators (ARMA), 4200 Somerset Drive, Suite 215, Prairie Village, KS 66208. *www.arma.org.*

Business Technology Association (BTA), 12411 Wornall Road, Kansas City, MO 64145. *www.bta.org.*

Canadian Information Processing Society (CII'S), 1 Yonge Street, Suite 2401, Toronto, ON M5V 1L5 Canada. *www.cips.ca.*

Computer Measurement Group, 414 Plaza Drive, Suite 209, Westmont, IL 60559. *www.cmg.org.*

Decision Sciences Institute (DSI), J. Mack Robinson College of Business, Georgia State University, Atlanta, GA 30303. *www.dsi.gsu.edu.*

Human Factors and Ergonomics Society, P.O. Box 1369, Santa Monica, CA 90406. *www.hfes.org.*

Information Resources Management Association, 1331 East Chocolate Avenue, Hershey, PA 17033. *www.hbg.psu. edu/faculty/rnlk/irrna.html.*

Information Technologies Industry Council (ITIC), 1250 Eye Street NW, Suite 300, Washington, DC 20005. *www.itic.org.*

Institute for Certification of Computer Professionals (ICCP), 2200 East Devon Avenue, Suite 247, Des Plaines, IL 60018. *www.iccp.org.*

International Federation for Information Processing (IFIP), IFIP Secretariat, Hofstrasse 3, A-2361, Laxenburg, Austria. *www.ifip.or.at.*

International Information Management Association, P.O. Box 648, Middletown, PA 17057, (717) 652-7794. *www.iima.org.*

International Society for Technology in Education (ISTE), 1787 Agate St., Eugene, OR 97403. *www.iste.org.*

Life Office Management Association (LOMA), 2300 Windy Ridge Parkway, Suite 600, Atlanta, GA 30339. *www.loma.org.*

Organizational Systems Research Association (OSRA), Morehead State University, UPO 2478 Department of Information Systems, Morehead, KY 40351—1689. *www.osra.org.*

Society for Information Management (SIM), 401 N. Michigan Ave., Chicago, IL 60611. *www.simnet.org.*

Appendix 2

EUIS-Related Publications

Andrew Seybold's Outlook, Andrew Seybold's Outlook Inc., P.O. Box 2460, Boulder Creek, CA 95006.

ARMA Records Management Quarterly, 4200 Somerset Drive, Suite 215, Prairie Village, KS 66208. *www.arma.org.*

Behavior and Information Technology. www. taylorandfrancis.com/JNLS/bit.htm *Beyond Computing,* IBM Magazines, 590 Madison Avenue, 8th Floor, New York, NY 10022. *www.beyondcomputingmag.com.*

Business Week, McGraw-Hill, Inc., McGraw-Hill Building, 1221 Avenue of the Americas, New York, NY 10020. *www.businessweek.com. BYTE,* BYTE Subscriptions, P.O. Box 590, Martinsville, NJ 08836. *www.byte.com.*

Communication Briefings, 1101 King Street, Suite 110, Alexandria, VA 22314. *www.briefings.com/cb.*

Conununicat ions of the ACM, ACM, 1515 Broadway, New York, *NY,* 17th Floor, 10036. *www.acm.org.*

Compute, P.O. Box 5406, Greensboro, NC 27403.

Compu ter4 Communication Decisions, Hayden Publishing Company, 10 Muiholland Drive, Hasbrouck Heights, NJ 07604.

Computer Industry Update, Industry-Market Reports, P.O. Box 681, Los Altos, CA 94023.

The Computer Instructor, 614 Santa Barbara Street, Santa Barbara, CA 93101.

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