12

Initiating

Objectives

After reading this chapter, you will be able to:

1. *Understand the importance of initiating projects that add value to an organization*
2. *Discuss the background of ResNet at Northwest Airlines*
3. *Distinguish among the three major projects involved in ResNet*
4. *Appreciate the importance of top management support on ResNet*
5. *Discuss key decisions made early in the project by the project manager*
6. *Relate some of the early events in ResNet to concepts described in previous chapters*
7. *Discuss some of the major events early in the project that helped set the stage for project success*

F ay Beauchine became Vice President of Reservations at Northwest Airlines (NWA) in 1992. One area that had continually lost money for the company was the reservations call center. Fay developed a new vision and philosophy for the reservations call center that was instrumental in turning this area around. She persuaded people to understand that they needed to focus on sales and not just service. Instead of monitoring the number of calls and length of calls, it was much more important to focus on the number of sales made through the call centers. If potential customers were calling NWA directly, booking the sale at that time was in the best interest of both the customer and the airline. Additionally, a direct sale with the customer saved NWA 13 percent on the commission fees paid to travel agents and another 18 percent for related overhead costs.

Fay knew that developing a new information system was critical to implementing a vision that focused on sales rather than service, and she wanted to sponsor this new information system. Although the Information Services (IS) Department had worked to improve the technology for call centers, past projects never went anywhere. The new reservation system project, ResNet, would be managed by business area leaders and not Information Services managers—a first in NWA's history and a major culture change for the company. Fay made Peeter Kivestu, a marketing director, the project manager for the ResNet Beta project in 1993. NWA was going through tremendous business changes at that time, and the airline almost went bankrupt in 1993. How could Fay and Peeter pull off the project?

WHAT IS INVOLVED IN PROJECT INITIATION?

In project management, initiating is the process of recognizing and starting a new project or project phase. This process seems simple enough, but a lot of thought should go into it to ensure that the right kinds of projects are being initiated for the right reasons. It is better to have moderate or even a small amount of success on an important project than huge success on an unimportant one. The selection of projects for initiation, therefore, is crucial, as is the selection of project managers.

Recall from Chapter 4, *Project Scope Management*, that strategic planning serves as the foundation for deciding which of several projects to pursue. The organization's strategic plan expresses the vision, mission, goals, objectives, and strategies of the organization. It also provides the basis for information technology project planning. Information technology is usually a support function in an organization, so it is critical that the people initiating information technology projects understand how those projects relate to current and future needs of the organization. For example, Northwest Airlines' main business is providing air transportation, not developing information systems. Information systems, therefore, must support the airline's major business goals, such as providing air transportation more effectively and efficiently.

Information technology projects are initiated for several reasons, but the most important one is to support explicit business objectives. As mentioned in the opening case, Northwest Airlines was having financial difficulties in the early 1990s, so reducing costs was a key business objective. Providing an information system to stop the financial drain caused by the reservation call centers was the primary objective of the ResNet project.

Table 12-1 lists the knowledge areas, processes, and outputs that are typically part of project initiation. Tasks often involved in the project initiation process include the completion of a stakeholder analysis and preparation of a feasibility study and an initial requirements document. The outputs or outcomes of project initiation generally include a project charter of some sort, selection of a project manager, and documentation of key project constraints and assumptions. This chapter provides background information on Northwest Airlines and ResNet and then describes the initiation tasks involved in this large information technology project.

You will find in this chapter, and the following process group chapters, that real projects often do not follow all of the guidelines found in this or other texts. For example, the initiating project management process group generally only includes the process of initiation, part of project scope management, and the outputs listed in Table 12-1. The first ResNet project, the ResNet Beta or Prototype project, included some but not all of these outputs plus several others as part of initiating and preproject planning. Many projects include groundwork that is done before they are considered to be official projects. Every project is unique, as is every organization, every project manager, and every project team. These variations are part of what makes project management such a diverse and challenging field.

Table 12-1: Initiating Processes and Outputs

KNOWLEDGE AREA	PROCESS	OUTPUTS
Scope	**Initiation**	**Project Charter**
		Project Manager Identified/Assigned
		Constraints
		Assumptions

BACKGROUND ON NORTHWEST AIRLINES

Northwest Airlines is the world's fourth largest airline and America's oldest carrier. Northwest began on October 1, 1926, flying mail between Minneapolis/St. Paul and Chicago. Passenger service began the following year. On July 15, 1947, Northwest pioneered the "Great Circle" route to Asia, with service to Tokyo, Seoul, Shanghai, and Manila.

Today, Northwest Airlines, with its global travel partners, serves more than 750 destinations in 120 countries on six continents. In 2001, it had more than 53,000 employees worldwide. The U.S. system spans 49 states and the District of Columbia. Northwest has more than 2,600 daily flights and operates more

than 200 nonstop flights between the United States and Asia each week. Hub cities include Detroit, Memphis, Minneapolis/St. Paul, and Tokyo.

In the early 1990s, Northwest Airlines' sales agents accessed a reservation system by using approximately 3,000 dumb terminals—display monitors, with no processing capabilities, connected to a mainframe computer. As the airline business became more complicated and competitive, so did the reservation process. Calls were taking longer to complete and few direct sales were being made. Therefore, the airline was losing money by providing this necessary function of the business. It was Fay Beauchine's intent to turn this situation around by initiating the ResNet project.

BACKGROUND ON RESNET

Arvid Lee had worked in the IS Department at Northwest Airlines since 1971. One of the project ideas he and his colleagues had kicked around for several years was improving the system interface for the sales agents in the call centers. Changes in the business were making the call center jobs more complicated, and sales agents were complaining about the old Passenger Airline Reservation System (PARS). The government had just deregulated the airline industry, and new marketing initiatives such as frequent flier programs complicated matters. The average length of calls in the call centers was increasing due to the complexity of the job and the inflexibility of the information system being used. The IS Department did some research on improving the interface of the reservation system, but no improvements were ever implemented.

Figure 12-1 shows a sample screen from the PARS reservation system used at Northwest Airlines in the early 1990s. Notice the unfriendly, character-based interface. There was only one window with no help or menus to assist sales agents in the reservation process. Sales agents attended special training classes to learn all of the codes and procedures for using the PARS reservation system. At times, the call center job would get very demanding as more and more people called to obtain flight information, and the PARS information system provided little flexibility in helping sales agents meet potential customers' needs.

In 1992, Fay Beauchine became the Vice President of Reservations at Northwest Airlines. She knew the call centers were losing money, and she knew their focus on improving service was not working. Fay realized that a major change was needed in the information systems used by the sales agents. They needed a system that would help them quickly give potential customers complete and accurate information and allow them to book flights directly with NWA. Fay also knew that several competing airlines had successfully implemented new reservation systems.

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22JUN-TU-1201A JAX NRT (JAX/TYO)   ET **          2NX/SGL
1 NW 465 F9 Y9 B9 M9 H9 Q9 V9 K9 JAXDTW 1210P 226P   9 D95 LL0
2 NW  11 F9 J9 C9 Y9 B9 M9 H9 Q9    NRT  320P 520P|1   744 LL0
          V9
3 NW 467 F9 Y9 B9 M9 H9 Q9 V9 K9 JAXDTW  855A1113A   7 D9S BB0
4 NW  85 F9 J9 C. Y9 B9 M9 H9 Q9    NRT 1255P 255P|1   744 LL0
          V9
5 NW1709 F9 Y9 B9 M9 H9 Q9 V9 K9 JAXMEM  705A 753A   8 D9S SS0
6 NW 282 F9 Y9 B9 M9 H9 Q9 V9 K9    DTW  845A1140A   8 72R SS0
7 NW  85 F9 J9 C. Y9 B9 M9 H9 Q9    NRT 1255P 255P|1   744 LL0
          V9
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Figure 12-1. Sample Reservation Screen Before ResNet

Peeter Kivestu was a marketing director at NWA in 1993. He knew the company was having financial problems, and he had heard about Fay's vision of turning around the call centers. Peeter met with Fay to exchange ideas, and they both decided that Peeter could meet the challenges of being the ResNet project director. (NWA did not have a job title of project manager in 1993, so Peeter was named the project director, their title for a project manager. He will be referred to as the project manager in this book.)

To succeed, Peeter knew that he needed strong support from the IS Department. Peeter had discussed the project with the director of Information Services, and she agreed to have her department support the project. In May 1993, Peeter met with Arvid Lee, a technical specialist and senior member of the IS Department. Arvid had a great reputation in the company, and Peeter wanted to solicit his ideas and support for developing the new reservation system.

Arvid's first meeting with Peeter was quite an experience. Peeter exuded energy as he explained his overall strategy. He wanted to have a beta version of the new reservation system (ResNet) done in less than fifteen months—by early August, 1994. A rough estimate for creating a beta version of the system was about $500,000. Peeter asked Arvid to take the lead on developing a project plan for the beta system, and he wanted the plan done in one week.

Arvid would be in charge of all of the Information Services people supporting the ResNet Beta project, focusing primarily on the hardware, networking, and software integration efforts. His title would be the ResNet IS project manager. Arvid would also work with Kathy (Krammer) Christenson, a former marketing analyst and the new ResNet application development manager, to customize the ResNet software to meet the sales agents' needs. ResNet would use off-the-shelf

software as much as possible, but NWA staff would have to do some customization, system software development, and new application development to have the new system work within their company's business environment.

After completing a prototype system that would prove the potential benefits of ResNet, Peeter would have to convince upper management to invest over $30 million in a new system involving over 3,000 personal computers. To get initial and continued funding, Peeter knew they needed to prepare convincing documentation for the project, especially since the airline was not in good financial health. Creating a way to measure the benefits of ResNet was a key part of his strategy from the start.

Although the budget plans for all 1993 projects were due in September, Peeter knew he could not sit around and wait for formal approval before he got people working on ResNet. By the time any official funds were approved in December of 1993, Peeter had about twenty people working on the project in various capacities. Several Information Services staff were redirected from other, lower-priority projects, to help support ResNet. Other NWA staff in the call centers and other departments supported the project part-time while maintaining their normal duties. These people worked on developing the plan for the beta test, researching various software and hardware options, documenting the work flow of the current reservation process, recruiting people to work on the project, and so on. After funds were approved and the ResNet Beta project was formally recognized in December of 1993, several people were officially assigned to the project.

Recall that every project is unique and has a definite beginning and a definite end. Many large information technology projects are also broken down into smaller projects. ResNet was really a series of three distinct projects. Table 12-2 provides an overview of the three distinct projects undertaken in creating ResNet—the ResNet Beta or Prototype project, ResNet 1995, and ResNet 1996. Each project had specific scope, time, and cost goals. Peeter Kivestu was the project manager for all three ResNet projects, with Arvid Lee and Kathy Christenson as team leaders.

The ResNet Beta project or prototype started in May of 1993 and ended in August of 1994. The Beta project involved customizing and testing new reservation software and hardware using sixteen personal computers. The project also involved developing a method for measuring the true benefits of ResNet before making major financial investments in new reservations systems. This project cost about $500,000.

The ResNet Phase I project, also called ResNet 1995, was approved by NWA's finance committee in November of 1994. This project involved installing personal computers in the call centers in Baltimore and Tampa and the international portion of the Minneapolis/St. Paul reservations offices. It also involved developing ResNet software for Reservations Sales and Support, the new Iron Range Reservations Center, and the Sales Action Center. The price of this 1995 project was about $8.3 million in capital costs: computer equipment, facilities, and purchased software. The total cost estimate for the ResNet 1995 project was about $13 million.

Table 12-2: Three Main ResNet Projects

	RESNET BETA OR PROTOTYPE	**RESNET 1995**	**RESNET 1996**
Scope	Writing and testing new reservations system software, installing system on 16 PCs, developing measurement approach	Installing PCs, software, and networks in Baltimore, Tampa, and international portion of Minneapolis/ St. Paul reservations offices; developing more software	Completing the installation of PCs, software, and networks at other six reservations offices, developing more software
Time	May 1993 – August 1994	September 1994 – December 1995	August 1995 – May 1997
Cost	About $500,000	About $13 million	About $20 million

The ResNet Phase II project, also called ResNet 1996, completed the installation of the new reservations system at six other call centers and provided additional software development. This project cost another $10.7 million in capital and $20 million total. The total cost of all three ResNet projects was approximately $33.5 million. More detailed information on project costs is provided in Chapter 13, *Planning*.

What Went Wrong?

After finishing the ResNet Beta project, Peeter and his team saw the rest of ResNet as one large project to implement the new reservation system in all of the call centers. Senior management, however, broke the rest of ResNet into two separate projects, ResNet 1995 and ResNet 1996. Their goals were to avoid a huge investment commitment and to provide further incentives for the ResNet team to produce successful results. If the ResNet 1995 project was not successful, senior management would decide not to fund the 1996 project. Although this strategy reduced financial risk, Peeter and his team did not like the decision. If ResNet 1996 were not approved for some reason, they would be stuck with two totally different reservations systems in different sales offices. This situation would cause huge management, technical, and support problems. The ResNet 1995 team was under a lot of pressure to do a good job or the ResNet 1996 project would not be funded.

SELECTING THE PROJECT MANAGER

An important part of project initiation is selecting a project manager. Fay Beauchine asked Peeter to be the project manager for several reasons.

- Peeter knew the airline business and had over thirteen years experience in the industry. He joined Northwest Airlines in 1991 after holding several positions at Canadian Airlines International and American Airlines. Peeter had a bachelor's degree in engineering and a master's in aeronautics and finance.
- He understood the technology. Peeter was Vice President of Advanced Productivity Programs at Canadian Airlines International in the late 1980s. He was very successful at leading business and technical professionals in developing and applying new technologies.
- He knew that technologies could improve business productivity. Peeter was working in NWA's marketing and scheduling area and had some discussions with Fay about new reservation technologies. He made a case to Fay that big technology projects can be successful if managed properly. He convinced her that he was the right person for the job. His passion for the project was obvious to Fay, and Peeter used this passion to convince others how important ResNet was for Northwest Airlines.

PREPARING BUSINESS JUSTIFICATION FOR THE PROJECTS

Most projects require some form of justification to secure resources and funding. Whereas the ResNet projects addressed a broad organizational need to cut costs, they also required significant investments before any cost reductions would be realized. Peeter used different approaches for justifying each of the ResNet projects: the Beta project, ResNet 1995, and ResNet 1996.

ResNet Beta Project

Fay, Peeter, and Arvid took specific actions to convince senior management at Northwest Airlines to fund the ResNet Beta project. All three people understood the company's strategic plan and knew that it was important to cut costs, minimize risks, and remain competitive in handling reservations.

Fay convinced senior managers at numerous meetings that her vision of focusing on sales would turn around the poor financial performance of the reservation centers. She did an excellent job of analyzing the stakeholders and addressing their unique interests and concerns. She emphasized the fact that the company had to continue making some investments to improve its financial performance. The $500,000 they were asking for was a reasonable investment given the huge potential benefits of the project.

Peeter had a successful track record in implementing information systems to meet business goals, and he focused on using proven technology to reduce potential risk. Peeter collected facts showing that their competitors were increasing productivity by investing in new reservations systems. Peeter's experience and charismatic personality convinced people that ResNet was the project to work on and that failure was not an option. Having a strong project manager helps to justify investing in new projects and reduces project risk.

Arvid was very familiar with what competing airlines were doing in their call centers, so he knew what NWA had to do to remain competitive. Arvid's expertise was instrumental in planning the details of the beta project and making recommendations on hardware, software, networks, and staffing. The plans he helped create convinced senior management that the ResNet team knew what they were doing.

ResNet 1995 and ResNet 1996

After successfully completing the ResNet Beta version of the new reservation system on time and on budget, Peeter and his team had to convince upper management to make a major investment in the operational ResNet system. They developed a project plan in October 1994, for the 1995 and 1996 ResNet projects.

What Went Right?

Peeter and the ResNet team prepared outstanding business justification for all of the ResNet projects. Using his strong technical and business skills, Peeter wrote persuasive documents justifying ResNet, and he made a good case in his presentations. Peeter's justification strategy for the 1995 and 1996 ResNet projects included very strong financial analysis, which greatly impressed the finance committee. Peeter knew that the decision makers wanted to see the bottom-line numbers, and he provided those numbers with detailed rationale for how he got them. He prepared a five-year cash flow analysis of all costs and benefits, clearly defined major assumptions, and described the basis for all of his projections. It was obvious to the finance committee that Peeter knew what he was doing. They also appreciated the fact that someone leading a major information technology project was driven by business needs instead of technology needs.

Because of the company's poor financial condition in 1994, Peeter knew he had to have an extremely compelling argument to convince senior management to make any large investments in information technology. When communicating with upper management, Peeter focused on the key business objectives of the project, highlighted the impressive results from the beta project, and focused on the opportunity to make money with the new system.

Peeter provided detailed financial estimates in the ResNet 1995-1996 project plan. (Peeter viewed ResNet 1995 and 1996 as one large project in his initial project plans and business justifications.) Table 12-3 shows the financial summary from the October 1994 ResNet project plan. Peeter and his team estimated a net present value of $37.7 million for the project, based on a five-year system life and an 11.5 percent discount rate. Peeter also estimated the discounted payback period for ResNet to be 30 months or 2.48 years, and the internal rate of return as 45.2 percent. All of these financial projections provided strong support for investing in ResNet for 1995 and 1996.

Table 12-3: ResNet 1995-96 Financial Summary

FINANCIAL CATEGORY	EXPENSE (MILLIONS OF DOLLARS)
Net Present Value over 5 years @ 11.5%	37.7
Commitment (over 5 years)	
- One-time capital	21.5
- Chisholm equipment credit	(2.4)
- One-time operating expenses	2.6
- Recurring operating expenses	11.9

The majority of estimated benefits came from increasing the sales conversion, the percentage of calls that resulted in direct sales. This benefit is also called improving the call-to-booking ratio. Peeter prepared a detailed financial analysis of the estimated benefits of improving the call-to-booking ratio. Inputs for this calculation included the annual number of calls, the booking percentage with and without ResNet, the assumed percent of bookings flown, the average number of passengers per booking, the airfare, the savings due to direct sales from not paying the 13 percent commission fees to travel agents, and an additional 18 percent for overhead cost savings. Another major category of projected benefits was a reduction in headcount (sales agents) due to reduced call-handling times.

Peeter also explained the capabilities of the new reservation system in business terms. In the project plan to management he wrote:

> "The objective of the ResNet PC user presentation software is to convert agents from reservationists to salespeople through the use of intuitive software, which anticipates the information an agent will need, incorporates context-appropriate sales messages, highlights marketing programs and promotions, and ensures accuracy and consistency in call handling."[1]

Figure 12-2 shows a sample of the ResNet screen. Notice that much more information is available on the new reservation system screen than was available on the old screen (see Figure 12-1). A critical part of the software develop-

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[1] Kivestu, Peeter, PR2 submitted to Robert E. Weil and Anne C. Carter, October 25, 1994.

ment for ResNet involved integrating information from different areas and putting that information all on one screen. The added context-appropriate sales messages also helped sales agents provide customers with information that would help close a sale. As Bill Hawkins, one of the ResNet Beta test sales agents, put it, "What ResNet is to PARS is like what AT&T is to two sticks and a hollow log. It's a world of difference."

Figure 12-2. Sample ResNet Screen

Figure 12-3 shows the executive summary used in the project plan Peeter and his team created to justify investing in ResNet. Notice that Peeter focused on business issues throughout the executive summary. Northwest's competitors were taking advantage of new technologies to improve their reservations systems and realizing significant cost savings and revenue enhancements. The detailed plan included a table listing major competitors and how much their productivity and sales had increased after upgrading their reservation systems. For example, Peeter showed that Qantas and Canadian Airlines had increased their sales conversion by 11 percent after installing a new reservation system, and American Airlines decreased their sales agents' training time by 22 percent with their new system. Peeter also presented the risk involved in the project as minimal, primarily due to the success of the ResNet Beta project and the fact that most of the money would be spent on off-the-shelf hardware and facilities

versus software development. Senior management knew the risks involved in large software development projects, and Peeter's approach was to wait until the vendor's software they planned to use was successfully implemented at two other clients' sites before adopting it for ResNet. All of these items convinced senior management that ResNet was an important project for NWA.

Northwest Reservations offices currently operate with the PARS reservations system using 30 year-old technology. As a result, reservations agents must remember cryptic commands to access vast amounts of quickly changing marketing information. Because of the inflexibility of the current system, the time, and consequently the cost of taking a reservation is difficult to manage, agents are not able to consistently follow procedures, and training costs are high. Most of Northwest's competitors, and now also travel agencies, have been aggressively addressing reservations inefficiencies by installing intelligent reservations terminals. These airlines and agencies have realized significant operating improvement through cost savings and revenue enhancements.

Marketing requests approval to install intelligent sales terminals - to be called ResNet - in the eight domestic Reservations Sales offices, in the new Chisholm WorldPerks office, and in the Sales Action Center. The 5 year NPV of the project is $37.7 M.

There is limited downside risk to the project as it has been proven in a National Sales beta test at NW and similar versions of the product are in service with many domestic and international competitors. As the extensions of the application are built for other parts of Reservations, they will be built to the same standards as the current application. Of the total one-time costs to implement ResNet, the majority (65%) is hardware or facility related.

Furthermore, there are substantial upside benefits possible. The software is a small part of the total cost of the system, but can be modified without change to the hardware to accommodate a wide variety of revenue enhancing and cost reducing add-ons to the base software. Because of the software chosen for this application and the ability of the reservations users to complete many of their own enhancements, rapid deployment of new functionality throughout the project term will be encouraged.

Written by Peeter Kivestu, NWA, October 25, 1994

Figure 12-3. Executive Summary for Justifying ResNet Project

DEVELOPING THE PROJECT CHARTER

Northwest Airlines did not use official project charters in the early 1990s. Receiving formal budget approval seemed to be the main means for chartering projects. They did have internal communications, however, recognizing the need for and existence of the ResNet project.

The October 1994 project plan mentioned earlier provided detailed information on the ResNet project. This document was called a Purchase Request 2 (PR2) and was based on the dollar amount involved. Peeter prepared it by following the guidelines of NWA's Information Services Application Development Methodology. NWA developed this internal methodology for planning and developing their information systems projects. These guidelines include information on creating the following documents (more information related to these planning documents is provided in Chapter 13, *Planning*):

- Project Approach
- Technical Approach
- Development Approach
- Applications Approach
- Operations Approach
- Change Management Approach

The PR2 included a summary of the next steps involved in the ResNet project after completing the Beta ResNet project. Table 12-4 provides information from the PR2 describing an overall approach for the ResNet 1995-1996 implementation process. Notice that the focus was on installing the new reservation system in the various business areas involved in the reservation process.

Table 12-4: Next Steps After ResNet Beta Project

STEP AFTER RESNET BETA PROJECT	DATE
First facility ready for information systems installation	2/95
First agent training for live calls	3/95
First office completed	5/95
National/International Sales offices completed	2/96
Chisholm WorldPerks office completed	3/96
Specialty Sales/Support Desks completed	12/96

The PR2 was prepared as part of the funding process. When NWA's Finance Committee approved funding for the ResNet 1995 project in November of 1994, that project was officially recognized and funded, and the PR2 served as the initial project charter and plan. Likewise, after the ResNet 1996 project was

funded in November of 1995, it was officially recognized. By the late 1990s, NWA had developed project charter forms to formally recognize projects and provide overall guidance for them.

ACTIONS OF THE PROJECT MANAGER AND SENIOR MANAGEMENT IN PROJECT INITIATION

As mentioned throughout this text, strong leadership is an essential part of good project management. Project managers must provide leadership to their project team members, develop good relationships with key project stakeholders, understand the business needs of the project, and prepare realistic project plans. Senior management must participate in the project by providing overall support and direction. Following are some of the actions Peeter and other senior managers took to get the ResNet projects off to a good start:

Quickly assembling a strong project team. As mentioned earlier, Peeter had twenty people working on ResNet before there was even an official budget for the Beta ResNet. There was a lot of work to do, and Peeter saw no need to wait for the annual budget approval before getting started. He assembled a project team for the Beta ResNet system in July and August of 1993, with Fay and other senior managers' support. Peeter convinced Arvid Lee, a crucial asset to the project, that ResNet was a critical project for the company and for the IS Department. After he was convinced of the project's importance and Peeter's ability to successfully lead the project, Arvid helped recruit other Information Services staff and users. Peeter and Arvid's passion for the project drew people to ResNet. This strong start for the project created a momentum that contributed to its success.

Getting key stakeholders involved in the project early. Peeter included stakeholders from all of the areas involved in ResNet, especially top management, marketing, the user community, and the IS Department. He knew from past experience how important it was to have users involved in projects and to have senior management support. Peeter held regular meetings with people in marketing, and Fay was instrumental in getting their support as well as support from the executive management team. Peeter also brought in several people from the reservation call centers. They would be the primary users of ResNet, and they understood the business of dealing with potential customers to sell airline tickets. Peeter had an experienced facilitator lead several focus groups with the sales agents to understand what the call center issues were. Peeter also held several meetings with Information Services people to have them start evaluating different technologies that could be used to improve the reservation system.

Preparing detailed analysis of the business problem and developing project measurement techniques. Peeter knew that senior management would constantly question the value of ResNet, so even before the ResNet Beta project officially started, Peeter developed plans to prove that the system would save the company money. Peeter recognized the need to bring in industrial engineering experts to help document the reservation process at NWA and recommend how to close more sales. These experts found that sales agents had to handle over thirty different types of calls. NWA developed a call strategy based on the detailed analysis done by these engineers. The ResNet system would have to support this call strategy and allow agents to handle any type of call without additional steps. The engineers also developed techniques for measuring the effects of various aspects of the new system on increasing sales and reducing call time. Peeter knew this project would be scrutinized, so he made sure they had evidence that the new technology was indeed increasing productivity.

Using a phased approach. Senior management at NWA decided to divide ResNet into several phases or distinct projects. First they would fund a beta project to prove the concept of the new reservation system. The beta phase would demonstrate that the new technology would work and that the system would be profitable. Originally, Peeter wanted the second project to involve installing ResNet in all of the reservation call centers. Instead, senior management at NWA insisted on continuing a phased approach. They agreed to fund ResNet 1995 after the successful ResNet Beta and made ResNet 1996 contingent on the success of the previous project. This approach would break the work into smaller, more manageable projects, provide motivation for success, and minimize the financial risk for the company. If the first phase did not work, the project could be canceled; the same went for the second phase. As mentioned in Chapter 2, *The Project Management Context and Processes*, this is a very wise approach.

Preparing useful, realistic plans for the project. Having realistic plans is another important factor for project success. Arvid Lee had worked on several information technology projects at NWA and understood what was involved in all phases of ResNet. He was also an experienced planner. Before they did detailed planning, Arvid decided to let implementation dates drive the rest of the plans, and he and Peeter ensured that they never missed any of the critical implementation dates during project execution. Deciding to focus on implementation dates during the initiating process on ResNet helped guide the process groups in later phases of the project.

Project initiation is a critical activity in organizations. Companies must spend their time and money wisely by selecting important projects to work on and by getting them off to a good start. NWA did an excellent job of project initiation with ResNet. They focused on key business objectives, provided top management support, assembled a strong project team, involved key stakeholders, performed detailed analysis, developed measurement techniques for the project, used a phased approach, and prepared an approach for developing useful, realistic project plans.

CASE-WRAP UP

Fay and Peeter were very pleased when Northwest Airlines' Finance Committee agreed to fund the Beta ResNet project and continue to fund ResNet 1995 and ResNet 1996. Their vision and leadership inspired all ResNet stakeholders to ensure project success. Fay understood the business needs of NWA and provided strong user sponsorship. Peeter formed a dynamic project team to successfully initiate ResNet and to later deliver even more than everyone had expected. They proved that a large information technology project could be accomplished successfully by focusing on business needs and using good project management.

C H A P T E R S U M M A R Y

Initiation is the process of recognizing and starting a new project or project phase. Supporting key business objectives is a key reason for funding projects. NWA initiated ResNet to reduce costs from its reservation call centers and implement a new vision of focusing on closing sales, which would increase profits.

As with many information technology projects, the concept of ResNet was discussed in the IS Department for a few years. However, a strong project sponsor outside information technology was needed to provide the vision for the project and convince senior management of its value.

ResNet involved three distinct projects: a ResNet Beta project, ResNet 1995, and ResNet 1996. This phased approach helped break the work into more manageable pieces and minimized financial risks.

Selecting the project manager and forming the core project team were important parts of ResNet's project initiation. Developing strong business justification for the project was also crucial.

Actions in the project initiation phase and during preproject planning helped set the stage for the success of ResNet. These actions included quickly assembling a strong project team, involving key stakeholders early and often in the project, preparing a detailed analysis of the business problem, developing measurement techniques, using a phased approach, and developing an approach for preparing useful, realistic project plans.

DISCUSSION QUESTIONS

1. What was Fay's role in initiating ResNet? Why did she succeed when other NWA employees in the IS Department, who had similar ideas years earlier, did not?

2. What role did senior managers, Peeter, and Arvid have in initiating ResNet? Did they make good decisions? Explain your answer.

3. What were some of Peeter's strengths as a project manager? How do these strengths relate to concepts discussed in earlier chapters?

4. Review the executive summary Peeter prepared to help justify investing in ResNet. What points were made to convince the finance committee to support the project?

5. Discuss the major differences between the three ResNet projects. What was the emphasis for each project? How might each be managed differently?

6. Describe a project you have seen initiated. Compare how it was handled to the ResNet project. What were the similarities and differences?

EXERCISES

1. Review the actions taken by Peeter and other senior managers that helped get ResNet off to a good start. How do these actions compare to what earlier chapters presented as good project management practice? List each action and find specific statements in earlier chapters of this book that support (or do not support) each.

2. Research information about how air travel and the airline reservation system process has changed over the past ten years. How many people currently book flights directly through the airlines? How many people book flights through travel agents? How many people use Web-based systems to book flights? What are the main differences between each approach? Do you see any trends developing? Do you think new services are better for customers? What are the potential disadvantages of increased Web-based bookings?

3. Research at least three different airline reservation systems available on the World Wide Web (nwa.com, other airlines' Web sites, expedia.com, travelocity.com, sidestep.com, and so on). List the basic features of each, then compare them based on the following criteria: ease of use, availability of flights to various locations, costs for specific flights, convenience in travel times, related services such as car rental, hotel information, and payment process. Add additional criteria, if you wish. Which system do you prefer and why?

4. Ask five people who have flown in the past year how they booked their flights. Be sure to talk to people of different ages and backgrounds (for example, your roommate, your parents, your grandparents, your boss, and your teachers). Compare the methods they used and why. What is your personal preference for booking flights?

MINICASE

None of the ResNet projects had a project charter as described in Chapter 4, *Project Scope Management*.

Part 1: Using Table 4-2 as a guide, write a project charter for each of the three ResNet projects.

Part 2: Review ads for project managers on Web sites such as www.monster.com. Then write an ad to advertise for the position of project manager for the ResNet projects. Also develop a list of questions you would ask when interviewing people for the position.

SUGGESTED READINGS

1. Microsoft's Travel Web site, www.expedia.com.

    Microsoft and several other companies have Web sites to help people book flights, reserve rental cars, find lodging, and so on.

2. Northwest Airlines Web site, www.nwa.com.

    A good way to learn more about a company is to visit its Web site. Review important information about Northwest Airlines from their Web site.

3. Sackman, Ralph B. *Achieving the Promise of Information Technology*. Newton Square, PA: Project Management Institute, 1998.

    Sackman's text offers a framework to help companies use the power of information technology to transform their mainstream operations and services. Based on the nature of systems work itself, this book describes initiatives to achieve growth, productivity, cost control, asset utilization, and customer satisfaction objectives.

4. Weiss, Joseph W. and Robert K. Wysocki. *5-Phase Project Management*. New York: Harper-Collins, 1992.

    This book provides practical, step-by-step information on each phase of a complex project, starting with project initiation.

5. WORLDSPAN's Web site, www.worldspan.

    WORLDSPAN is a computer reservation system used by Northwest Airlines and many other airlines and travel agents. Their Web site provides information on the history of WORLDSPAN and more recent products and services.

13

Planning

> **Objectives**
>
> *After reading this chapter, you will be able to:*
>
> 1. *Discuss the project management planning processes and outputs and describe how they were used on ResNet*
> 2. *Describe how Northwest Airlines organized the scope of work on ResNet using work breakdown structures*
> 3. *Discuss how Microsoft Project was used to aid in project planning on ResNet*
> 4. *Review and discuss real-world examples of work breakdown structures, cost estimates, staffing plans, and a project organizational chart for a large information technology project*
> 5. *Discuss key decisions the project manager and team made in the planning process*
> 6. *Relate some of the planning events in ResNet to concepts described in previous chapters*
> 7. *Understand the contribution that good planning makes to project success*

Peeter Kivestu and Arvid Lee took the lead in creating project plans for all the ResNet projects. Peeter had a strong finance background and understood the airline business well. His work in writing the PR2 was instrumental in getting funding for the ResNet 1995 and 1996 projects. Arvid had the most experience working on information systems projects at NWA, and he was good at getting input from the people who would be involved in executing the plans.

However, Arvid was having a difficult time deciding what level of detail to use in planning the project scope and schedule. A friend of his had spent a lot of time planning a large information technology project for his organization, and he had nothing but horror stories to tell. He couldn't keep track of the details, the changes, and what actually occurred on the project versus what was in the plan, even

with the aid of project management software. How should Arvid and the ResNet team plan the work that needed to be completed so they could actually focus on getting the job finished? How should they communicate the plan and keep it updated?

WHAT IS INVOLVED IN PROJECT PLANNING?

Planning is often the most difficult and most unappreciated process in project management. Many people have negative views of planning because the plans created are not used to facilitate action. The main purpose of project plans, however, is to guide project execution. To guide execution, plans must be realistic and useful. To create realistic and useful plans, a fair amount of time and effort must go into the planning process, and people knowledgeable in doing the work need to plan the work.

Unlike initiating, which generally involves only one knowledge area, planning concerns activities in every knowledge area:

- Project integration requires developing the overall project plan.
- Project scope management includes scope planning and scope definition.
- Project time management includes activity definition, sequencing, duration estimating, and project schedule development.
- Project cost management includes resource planning, cost estimating, and cost budgeting.
- Project quality management includes quality planning.
- Project human resource management includes organizational planning and staff acquisition.
- Project communications management includes communications planning.
- Project risk management includes risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, and risk response planning.
- Project procurement management includes procurement planning and solicitation planning.

Table 13-1 lists the project management knowledge areas, processes, and outputs of project planning. You can see there are many outputs from the planning process group. ResNet documents produced during the planning process, and discussed in this chapter, include a project plan, work breakdown structure, project schedule, cost estimates, and an organizational chart.

Table 13-1: Planning Processes and Outputs

KNOWLEDGE AREA	PROCESS	OUTPUTS
Integration	Project Plan Development	Project Plan
		Supporting Detail
Scope	Scope Planning	Scope Statement
		Supporting Detail
		Scope Management Plan
	Scope Definition	WBS
		Scope Statement Updates
Time	Activity Definition	Activity List
		Supporting Detail
		WBS Updates
	Activity Sequencing	Project Network Diagram
		Activity List Updates
	Activity Duration Estimating	Activity Duration Estimates
		Basis of Estimates
		Activity List Updates
	Schedule Development	Project Schedule
		Supporting Detail
		Schedule Management Plan
		Resource Requirement Updates
Cost	Resource Planning	Resource Requirements
	Cost Estimating	Cost Estimates
		Supporting Detail
		Cost Management Plan
	Cost Budgeting	Cost Baseline
Quality	Quality Planning	Quality Management Plan
		Operational Definitions
		Checklists
		Inputs to Other Processes

Table 13-1: Planning Processes and Outputs (continued)

Knowledge Area	Process	Outputs
Human Resource	Organizational Planning	Role and Responsibility Assignments
		Staffing Management Plan
		Organizational Chart
		Supporting Detail
	Staff Acquisition	Project Staff Assigned
		Project Team Directory
Communications	Communications Planning	Communications Management Plan
Risk	Risk Management Planning	Risk Management Plan
	Risk Identification	Risks
		Triggers
		Inputs to Other Processes
	Qualitative Risk Analysis	Overall Risk Ranking for the Project
		List of Prioritized Risks
		List of Risks for Additional Analysis and Management
		Trends in Qualitative Risk Analysis Results
	Quantitative Risk Analysis	Prioritized List of Quantified Risks
		Probabilistic Analysis of the Project
		Probability of Achieving the Cost and Time Objectives
		Trends in Quantitative Risk Analysis Results
	Risk Response Planning	Risk Response Plan
		Residual risks
		Secondary risks
		Contractual Agreements
		Contingency Reserve Amounts Needed
		Inputs to Other Processes
		Inputs to a Revised Project Plant

Table 13-1: Planning Processes and Outputs (continued)

KNOWLEDGE AREA	PROCESS	OUTPUTS
Procurement	Procurement Planning	Procurement Management Plan
		Statement(s) of Work
	Solicitation Planning	Procurement Documents
		Evaluation Criteria
		Statement of Work Updates

DEVELOPING THE PROJECT PLANS

Recall that ResNet actually involved three related projects: the ResNet Beta project, ResNet 1995, and ResNet 1996. Planning for the first two projects will be discussed briefly, then the emphasis of this and subsequent chapters will be on the ResNet 1996 project. Descriptions of the ResNet 1996 project plans are provided by knowledge area.

ResNet Beta Project Planning

In May of 1993, Peeter asked Arvid Lee to lead development of a project plan for the ResNet Beta project. Recall that Peeter wanted the plan completed in one week. The main purpose of the ResNet Beta project was to prove the concept and business value of moving to a PC-based reservation system. The tasks involved were purchasing new reservations software, developing new software, installing the system on a small group of new PCs, testing the system, and documenting the potential benefits. Peeter insisted that the ResNet Beta project be completed by August of 1994 so they could use the results to justify obtaining funds for a follow-on ResNet project in the next budget cycle.

Arvid was familiar with planning and implementing hardware, software, and networking technologies for NWA and had experience working with the users and vendors involved. He was familiar with PCs and performing beta projects. He also knew whom to contact for help in quickly preparing a good plan. Arvid recruited people from various areas to help him craft and later implement a plan for the ResNet Beta project. He was careful to create a plan that focused on everyone doing his or her part to be successful. A few important decisions that were made in planning the ResNet Beta project included:

- Planning at a fairly high level: Learning from a friend's experience, Arvid was careful not to get carried away by planning in too much detail. He trusted his colleagues to perform their jobs well, so he focused on

deliverables and results and not the details of how the work would be accomplished. Since performing any beta project involves a high degree of creativity, Arvid felt it was important to let everyone work together creatively to produce those deliverables and results.

■ Getting strong user involvement: Kathy Christenson, an analyst from the marketing and sales division of NWA, had firsthand experience working with sales agents and led the ResNet application development area. Kathy and her team of agents were a critical part of defining the requirements for the software and actually did most of the software customization (*see* Chapter 14, *Executing*). Arvid was open to this innovative approach to ensuring strong user involvement in the project and worked well with non-IS staff.

■ Developing a solid measurement tool: Following Peeter's advice, Arvid had several industrial engineers assigned to the project. They planned to do detailed studies of the current reservation system to find areas for improvement (a procedure known as process reengineering) and then measure the impact of the new reservation system. They asked questions such as "Did the new system increase the sales conversion percentage? Did the new system decrease call handle time?" Arvid included plans for developing this measurement tool for ResNet in the project plan for the beta test.

ResNet 1995 Planning

After successfully completing the ResNet Beta project, the ResNet team had to create a plan for installing PCs in various sales offices. The ResNet 1995 plan was to install PCs and software in Baltimore (339 PCs), Tampa (289 PCs), and the international portion of the Minneapolis/St. Paul (82 PCs) reservations offices. The plan also involved developing customized applications for specialty and support desks, two business areas related to the reservations process.

Arvid consulted with key stakeholders to develop these plans. The IS Department had experience installing PCs and networks, so he used that knowledge base to plan the installations. He also had a good idea of the amount of work and time involved in doing more software development and used that knowledge to create plans for customized application development. Arvid consulted with other experts inside the company and outside the company to develop realistic timelines for the work involved.

ResNet 1996 Planning

Because of the ResNet Beta project and the 1995 project, Peeter, Arvid, and their team had a wealth of information available when they prepared the plan for the ResNet 1996 project. Their successful experiences with the ResNet Beta and 1995 projects helped them define scope, time, cost, and other dimensions

of the 1996 project. In August of 1995, Peeter prepared another Purchase Request 2 (PR2) for NWA's finance committee to review and then decide on continued funding for ResNet. The PR2 included the following information:

- Executive summary
- Brief justification
- Background
- Need
- Opportunity
- Justification
- Risk
- Other benefits
- Next steps
- Post implementation audit
- NPV schedule
- Attachments

The justification section included information on increased revenue, enhanced quality processes, reduced operating costs, and new revenue generation based on the ResNet 1995 project. The risk section included information about software, change management, and implementation. The attachments included one-time and ongoing expenses, an application development timeline, and a summary of ResNet performance. The summary of ResNet performance included the implementation schedule performance in 1995, the budget versus actual spending performance for the ResNet 1995 project, measurement objectives, performance results in the Baltimore call center, and a qualitative feedback summary of the project. The PR2—for all intents and purposes a project plan—provided a great foundation for convincing the finance committee to fund the ResNet 1996 project. It also provided a great foundation for enabling the project team to execute the project.

What Went Right?

The PR2 for the ResNet 1996 project included performance results from implementing ResNet in Baltimore in 1995. Because the project team developed measurement tools and used them on the ResNet 1995 project, they had a strong business case for justifying further investments in the ResNet 1996 project. The actual results of the call handle time in Baltimore showed a 6.7 percent improvement after implementing ResNet. The percentage of direct ticket sales increased from 3.2 percent to 7.5 percent. This increase in direct sales translated to over $15 million in profits that ResNet generated in 1995 alone.

DETERMINING PROJECT SCOPE AND SCHEDULES

The two primary goals of ResNet 1996 were further software development and seven office implementations. These two efforts were interdependent because application development drove the timing of office implementation. Table 13-2 shows the planned software development and office implementation milestones as presented in the PR2 project plan dated August 29, 1995.

Table 13-2: Planned Software Development and Office Implementation Milestones

SOFTWARE DEVELOPMENT MILESTONE	DATE	OFFICE IMPLEMENTATION MILESTONE	DATE
International sales in production	10/95	Minneapolis/St. Paul (MSP) international desk completed	10/95
WorldPerks in production	3/96	New York City (NYC) and Detroit (DTT) facilities ready	12/95
Specialty and support desk production rollout	8/96-12/96	WorldPerks office rollout	3/96-12/96
Sales Action Center in production	12/96	National/International sales offices completed	11/96
		Specialty sales/support desks completed	12/96

Northwest Airlines used Microsoft Project (one of the first versions available) to aid in planning the scope and schedule for ResNet. They created two separate files for the software development and office implementation efforts. Figure 13-1 shows the actual Gantt chart used to plan ResNet 1996 software application development. The project team also had more detailed schedules based on this Gantt chart; however, they did not link tasks using the software. Instead, they manually entered the dates for each task. The ResNet staff only created Gantt charts to aid them in initial planning. They did not plan to enter actual information or use critical path analysis, so they did not link the tasks in Microsoft Project. They were very careful in setting the milestone dates, and *they missed none of them.*
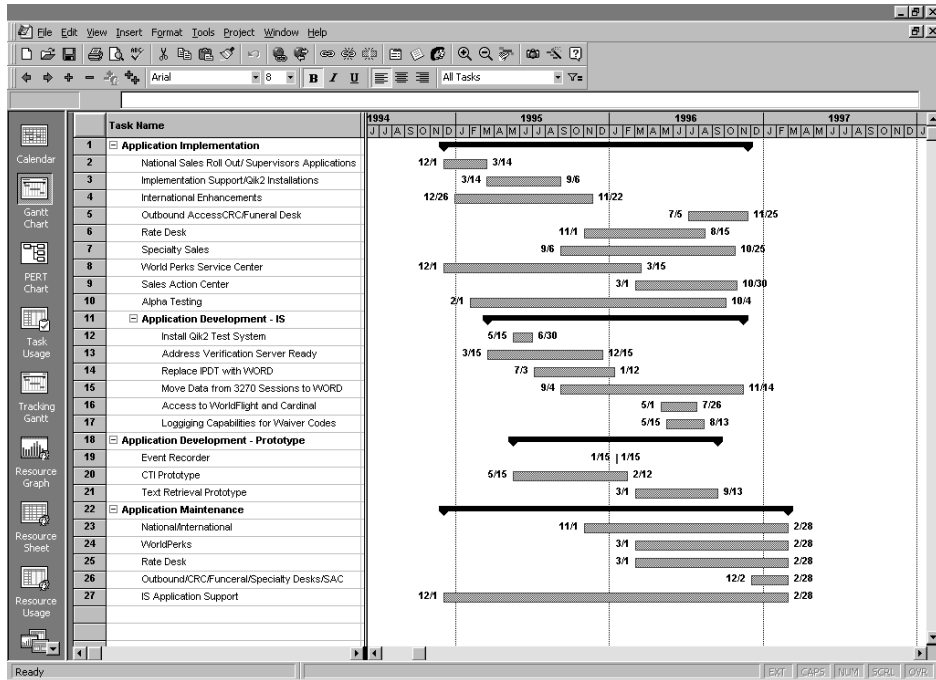
Figure 13-1. ResNet 1996 Application Development Gantt Chart

NWA developed a much more detailed Microsoft Project file for the ResNet 1996 office installations than for the software application development effort. Figure 13-2 shows part of the WBS for the office installations, which NWA staff created using a combination of the phase-oriented and product-oriented approaches for developing a WBS (*see* Chapter 4, *Project Scope Management*). For example, each office was a separate Level 1 WBS item. Figure 13-2 also shows a WBS Level 2 view of the office implementation plan for Office 1, New York City. Each of the seven offices followed the same phase-oriented approach. There were phases for each office for pre-implementation preparation, infra-structure implementation, change management, agent conversion, and achieving office goals.
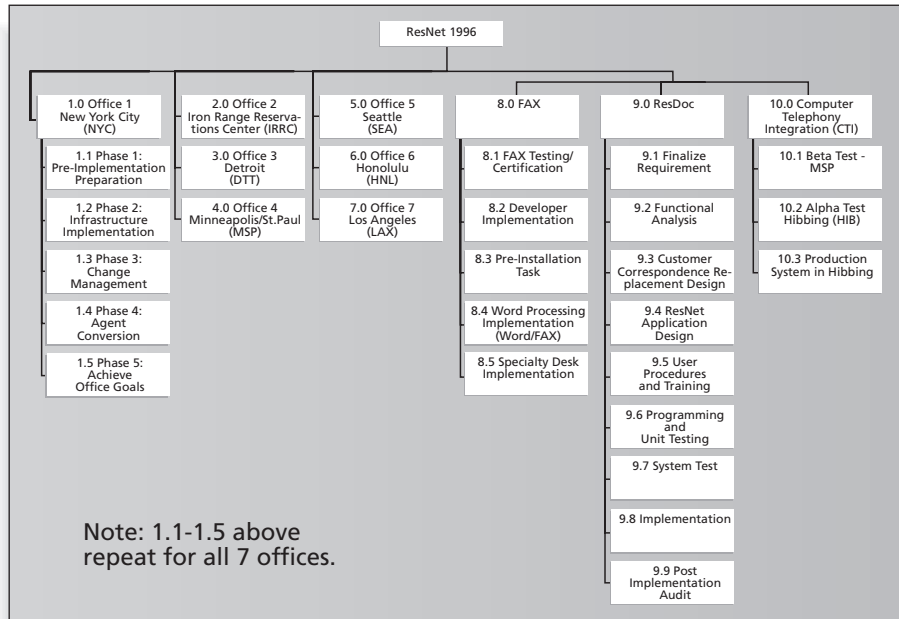
Figure 13-2. ResNet 1996 Level 2 WBS for Office Implementations

The development and implementation of facsimile (FAX) capabilities, the ResDoc customer documentation system, and the Computer Telephony Integration (CTI) system, which could be viewed as major products of the project, were also Level 1 WBS items. The Level 1 WBS item called FAX included the development and implementation of facsimile capability from the ResNet PCs. The ResDoc WBS item refers to the letter-writing system that generates correspondence for members of NWA's frequent flier program called WorldPerks. The CTI WBS item represents the Computer Telephony Integration (CTI) part of the ResNet 1996 project. CTI is a system that connects the telephone system to the ResNet computers. For example, when customers call NWA, they can respond to telephone prompts. Depending on what telephone buttons they press, the ResNet system will direct the call to a particular type of ResNet agent—domestic versus international, for example—and that agent's computer screen will pull up information on the customer's needs, according to the telephone prompt responses.

What Went Wrong?

There was a lot of political pressure related to the Iron Range Reservations Center (IRRC) in Chisholm, Minnesota. The state of Minnesota funded a large portion of this office, which was the central point for handling the WorldPerks system. The WorldPerks implementation

date of March 31, 1996, was firm. The ResNet team was a little overconfident in their plan-
ning, and several problems developed. WorldPerks involved a new communications proto-
col, and the ResNet team did not plan enough time up-front to analyze all of the system
requirements. They expedited testing, and there were several quality problems that were dif-
ficult to resolve because of a lack of precision in planning.

Figure 13-3 shows part of the actual Microsoft Project Gantt chart used for
ResNet 1996 office installations. Notice that the WBS follows the structure
shown in Figure 13-2. Although the Level 2 WBS items for each office were
the same, the Level 3 items beneath them (not shown in this figure) varied to
meet the particular needs of each office. There were a total of 821 tasks in the
Microsoft Project file for the 1996 office installations. The ResNet project team
focused on meeting key milestone dates, so they worked to finish tasks on
time. *They missed none of these completion dates even though there were definite chal-
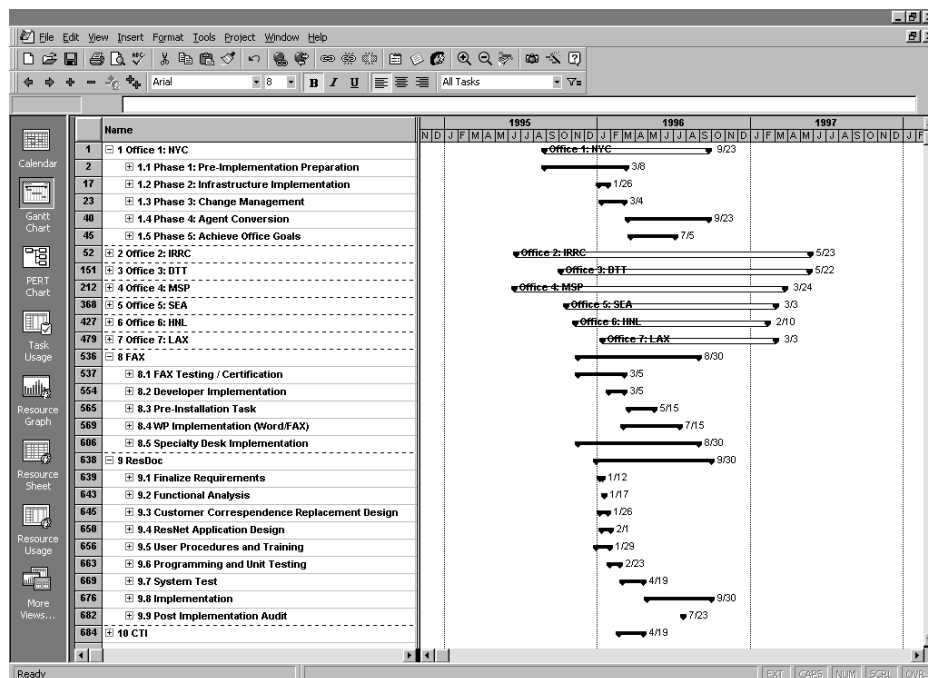lenges in doing so.*

Figure 13-3. ResNet 1996 Office Implementation Gantt Chart

The ResNet 1996 project team broke down the scope of the office installa-
tions to WBS Level 3, as follows:
  1.1   Phase 1: Pre-Implementation Preparation
      1.1.1   Modify Facilities for the Floor

1.1.2 Modify Facilities for Communications Room
1.1.3 Conduct Pre-Implementation Site Visit
1.1.4 Prepare for Network Pre-Installation
1.1.5 Order all ResNet Equipment Components
1.1.6 Request Communication lines
1.1.7 Develop Training Schedule
1.1.8 Develop Phased Implementation Plan
1.1.9 Order Physical Security Devices for PCs
1.1.10 Conduct On-Site Planning Session
1.1.11 Conduct Change Management Site Visit
1.1.12 Conduct Awareness Programs
1.1.13 Validate PC Image
1.1.14 Define Electronic Distribution Manager (EDM) services for office
1.2 Phase 2: Infrastructure Implementation
1.2.1 Install all components in Communications Room
1.2.2 All native WORLDSPAN (WSP) training terminated
1.2.3 Install PCs in Training Room
1.2.4 Test and Stabilize IS Components
1.2.5 IS Certification Completed
1.3 Phase 3: Change Management
1.3.1 Train Supervisor Agent Coordinators in MSP
1.3.2 Provide 2 Temporary Awareness PCs
1.3.3 Install Buffer Area PCs and Demo PCs
1.3.4 Train the Trainer (TTT)
1.3.5 Install PCs: Trainers/Early Trained Agents
1.3.6 Train Supervisors in ResNet
1.3.7 Train Managers in ResNet
1.3.8 Install PCs for Managers, Supervisors, Podium
1.3.9 Conduct Manager Measurement Strategy Meeting
1.3.10 Develop Continuous Improvement Plan
1.3.11 Train Floor Support Agents
1.3.12 Install PCs for Floor Support Agents
1.3.13 Conduct Manager/Supervisor Strategy Meeting
1.3.14 Train Office Administration and Staff in Windows Applications
1.3.15 Install PCs for Office Administrative Staff
1.3.16 Conduct Office Kickoff
1.4 Phase 4: Agent Conversion
1.4.1 Conduct Agent Conversion Training (ACT) [phased]
1.4.2 Install PCs for Conversion Agents [phased]
1.4.3 Office Conversion Completed
1.4.4 ResNet Agent Measurement Completed

    1.5   Phase 5: Achieve Office Goals
        1.5.1   Implement Continuous Improvement Plan
        1.5.2   Analyze Airline Control Protocol (ALC) Line Utilization
        1.5.3   Conduct Recurrent Training
        1.5.4   Complete Test and Balance of Facility
        1.5.5   Conduct Focus Groups
        1.5.6   Conduct Post Implementation Review

The ResNet 1996 project plans were not broken down any further than WBS Level 3 for the offices, but they were broken down to Level 4 for the Fax and CTI areas. For example, samples of Level 4 items for the FAX part of the ResNet 1996 project were:

8   FAX
    8.1   FAX Testing / Certification
          8.1.1   Install Fax Server for Evaluation
                  8.1.1.1 Order equipment/software
                  8.1.1.2 Set up the PBX
                  8.1.1.3 Install T1
                  8.1.1.4 Install Fax Server
                  8.1.1.5 Install FAX client software

RESNET COST ESTIMATES

Peeter, Arvid, and other members of the ResNet team prepared detailed cost estimates, especially for the ResNet 1996 project. Most of the costs involved purchasing hardware, software, and network equipment, and they used vendor quotes for these items. They also had a good understanding of internal costs for installing hardware, software, and networks. The internal development costs for coding and training were based on estimates of the number of people needed from various departments and the labor cost per hour for those employees.

Table 13-3 shows the maximum departmental headcounts by year for the 1995 and 1996 ResNet projects and for supporting ResNet through 1998. This information was included in the PR2 and provided the basis for the labor cost estimates. The IS Department staff included personnel to perform industrial engineering functions (such as developing and implementing the measurement system), application development, network operations and development, and marketing application management and support. The staff from the Marketing Systems Department included a project analyst, an application development person to assist with the industrial engineering functions, and an administrative assistant. The Reservations Department staff included reservation agents who worked on application development, additional reservation agents for

testing, change management analysts, training and awareness staff, applications support/maintenance staff, and reservation agents for the ResNet Hotline (a special help desk for handling agents' questions related to ResNet). The contractor headcount included people from Sabre Decision Technologies who assisted in application design and development and people to assist in ResNet distributed system implementation.

Table 13-3: Maximum Departmental Headcounts by Year

DEPARTMENT	1994	1995	1996	1997	1998	TOTALS
Information Systems	24	31	35	13	13	116
Marketing Systems	3	3	3	3	3	15
Reservations	12	29	33	9	7	90
Contractors	2	3	1	0	0	6
Totals	41	66	72	25	23	227

Peeter and his team had a high degree of confidence in their cost estimates because they had drawn on a large experience base. They knew what it would cost to purchase PCs and other hardware. They knew what their labor costs were. The main risk was in labor costs for application development. Peeter and Fay determined the maximum headcount by year, as shown in Table 13-3. They budgeted for people to work on developing, testing, and enhancing the ResNet software, and they chose to make the functionality of the system fit within the confines of what the people allocated to work on it could accomplish. This choice forced everyone to prioritize his or her work and focus on doing what was most important.

Table 13-4 summarizes the cost estimate for the ResNet 1995 and 1996 projects and on-going and recurring costs for ResNet after the projects would be completed. Peeter and his team provided many detailed calculations to support this estimate in the PR2. Notice the heavy investments in computer equipment, facilities/buildings, and software in 1994, 1995, and 1996. Also notice that costs were projected based on a five-year system life for ResNet, or the system's life cycle cost. The total life cycle cost estimate for ResNet was over $42 million.

Table 13-4: Summary of ResNet Total Life Cycle Costs

	1994 ($)	1995 ($)	1996 ($)	1997 ($)	1998 ($)	1999 ($)	Total ($)
Computer equipment	325,779	4,337,036	8,487,495	-	-	-	13,150,310
Facilities/ buildings	-	974,372	1,072,969	-	-	-	2,047,341
Software	563,627	2,517,590	1,704,575	-		-	4,785,792
Total one-time capital expenditures	889,406	7,828,998	11,265,039	-	-	-	19,983,443
Capitalized labor one-time costs	88,627	1,589,191	1,704,575				3,382,393
One-time labor costs	38,040	748,267	1,265,323	60,000			2,111,630
Ongoing operating labor	108,675	1,101,809	3,150,414	2,787,984	2,710,982	2,710,981	12,570,845
Total labor and consultant costs	235,342	3,439,267	6,120,312	2,847,984	2,710,982	2,710,981	18,064,868
Recurring computer equipment	-	601,249	559,794	805,549	829,715	854,607	3,650,914
Recurring facilities/ buildings	-	6,100	41,610	42,858	44,144	45,468	180,180
Recurring software	-	-	162,050	206,912	213,119	219,512	801,593
Total recurring expenses	-	607,349	763,454	1,055,319	1,086,978	1,119,587	4,632,687
TOTAL COSTS	**1,124,748**	**11,875,614**	**18,148,805**	**3,903,303**	**3,797,960**	**3,830,568**	**42,680,998**

HUMAN RESOURCE AND COMMUNICATIONS PLANNING

Two of Peeter's strongest assets were his ability to motivate people and to provide strong communications with project stakeholders. He was good at using informal networking to accomplish a great deal of work. For example, recall that Peeter recruited people to work on ResNet before the beta project was officially funded.

Peeter and his team were also good at creating formal human resource and communications plans. Table 13-5 shows the staffing plan Peeter created for the ResNet 1995-1996 PR2. This plan provided detailed estimates of the number of person-months ResNet would require from each department for its five-year system life. Peeter and his team further broke down the staffing needs by the category of people in each department. This detailed staffing plan provided a strong basis for the labor cost estimates and for assigning people to the project.

Table 13-5: ResNet Staffing Plan (in person-months)

DEPARTMENT	1994	1995	1996	1997	1998	TOTALS
Information Systems						
Application Development (IE)	4	12	6	0	0	22
Application Development (IS)	30	135	86	0	0	251
WorldPerks Service Center Application Development (IS)	0	15	5	0	0	20
Network Operations and Development	20	60	10	0	0	90
Network and Systems Support	30	96	96	96	96	414
Marketing Application Management	4	12	12	12	12	52
Application Support	0	6	36	48	48	138
Total Information Systems Department	**88**	**336**	**251**	**156**	**156**	**987**
Marketing Systems						
Project Analyst	4	12	12	12	12	52
Application Development (IE)	4	12	12	12	12	52
Administrative Assistant	4	12	12	12	12	52
Total Marketing Systems Department	**12**	**36**	**36**	**36**	**36**	**156**

Table 13-5: ResNet Staffing Plan (in person-months) (continued)

DEPARTMENT	1994	1995	1996	1997	1998	TOTALS
Reservations Department						
Application Development (Reservations Agents)	20	87	42	0	0	149
Alpha Testers (Reservations Agents)	0	24	12	0	0	36
WorldPerks Service Center Application Development	16	44	0	0	0	60
Sales Action Center Application Development	0	4	18	0	0	22
Change Management Analyst	4	12	12	12	12	52
Training and Awareness (Reservations Agents)	8	24	6	0	0	38
Support/Maintenance (Reservations Agents)	0	27	106	96	72	301
ResNet Hotline (Reservations Agents)	0	60	30	0	0	90
Total Reservations Department	**48**	**282**	**226**	**108**	**84**	**748**
Contractors						
Application Design and Development (Sabre)	3	18	6	0	0	27
ResNet Distributed System Implementation Support	4	4	0	0	0	8
Total Contractors	**7**	**22**	**6**	**0**	**0**	**35**
Grand Total Person-Months (Including Contractors)	**155**	**676**	**519**	**300**	**276**	**1926**

Figure 13-4 shows the organization chart for ResNet as of 4/19/95. Even though most ResNet staff did not directly report to Peeter (noted by the many-dotted line relationships on the chart), he seemed to have no problem managing them. Peeter motivated people by providing them with challenging work and strong leadership. He also made sure that the functional area managers supported ResNet and encouraged their staff to do a good job on this highly visible project. NWA was a strong functional organization, but most of the people assigned to work on ResNet were assigned full-time. Having people assigned full-time also made it easier for Peeter to manage such a large group of people.
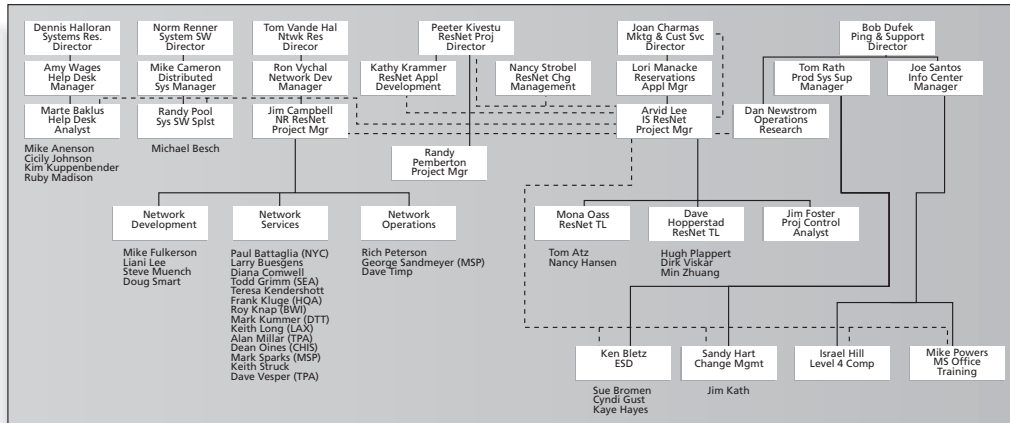
Figure 13-4. ResNet Project Organization Chart

The ResNet team created templates for communicating project information. For example, they had templates for weekly and monthly status reports. They also set up a shared network drive for all project information. Anyone working on the ResNet project could access project files, including the Microsoft Project files. The templates and shared network drive helped the team share information and be more efficient in creating project documents.

The ResNet team also established regular meeting times for the technical project personnel, the management team, and senior management. Peeter, Arvid, and Kathy all had prior project experience, and they knew how important it was to have good communications with all project stakeholders. Establishing regular meeting times facilitated strong communications throughout the project.

QUALITY, RISK, AND PROCUREMENT PLANNING

The PR2 included a few paragraphs related to project quality, risk, and procurement planning, but ResNet did not include formal plans in each of these areas. The ResNet team, however, developed and followed strategies for success in each of these areas. For example, the measurement techniques for tracking call handling time and number of direct sales closed were critical elements in assessing the quality of the system. The PR2 also included plans for which hardware and software vendors ResNet would use based on their technical approach and NWA's prior experience with preferred vendors.

The PR2 included a brief discussion of plans to manage risks, especially for software development. Risk is always a part of software development, and NWA relied on advice from their primary software vendor, Qantas, to mitigate

these risks. Qantas' approach to reducing software development risks was to follow the best practices in the airline reservations industry. For example, Qantas recommended that NWA use QIK ACCESS (QIK 1 and later QIK 2) software. QIK ACCESS is interface application software that many other airlines have used for creating interfaces to their reservation systems. NWA chose to purchase software that was a proven tool instead of creating a customized tool. Qantas also recommended that NWA have reservation agents instead of information services people use the QIK ACCESS software to help develop the ResNet interface. By having users be the primary software developers for the ResNet interface, the project team minimized the risk of not understanding user requirements. (The software development process is discussed further in Chapter 14, *Executing*.)

In the area of procurement planning, the ResNet team analyzed several vendors for hardware and software. They developed good relationships with their vendors, primarily Qantas, the company that provided QIK Access. They also hired outside contractors from Sabre Decisions Technology to assist them in the software development process. These contractors had experience in using QIK ACCESS for other reservation systems, and they provided training and advice for using the software. NWA also had good contracts with their vendors. For example, when the communications hardware for the Chisholm office was not working properly, NWA exercised their rights in a contract clause to have the vendor fix the hardware at no charge to NWA.

It is difficult to summarize all of the planning done on such a large, important information technology project. NWA did an extensive job of planning its ResNet projects. The PR2 provided detailed planning information tailored to the needs of the ResNet project. The ResNet project team took planning very seriously, and their plans provided the basis for successful project execution.

CASE-WRAP UP

Arvid decided to focus on Level 3 in most of the project planning to avoid getting lost in the details. Each person responsible for the Level 3 items could do their own, more detailed, planning. Peeter and Arvid found that having project plans focused on key deliverables and at a Level 3 or 4 WBS worked well in managing the project. Following NWA's PR2 guidelines for submitting project plans also aided Peeter in preparing a good project plan. Microsoft Project was useful for project scheduling. NWA liked to keep its overhead low, and this software tool provided a very inexpensive way to prepare several planning documents such as Gantt charts and

schedule-related reports. Arvid also set up a shared drive on their local area network so the ResNet team members could all easily view the Microsoft Project files and other documentation. Arvid and other team members ran several reports from Microsoft Project, such as a list of tasks due by each person each month. The ResNet plans were a critical asset for guiding project execution.

C H A P T E R   S U M M A R Y

Project planning involves all nine of the project management knowledge areas. Many processes and outputs are involved in project planning. ResNet planning documents included a project plan, work breakdown structure, project schedule, cost estimates, and project organizational chart.

Factors that contributed to successful planning, and later successful implementation, of ResNet included planning at a WBS Level 3 or 4, getting strong user involvement, and developing a solid measurement tool to track overall project benefits.

Planning for the ResNet 1996 project focused on software development and office implementation milestones. The project team used experience gained during the ResNet Beta and ResNet 1995 projects to create realistic estimates for the time and costs involved. They also followed company guidelines in creating their PR2, NWA's version of a project plan.

The NWA ResNet team used Microsoft Project to assist in project planning, although they did not use all of the Microsoft Project features and tools. They developed Gantt charts and set milestone dates that allowed them to establish realistic schedules and helped them meet their goals.

The project team used vendor quotes to estimate ResNet 1996 costs for purchasing hardware, software, and network equipment. They based internal development costs for coding and training on estimates of per-hour labor costs of people from various departments. Because the team drew on a large experience base, they had a high degree of confidence in their cost estimates.

The ResNet team created staffing plans and documents and procedures to aid in project communications management. The PR2 for the ResNet 1996 project provided detailed staffing information for ResNet throughout the project's life cycle. The team prepared templates for project communications and shared information on a local area network drive.

The PR2 included information related to quality, risk, and procurement planning. Although they did not write separate plans for each of these areas, the ResNet team developed and followed successful strategies for managing these areas.

DISCUSSION QUESTIONS

1. Review the list of processes and outputs involved in project planning. Which outputs did NWA emphasize?

2. Discuss Peeter's request for Arvid to create a plan for the ResNet Beta project in one week. How would you react to this request? Is it realistic to take only one week to plan a project that will last more than a year? How do you think Peeter made this request so that Arvid responded so well?

3. What planning decisions were made on the ResNet Beta project that helped ensure successful completion?

4. What made it easier for the ResNet team to develop plans for the 1996 ResNet project? What challenges did they face?

5. Review the Gantt charts for the ResNet 1996 application development and office implementation. Why do you think these were created as two separate Gantt charts? Why do you think the project team did not link activities in Microsoft Project? Do you think linking activities in project management software is done often on real projects? Why or why not?

6. Review the WBSs and cost estimates provided. Discuss any questions you might have about them.

EXERCISES

1. Review the items NWA includes in their PR2 planning documents. Suggest other items that should be included. Create a new outline for a project plan based on your suggestions. Briefly describe what should be included in each area.

2. Compare the WBSs provided in this chapter with information in Chapter 4 on project scope management. Provide five suggestions for improving the WBSs for ResNet.

3. Develop a list of questions for which you would need the answers in order to link tasks and create a network diagram for ResNet software application development. Do the same for the office implementations.

4. Review the project organizational chart for ResNet. List which groups you think had the main responsibility for each task in the Gantt charts. Create a responsibility assignment matrix as described in Chapter 8, *Project Human Resource Management*.

MINICASE

Developing a good project schedule is an important output of the planning process. As stated in this chapter, NWA did an excellent job of developing realistic project schedules and used Microsoft Project to generate Gantt charts, but they did not link tasks in their files.

Part 1: Review the Gantt chart for the ResNet 1996 Application Development. Using Project 2000, re-create this file with some improvements. For example, link tasks that you think should be linked. Also include the milestones for software development listed in Table 13-2 on your Gantt chart.

Part 2: Review the Gantt chart for the ResNet 1996 Office Implementation. Using Project 2000, re-create this file with some improvements. For example, link tasks that you think should be linked. Also include the milestones for office implementation listed in Table 13-2 on your Gantt chart.

SUGGESTED READINGS

1. Kouzes, James M. and Barry Z. Posner. *The Leadership Challenge*. San Francisco, CA: Jossey-Bass, 1990.

    Kouzes and Posner show that leadership is not the private preserve of a few charismatic people, but a learnable set of practices that virtually anyone can master. They suggest that leadership involves five basic practices—challenge the process, inspire a shared vision, enable others to act, model the way, and encourage the heart.

2. Levesque, Paul. *Breakaway Planning*. Amacom Books, A Division of AMA, 1998.

    This book walks readers through the entire planning process, from creating a compelling vision to making that vision a reality. Levesque describes eight important questions to address in planning, such as: How do we spread the word internally? How will we make things better for employees? How do we measure success?

3. Lientz, Bennet P. and Kathryn P. Rea. *Breakthrough Technology Project Management*. San Diego, CA: Academic Press, 1999.

    This text describes how to carry out collaborative scheduling and planning for information systems projects. The authors share their experiences by providing over 250 guidelines and lessons learned that address many of the issues project teams face in developing information systems.

4. Maguire, Steve. "Getting Your Team Off on the Right Foot." *Software Development* (May 1997): 37–44.

    A former Microsoft project manager offers advice for planning and managing project teams. He suggests stressing that project team members can create high-quality products, that the work can be done on time, that team members should not be required to put in long hours or seven-day workweeks, and that people should be excited about the work.

14

Executing

Objectives

After reading this chapter, you will be able to:

1. *Understand how important good project execution is to getting work results*
2. *Discuss the executing processes and outputs and how they were used on ResNet*
3. *Describe Peeter's leadership style and how he developed the core team*
4. *Discuss methods used to verify project scope and assure quality on ResNet*
5. *Describe how the ResNet team disseminated information to project stakeholders and managed project procurement*
6. *Explain NWA's rationale for having sales agents write some of the code for the ResNet system*
7. *Relate some of the executing events in ResNet to concepts described in previous chapters*

Over 100 people gathered in the large conference room at the headquarters of Northwest Airlines in Minneapolis, Minnesota. The invited guests included reservation sales agents, their supervisors and office managers, people from the Information Services Department, and people from the Facilities, Purchasing, and Quality departments. They were all looking forward to the ResNet 1996 Kickoff/Strategy Meeting. This project would include developing more custom software and completing the installation of ResNet at the remaining seven reservations and support offices.

Based on the success of the Beta project and the ResNet 1995 project, stakeholders had high expectations of Peeter Kivestu and his ResNet team. Peeter believed in making projects fun, and the ResNet team was especially known for having great project kickoff events. In addition to clarifying project objectives, the ResNet team provided great food, gave away coffee mugs and other items with the ResNet

logo, and made everyone feel welcome and excited about the project. Peeter even hired professional actors to coach his team on delivering engaging presentations and to help them act out some of the skits performed at the kickoff meeting. Now the ResNet team had to deliver what they had promised and make it an enjoyable experience for all stakeholders. Could they install over 2,000 more PCs in seven different offices as scheduled? Given the budget and time constraints, could they develop the necessary software?

WHAT IS INVOLVED IN EXECUTING PROJECTS?

Project execution involves taking the actions necessary to ensure that activities in the project plan are completed. The products of the project are produced during project execution, and it usually takes the most resources to accomplish. Table 14-1 lists the knowledge areas, processes, and outputs of project execution. The most important output is work results, or delivery of products. The ResNet 1996 project involved installing over 2,000 PCs in seven different offices, creating more customized software, training the reservation sales agents, and measuring the benefits of the system. This chapter will focus on ResNet's execution phase activities, such as providing project leadership, developing the core team, verifying project scope, assuring quality, disseminating information to stakeholders, procuring necessary resources, and training users to develop code.

Table 14-1: Executing Processes and Outputs

KNOWLEDGE AREA	PROCESS	OUTPUTS
Integration	Project Plan Execution	Work Results Change Requests
Quality	Quality Assurance	Quality Improvement
Human Resources	Team Development	Performance Improvements Inputs to Performance Appraisals
Communications	Information Distribution	Project Records
		Project Reports
		Project Presentations
Procurement	Solicitation Source Selection Contract Administration	Proposals Contracts Correspondence Contract Changes Payment Requests

PROVIDING PROJECT LEADERSHIP

Peeter Kivestu was an experienced project manager, having led several project teams before becoming ResNet project manager. When asked what factors contributed to his success as a project manager, he mentioned the importance of *having clear goals, making the work fun, and sticking to schedules.*

Peeter's belief is that it is human nature to want to achieve goals. To achieve goals, however, people must have a very clear understanding of what those goals are. Peeter cares deeply about the business, and he wanted to show everyone involved in the ResNet project that a large information technology project can be successful. Anyone who has worked with Peeter knows that he likes to talk things out and get people to think all of the time. Peeter is known for having very long meetings to hammer out project goals. He always wants everything to be crystal clear to every member of the team before ending a meeting. He challenges people to use every spare moment to think through ideas—while driving, while waiting in line, and even while taking a shower. His ResNet team would tease him about needing a whiteboard in their showers to write down ideas.

Peeter also believes that work should be fun. He knows most information technology professionals are introverted by nature, and this quality often interferes with their ability to communicate with their users. He wanted his technical staff to get to know the reservation agents and other people involved in ResNet. Peeter also believes that strong beginnings are important. Many project managers underestimate the amount of confusion at the start of projects. To help put people at ease and enhance communications, Peeter made sure that various aspects of ResNet got off to good starts. For example, the ResNet team made special plans for each project kickoff meeting and office installation. They planned special themes for each event to make them fun and memorable, as described in the *What Went Right* section. Whenever possible, they used humor to enhance the project. As mentioned in the opening case, project kickoff meetings were huge and entertaining productions; everyone looked forward to them.

What Went Right?

To make ResNet fun, Peeter's team created videotapes and themes for important project activities. For example, NWA prepared a videotape of the ResNet beta test agents sharing their responses to the new system and another tape of the final project recognition dinner. The ResNet team also planned and executed exciting kickoff meetings. They worked with each ResNet office to develop and follow a theme for each office implementation. For example, the Tampa office used a "Flintstones to the Future" theme for ResNet. Months before the Tampa office would receive their ResNet PCs, the ResNet team put up posters about the new system, alerting the office staff to get ready for the future. At the first meeting to coordinate the Tampa installation, people dressed to look like Star Trek characters—they wore silver collars and put the ResNet logo on their shirts. Peeter, who became a Vice President at

NWA in 1999, still proudly displays his silver ResNet logo in his office. The Minneapolis office used a "Broadway Shows" theme, and the ResNet team and sales agents danced in a chorus line. Each office looked forward to their implementation and had fun creating their own theme.

A project management consultant once told Peeter of the chaos caused by missing dates on projects. Peeter decided to set milestone dates with his team and stick to those dates. Everyone liked Peeter's charismatic and fun approach to work, but they also knew that he did not budge on dates unless absolutely necessary. This strict adherence to schedules helped people focus on accomplishing their work on time.

DEVELOPING THE CORE TEAM

Peeter knew that he had to work well with people on his management team and that they, in turn, had to work well with other project stakeholders. Peeter had several strategy meetings with Arvid Lee, the head of the Information Services people on the ResNet project, and Kathy Christenson, the head of software application development for the ResNet interface. They worked together to determine how to motivate different people involved in the project. Kathy came from the marketing area, and she knew that the sales agents and other people in marketing were very excited by themes, office decorations, gifts, contests, and so on. Arvid knew that he and most other members of the Information Services Department would think those types of things were silly, but he fully supported the approach. Arvid motivated the information services staff by providing them with challenging work and keeping them informed of project progress.

Peeter was a hands-on manager and he felt that every single person involved in ResNet was important. He gave a lot of responsibility to Arvid and Kathy, keeping in constant communication with them and relying heavily on their judgments. Peeter kept their project sponsor, Fay Beauchine, well informed of the project's progress. He went out of his way to talk to lower-level people involved in ResNet. He wanted to know what everyone was doing and how he or she thought things were going. Peeter had an excellent memory and made a point of having focused discussions with all ResNet stakeholders.

Peeter provided resources to people as they were needed. In addition to hiring professional actors to help his team run better meetings, he sent people to technical training classes. He shared his experience and advice with others, and what's more important, he worked with them to develop critical thinking skills. Peeter knew that a key part of his job was supporting and developing his staff.

VERIFYING PROJECT SCOPE

As mentioned in Chapter 13, *Planning*, most of the project plans for ResNet were done at a WBS Level 3 or 4. Peeter believed in focusing first on the broad goals of the project and then narrowing down to the details. He held long meetings to help brainstorm and develop important ideas and issues regarding the scope of various aspects of ResNet. Once everyone shared their thoughts, the team worked together to nail down exactly what could be done to meet the overall project goals.

Peeter believed that many information technology projects fail to focus on the necessary requirements and become sidetracked by scope creep. He was determined to have ResNet meet requirements on time and on budget. He met with project members as scope changes were proposed, and together they worked to do what was best for the project. Peeter always stressed the importance of focusing on business needs and not succumbing to unnecessary requests.

Peeter and Fay planned for incrementally developing the ResNet interface. Even though the system worked after the beta project, they knew it could still be improved. They budgeted for additional people to continue developing enhancements to ResNet after it was implemented to more and more sales agents. For example, ResNet included a feature for sales agents to electronically send in suggestions for improving the system. Handling these requests for enhancements will be discussed further in Chapter 15, *Controlling*.

ASSURING QUALITY

During planning for the ResNet beta project, Peeter decided to have people with industrial engineering experience analyze the reservations process and develop techniques to measure the impact of ResNet. This decision proved to be very wise. The industrial engineers used a systematic approach to document the reservations process workflow. For example, in the PARS system, agents often had to go back and forth between several screens and jot down information on a piece of paper to help a caller. The industrial engineers documented over thirty different scenarios for sales calls. This information helped the software developers design the user interface and flow between screens for ResNet.

Figure 14-1 shows Quadrant 4 of the ResNet screen. Notice the many different cells—16 in this example. The industrial engineers worked with the sales agents to design this quadrant and determine the optimum cell positions based on the workflow of making reservations. Each cell corresponded to a key on a special ResNet keypad. After an agent pressed one of the keys on the keypad for a specific cell, the information in Quadrant 4 would change to show related functions. Spending time on the human engineering aspects of the system helped the team design a high-quality application that streamlined the reservation process.

Figure 14-1. ResNet Quadrant 4

Because of Northwest Airlines' poor financial status, Peeter knew that any big project would be scrutinized. He asked the industrial engineers to develop benefits measurement techniques to track performance in increasing direct sales and decreasing call handle time, two of the main business objectives of ResNet. The industrial engineers physically observed what happened when ResNet PCs were installed during the beta project and office installations. They graphed the sales agents' progress on increasing direct sales and reducing call handle times. The industrial engineers were the eyes and ears that provided objective feedback on the business value of the system.

Peeter's team also assured quality by following internal procedures for software development and hardware installation. For example, the software developers created and followed design guidelines for the system. One of the design standards was that users would never be more than two keystrokes away from the next function. They used best practice for determining colors, fonts, and so on. They also developed alternate features to accommodate users who were color-blind. The Information Services staff followed internal testing procedures after installation of new PCs and network hardware. Many experienced professionals were working on ResNet, and they constantly tested their work to make sure it was done well.

DISSEMINATING INFORMATION

Communication was a key factor in ResNet's success. As Kathy Christenson put it, "Fear of the unknown is detrimental to a project." The ResNet team made a point of disseminating project information often and in different ways. Just as people respond to different motivating factors, they also respond to different forms of communication. The ResNet team used meetings, posters, electronic communications, and written reports to disseminate project information.

Figure 14-2 shows one report format that many stakeholders found useful and informative. The report uses a visual representation to show office implementation progress for the training, communications, and network rooms, and for installation of ResNet PCs for sales agents and office managers. Items shaded in gray (they were green in the actual report) indicated areas where the ResNet PCs or other related hardware were installed. Most offices, like the Detroit Reservations Center highlighted in Figure 14-2, had separate rooms for training, communications hardware, network hardware, and managers' offices or specialty desks. The reservation sales agents sat in pods or circular seating areas with six PCs per pod. In addition to coloring the completed areas for each office, this one-page report included at the top a quick count of the number of PCs installed to date.
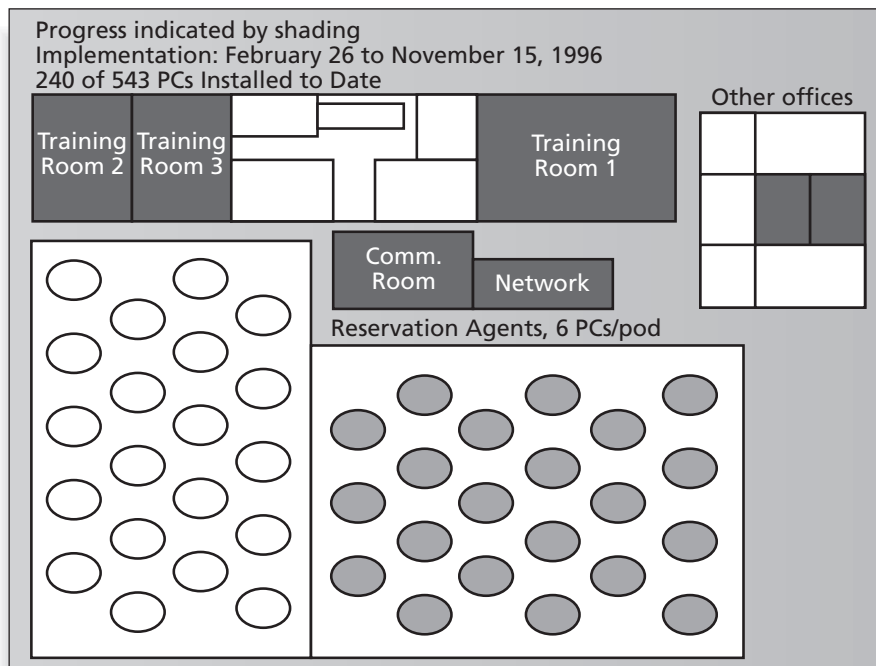

Figure 14-2. Detroit Reservations Center Progress Report

The ResNet team set up change management teams at each office to keep each geographic area informed of specific activities for their offices. For example, the change management team coordinated the delivery and installation of all hardware and scheduled ResNet training for all office personnel. Keeping people well informed helped to ease their fears of using a new system. The training program included brief one-on-one sessions with each reservation sales agent in addition to formal classroom training. Because many sales agents were wary about moving to a new computer system, ResNet management decided it was important to address the unique questions and concerns of each individual sales agent. They knew that many agents would be afraid to ask questions in a large training session. The ResNet team also had a strong informal communications network. At all stages of the ResNet project, Peeter and his team tried to keep everyone informed about the ResNet activities that mattered to them most.

PROCURING NECESSARY RESOURCES

ResNet involved the procurement of many off-the-shelf hardware, software, and networking products. Several vendors provided personal computers, servers, printers, networking hardware, operating systems, communications software, reservations system software, and training.

Figure 14-3 shows a schematic of the ResNet network architecture. Note the many different hardware platforms, communications protocols, and operating systems involved. The main reservation system and database to which ResNet interfaces is Worldspan, which runs on mainframe computers in Atlanta. The Worldspan computer reservation system supplies over 20,000 customers in more than 60 countries with availability, fare, and rate information. In 2001, Worldspan was the market leader in e-commerce for the travel industry, processing more than 50 percent of all online travel agency bookings.[1] Northwest Airlines had its own IBM mainframes running IBM's Multiple Virtual Storage (MVS) and Virtual Machine (VM) operating systems. ResNet also used information from Unisys mainframe computers and several distributed servers using Unix, OS/2, and Windows NT operating systems. NWA's local area network (LAN) included other servers and systems such as Unix, Novell, and Lucent. The ResNet PCs were Pentium 75 MHz machines, state-of-the-art at the time of purchase.

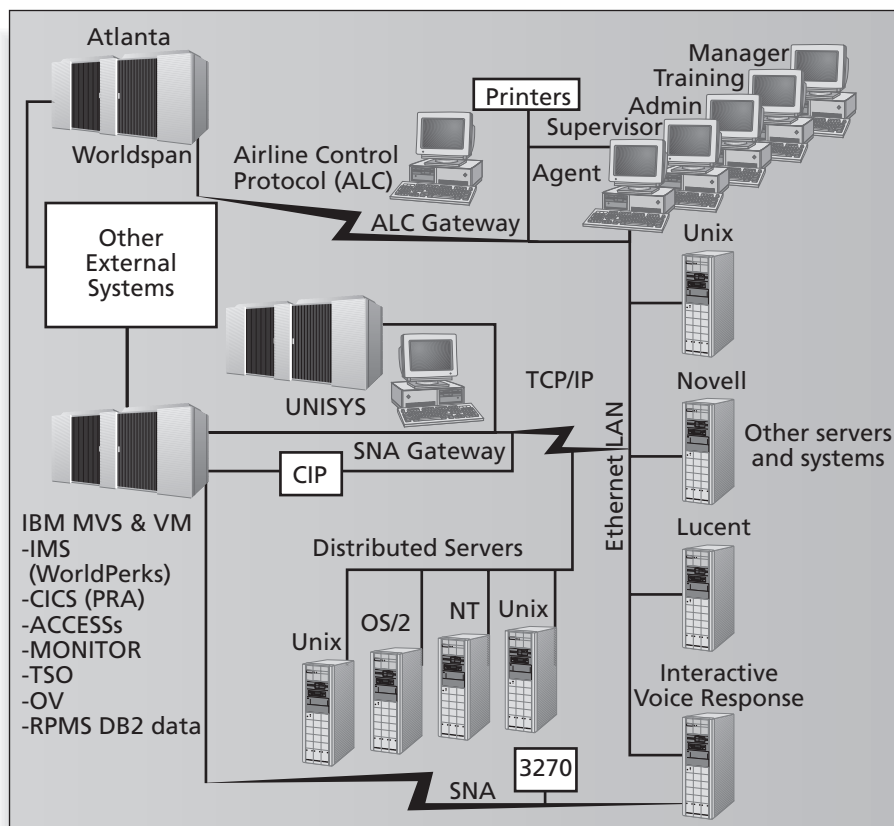[1]Worldspan's Web site, www.worldspan.com (February 14, 2001).

Figure 14-3. ResNet Data Network Overview Schematic

Using a variety of hardware and operating systems is typical on large information technology projects. The main challenge for the Information Services department was getting all of the different computers to communicate. The Information Services staff procured and installed the necessary hardware and wrote the system software for the ResNet infrastructure. As shown in Figure 14-3, Worldspan uses IBM's Transaction Processing Facility (TPF), a high-volume transaction-processing platform used by many airlines. Other communications technologies included Systems Network Architecture (SNA), a set of network protocols developed by IBM, and Transmission Control Protocol/Internet Protocol (TCP/IP). the communications protocol used to connect hosts on the Internet. The ResNet 1996 project was completed before the rapid expansion of Internet applications. ResNet+, the follow-on project to ResNet, uses newer technologies and is described briefly in Chapter 16, *Closing*.

Arvid Lee was instrumental in working with various vendors to procure hardware, software, and technical training. He used his twenty-five years of experience in information technology to the company's advantage. He researched the

best information technology products and vendors and consulted with other information services professionals to make purchasing decisions. Much of the hardware and software needed was available off-the-shelf, so the ResNet team was not pushing the state of the art. Arvid also had a good relationship with people at Qantas, the vendor that provided the QIK-ACCESS software as well as the training to use it for developing the graphical user interface for ResNet.

TRAINING USERS TO DEVELOP CODE

A critical decision concerning the ResNet software was who would develop the graphical user interface the sales agents would use. The ResNet team decided that QIK-ACCESS, an off-the-shelf software package from Qantas, was the best tool available. Software development for the ResNet user interface involved using the QIK-ACCESS scripting language to develop code that would generate the user interface to meet NWA's unique needs for ResNet. Qantas recommended that the users—the reservation sales agents—be involved in developing the software and writing the code. Qantas had experience training non-information technology people to customize their software, so they provided the training as well as the QIK-ACCESS software.

Having users—sales agents—actively participate in software development was a new concept for NWA. Arvid researched the advantages and disadvantages of having users do the coding for the user interface. (Information Services staff did all of the systems programming, which is much more technical.) The sales agents understood the reservation process, so understanding user requirements would be less of an issue if they wrote most of the code for the ResNet user interface. On the other hand, coding would go faster if experienced programmers did most of the actual programming. In the mid-1990s, the majority of sales agents had college degrees, but none had coding experience. Training the agents to use the scripting language would take time, and, once trained, the agents might not work as quickly as someone with years of programming experience.

Arvid learned that another major airline was having a difficult time implementing their new reservation system, which also used Qantas' software. Their Information Services department was doing all of the coding. Arvid consulted with Kathy Christenson, and they decided that having users do as much of the coding as they could for the ResNet interface made the most sense. However, they also decided to have Information Services staff assist them.

Peeter agreed to this combined approach. He felt it was good to take a more conservative, business-oriented approach and have the users develop the code that was absolutely necessary for them to do their jobs. Information Services Department members might generate code more quickly, but they could easily have trouble interpreting what users needed. Peeter interviewed several sales agents who volunteered to help develop the software. There were over 4,000 sales agents, so Peeter had a large pool of people from which to choose. The

sales agents were union employees, so Peeter had to work with union manage-ment to be fair to all union workers. Peeter budgeted for six sales agents and three Information Services people to write the ResNet interface for the beta project. After that, Peeter budgeted for even more people to help test and enhance the software, as described in Chapter 13, *Planning*.

As soon as funds were approved for the ResNet beta project, the six sales agents and three Information Services application developers flew to Texas for a special training course provided by Qantas. Table 14-2 provides a sample of the scripting code they used to write a subroutine that compares agent statistics between reservation offices. As you can see, it would take time for anyone to become proficient in using this text-based, procedural programming language. The team of sales agents and Information Services staff worked throughout the beta test and the ResNet 1995 and ResNet 1996 projects to develop the graphi-cal user interface for ResNet.

Table 14-2. Sample Scripting Language for ResNet User Interface

```
;*****************************************************************************
;* Subroutine: B_A_OFCCOMPARE_SUB
;* Called By:
AR_MTD_DISP_SUB,AR_MTD_DISP_GLD_SUB,AR_MTD_DISP_INL_SUB,AR_MTD_DISP
_OTH_SUB
;* Parameters:      # 1 = column to display data
;*                  # 2 = d.i. for city code
;*                  # 3 = d.i. for dt
;*                  # 4 = d.i. for dt2
;*                  # 5 = d.i. for netrev
;*                  # 6 = d.i. for cph
;*                  # 7 = d.i. for ctt
;*                  # 8 = d.i. for acw
;*                  # 9 = d.i. for occ
;*                  # 10 = d.i. for sit
;* Function:        Builds office comparison of agent statistics
;* Date/Init:       17NOV97 MMR
;* Updates:
;* SPLIT COMMENTS 01SEP98 TLF Renamed applicable objects for application split
;*****************************************************************************
set ar_temp_col"
display #2 ns_cur_window '5' #1 ns_bright_yellow ns_blue
display #3 ns_cur_window '6' #1 ns_bright_white ns_blue
display #4 ns_cur_window '7' #1 ns_bright_white ns_blue
calculate ar_temp_col = #1 - '2'
display #5 ns_cur_window '8' ar_temp_col ns_bright_white ns_blue
calculate ar_temp_col = #1 - '1'
display #6 ns_cur_window '9' ar_temp_col ns_bright_white ns_blue
display #7 ns_cur_window '10' #1 ns_bright_white ns_blue
display #8 ns_cur_window '11' #1 ns_bright_white ns_blue
calculate ar_temp_col = #1 + '1'
display #9 ns_cur_window '12' ar_temp_col ns_bright_white ns_blue
;*** office comparison for sit displayed if DRS gmmores3 DISP COL SIT: IS NOT 'N'
if ar_disp_col_sit <> 'N'
  display #10 ns_cur_window '13' #1 ns_bright_white ns_blue
end_if
```

Based on the workflow of the reservations process, the beta software developers decided to have four quadrants on the ResNet screen at one time. The Quadrant 4 section of the screen, as shown in Figure 14-1, took the most time to develop. The other quadrants were similar to the old reservation system, but the agents could now see important data all on one screen. The system included prompts to help sales agents pronounce unfamiliar words or read prepared promotion scripts. For example, after developing a partnership with KLM, sales agents often handled flights to Japanese cities whose names they did not know how to pronounce. ResNet screens included prompts that explained how to pronounce these cities phonetically, such as "TOK ee oh" for Tokyo. Agents were also prompted to ask for the direct ticket sale by saying, "What type of credit card would you like for me to hold that with?"

What is most important, the majority of sales agents, over 4,000 of them, liked the new system. ResNet sales agents made the following comments:[2]

- "This computer is just wonderful. The colors are great. It's easy to look at. It's a lot of fun."

- "It makes the customer feel confident that you know what you're doing."

- "You have time to think about more important things like nonstop service to certain cities that we have that other airlines don't."

- "Not going home at night with headaches. That's my favorite part."

- "It's fun. It's new and it's different. You look at the big picture and what it can save Northwest and the revenue we can bring in. The bottom line is it's a great system—it's a moneymaker. It's quick, it's fun, and it's easy. What more can you want?"

CASE-WRAP UP

Key deliverables and dates were well defined for ResNet. Peeter, Arvid, Kathy, and the rest of the ResNet team worked hard to ensure that work was delivered on time, close to budget, according to specifications, and with high quality. The PCs and other hardware were delivered according to plan, and the sales agents were satisfied with the new software. The ResNet team successfully installed over 3,000 new PCs, developed several software programs, and provided training to all the reservations sales agents.

[2]JUNTUNEN VIDEO, Inc. Northwest Airlines' ResNet videotape, Minneapolis, MN, April 4, 1995.

ResNet met its business objectives by increasing the number of direct sales and reducing the average time sales agents took to handle calls. In 1996 alone, ResNet generated over $15 million in savings, and the sales agents, all union employees, were very happy with the new system. The ResNet team completed work as planned, celebrated each small achievement, and proved that a large information technology project could be successful and improve the company's bottom line.

CHAPTER SUMMARY

Project execution involves taking the actions necessary to ensure that activities in the project plan are completed. The results of the project are produced in this phase, and it is usually when the most resources are needed.

The main knowledge areas involved in execution are integration, scope, quality, human resources, communications, and procurement. Outputs include work results, change requests, quality improvement, and various procurement items such as contracts.

Factors that contributed to successful project execution on ResNet were having clear goals, making the work fun, and sticking to schedules.

Leadership, team development, scope verification, and quality assurance also contributed to the successful execution of the ResNet projects. Peeter, Arvid, and Kathy worked together to motivate the ResNet project team. Peeter and Fay managed potential scope creep by budgeting for people to develop enhancements to ResNet throughout the project, and office managers set priorities for what enhancements were most important. Industrial engineers helped ensure quality by providing detailed analyses of the reservations process and developing benefits measurement techniques.

Other factors that contributed to project success included information dissemination, procurement, and strong user involvement. Because people respond well to different forms of communication, the project team used various forms of communications to meet stakeholder needs. ResNet involved procuring resources from several different hardware and software vendors, and staff at NWA used their past experiences to select the best vendors, create good contracts, and develop good vendor relationships. Strong user involvement, especially in software development of the ResNet user interface, was a critical success factor for the project.

DISCUSSION QUESTIONS

1. What are the main knowledge areas, processes, and outputs of project execution?

2. Discuss how executing processes were done on ResNet and what the outputs of each process were. What were some of the unique ways that Peeter and his team handled project execution?

3. Describe Peeter's leadership style. What made him an effective project leader? Would he be an effective project leader in a different organization? Why or why not? What role did organizational culture play in his leadership style?

4. What were the three main success factors for ResNet, according to Peeter? Can these factors be applied to all large information technology projects? Explain your answer.

5. What do you think about having users go to training classes to learn to write code to develop their own systems? Do you think this could or should be done on more information technology projects?

6. How much impact do you think making the project fun had on project success? Do you think that most large information technology projects could copy this approach?

EXERCISES

1. Review the ResNet Data Network Overview Schematic shown in Figure 14-3. Research the various technologies listed: Worldspan, Airline Control Protocol (ALC), SNA, IBM MVS & VM, WorldPerks, and so on. Pick three of these technologies and write a brief paper describing each. Include the advantages and disadvantages of using each technology.

2. Review research on project success factors, such as studies done by the Standish Group (www.standishgroup.com). Write a paper summarizing the research results, then compare those success factors with the three success factors mentioned by Peeter Kivestu.

3. Find other examples of projects that took a fun approach to performing the work. Analyze these projects: Were they successful? Why or why not? Write a one- to two-page paper summarizing what you learned by examining examples of other projects.

4. Review the sample progress report in Figure 14-2. Why do you think stakeholders liked this format so much? Find an example of another project status report. Try to make the report more visual and clear to users, like this example.

5. Read one of the books mentioned in the Suggested Readings and write a summary of it.

MINICASE

Peeter was an outstanding leader. He was particularly good at communicating project information and motivating the ResNet team.

Part 1: Pretend that you were Peeter at the ResNet 1996 Kickoff/Strategy meeting described in the opening case. Create a short presentation and script that you would use to start the meeting. Limit your presentation to five to ten minutes.

Part 2: Peeter and the ResNet team did their best to make the ResNet projects fun. Review some of the themes described in the *What Went Right?* section of this chapter. Then develop a theme for your class or workgroup to help make the work more fun. Create a poster or other visual aid to help promote your theme.

SUGGESTED READINGS

Peeter, Arvid, and Kathy mentioned several authors that influenced their leadership styles. Following are a few of the books they found helpful:

1. Kanter, Rosabeth Moss. *When Giants Learn to Dance*. New York: Touchstone Books, 1990.

   In this book about new management strategies and techniques, Dr. Kanter shows how the truly innovative companies are leading the way. She describes how corporate "giants" are actually joining this post-entrepreneurial revolution.

2. Miller, John G. *Personal Accountability*. Denver, CO: Denver Press, 1998.

   The first part of this book explains the Question Behind the Question, a tool to help eliminate blame, victim thinking, and procrastination from people's lives. The second part explores the Pillar Principles, which include ideas such as courage, excellence, ownership, trust, and integrity.

3. Oakley, Ed and Doug Krug. *Enlightened Leadership*. New York: Fireside, 1994.

   Being able to change to keep pace with a rapidly changing world is key to business success today. Managers and leaders at all levels can use Oakley and Krug's proven techniques, including planning, communication, and motivational tools, to support their employees in effecting the positive changes that will make the difference in achieving their organizations' bottom-line goals.

4. Peters, Tom. *Thriving on Chaos*. New York: Harper Collins, 1991. (Also, see other books by the same author.)

   Peters, the coauthor of In Search of Excellence *and* A Passion for Excellence, *provides readers with a book that describes fifty specific courses of action essential to corporate survival in today's turbulent world. Tom Peters also wrote a book called* The Project 50, *published in 1999, emphasizing the importance of good project management.*

5. Roberts, Wess. *Leadership Secrets of Attila the Hun*. New York: Warner
Books, 1991.

> *Wess Roberts draws from the imaginary thoughts of one of history's
> most effective and least-beloved leaders—Atilla the Hun—to discover
> leadership principles that can apply to modern situations. This book
> discusses principles for successful morale building, decision making,
> delegating, and negotiating, and gives advice on overcoming setbacks
> and achieving goals.*

15

Controlling

Objectives

After reading this chapter, you will be able to:

1. *Understand the importance of good project control to keeping things on track*
2. *Discuss the controlling processes and outputs and how they were used on ResNet*
3. *Describe the tools and techniques used for project control on ResNet*
4. *Discuss challenges the ResNet team faced in controlling the project and decisions they made to manage these challenges*
5. *Describe the use of change management on this project*
6. *Relate some of the controlling events in ResNet with concepts described in previous chapters*

Peeter learned that managing change was 50 percent of a project manager's job. He also learned that every stakeholder was different. His team had to develop strategies for dealing with the unique personalities involved in ResNet. The executive management team, in particular, needed special consideration, as did the reservation sales agents. Peeter's team knew that members of the executive team liked to make decisions. They also knew that typical status reports would bore this group. Therefore, at the 1996 ResNet review meetings, instead of reporting on how things were going, each presenter focused on key issues and decisions needed by the executive team. Would this strategy help keep ResNet on track and get the executive management team to make important decisions quickly? The unionized reservation sales agents were also crucial stakeholders in ResNet's success. How should the ResNet team manage the problems inherent in developing and delivering a new information system to these sales agents? How could they overcome potential resistance to change?

WHAT IS INVOLVED IN CONTROLLING PROJECTS?

Controlling is the process of measuring progress towards project objectives, monitoring deviation from the plan, and taking corrective action to match progress with the plan. Controlling cuts across all other phases of the project life cycle. It also involves seven of the nine project management knowledge areas:

■ Project integration requires integrated change control. Outputs include updates to the project plan, corrective actions, and lessons learned.

■ Project scope management includes scope verification and change control. A key output is scope changes. (Note that some aspects of scope verification for ResNet were described in Chapter 14, *Executing*.)

■ Project time management includes schedule control. The output of this process is schedule updates.

■ Project cost management involves cost control. Outputs include revised cost estimates, budget updates, and estimates at completion.

■ Project quality management includes quality control. Outputs are quality improvements, acceptance decisions, rework, completed checklists, and process adjustments.

■ Project communications management includes performance reporting, and outputs of this process are performance reports and change requests.

■ Project risk management involves risk monitoring and control. Outputs of the risk monitoring and control process include work-around plans, corrective actions, project change requests, and updates to the risk response plan.

Table 15-1 lists the knowledge areas, processes, and outputs that are generally part of project controlling. This chapter will focus on the ResNet project's key controlling activities such as schedule control, scope change control, quality control, performance and status reporting, and employee change management.

Table 15-1: Controlling Processes and Outputs

KNOWLEDGE AREA	PROCESS	OUTPUTS
Integration	Integrated Change Control	Project Plan Updates Corrective Actions Lessons Learned
Scope	Scope Verification Scope Change Control	Formal Acceptance Scope Changes Corrective Actions Lessons Learned Adjusted Baseline
Time	Schedule Control	Schedule Updates Corrective Actions Lessons Learned
Cost	Cost Control	Revised Cost Estimates Budget Updates Corrective Actions Estimate At Completion Project Closeout Lessons Learned
Quality	Quality Control	Quality Improvement Acceptance Decisions Rework Completed Checklists Process Adjustments
Communications	Performance Reporting	Performance Reports Change Requests
Risk	Risk Monitoring and Control	Work-around Plans Corrective Actions Project Change Requests Updates to the Risk Response Plan Risk database Updates to Risk Identification Checklists

SCHEDULE CONTROL

Recall that Peeter's main strategy for avoiding schedule-related problems and conflicts was to focus on meeting schedule dates. Peeter worked with his project team to determine important milestones and set realistic dates for their completion. Peeter also focused on meeting business needs. Problems with WorldPerks and the Chisholm office caused the start of the Detroit office installations to slip by about three weeks, but it was in the best interest of the business to allow that slippage to occur.

Peeter admitted that they sacrificed some functionality of the ResNet system to meet deadlines. Recall that Peeter and Fay budgeted for a certain number of people to work on ResNet software enhancements after writing the beta software. These people developed as many enhancements as they could, given their schedule constraints. Peeter felt that making this trade-off was in the best interests of the overall project and business. Overall, the project was completed on time and just slightly over budget.

Recall that part of a project manager's job is making trade-offs related to the triple constraint—scope, time, and cost. Peeter often focused on meeting time constraints to avoid the problems that missed deadlines would have on the rest of the project. This strategy meant that he and his team worked long hours during certain parts of the project.

Arvid recalled several times when he did not think his team could meet a deadline, and Peeter would say, "Failure is not an option." Because the ResNet team were all salaried employees, they did not receive paid overtime. They worked extra hours as needed to help an important and challenging project succeed.

What Went Right?

Peeter had gone through project management training when he worked in Canada. One piece of advice he remembered was to focus on meeting the project schedule goals. Date changes tend to cause chaos throughout a project. Therefore, his goal for ResNet was to establish key dates and vary the scope as needed to stay on schedule. To emphasize the importance of schedule, the ResNet team made the theme for the 1996 ResNet kickoff meeting "What About Wendy?" Wendy was the office manager of the last call center scheduled to get ResNet PCs. The theme stressed the importance of meeting schedule dates so that Wendy's group would not be disappointed. The ResNet team displayed a Gantt chart and explained that missing any deadlines would hurt Wendy. This personal touch helped everyone focus on meeting deadlines.

Throughout the ResNet projects, Peeter stayed firm on dates, and all stakeholders knew that key dates were real and not subject to change unless there were insurmountable obstacles. Peeter used a football analogy to explain his commitment to keeping the schedule: If a team keeps getting first downs, it will score touchdowns. If his ResNet team focused on meeting key incremental dates, they would finish the project successfully. This strategy worked well on ResNet most of the time.

What Went Wrong?

The WorldPerks application development and office rollout in Chisholm, Minnesota, provided one of the toughest challenges for the ResNet team. They had underestimated how long it would take to develop the WorldPerks software, plus they ran into technical and personnel problems. The WorldPerks software had to interface with the IBM 3270 system, and the ResNet team and vendors had to develop special communications software for this interface. It was much more complicated than they anticipated. Also, the state of Minnesota funded the Chisholm office to develop more jobs in the Minnesota Iron Range. All of the office employees were new hires, so they did not understand Northwest Airlines' reservations systems work flow. Many of the new employees had little experience with computers, so the ResNet team had to send in people to work with them and help coordinate technical and training problems with the main office in Minneapolis. The project incurred additional costs, and the extra work for this office delayed the start of the Detroit implementation by about three weeks.

Peeter and Fay wanted to change the sequencing of office installations after the problems that occurred in Chisholm. The Detroit office installation also used the WorldPerks application and could not be completed until the Chisholm office was completed. (Note the finish-to-finish relationship between Office 2 and Office 3 on the Gantt chart in Figure 13-3.) Peeter and Fay did not want the Detroit installation to be late, as this would affect the entire project schedule. They also did not want people waiting around in Detroit because their start had been delayed. Arvid and other ResNet team members banded together to successfully convince Peeter and Fay not to change the sequencing of office installations because it would disrupt many of their plans and cause even more problems. With a lot of extra hours and some extra money for additional temporary staff, the Chisholm and Detroit offices were both completed on time.

SCOPE CHANGE CONTROL

All stakeholders were involved in determining and controlling the scope of ResNet. Sales agents and their managers defined the basic requirements for the software and made suggestions on enhancements. Senior management determined the overall scope, budget, and schedule goals. The 1996 kickoff meeting emphasized the purpose of the ResNet projects and their scopes. Table 15-2 presents some of the statements about purpose and scope that were used at the kickoff meeting.

Table 15-2: Kickoff Meeting Statements About ResNet Purpose and Scope

PROJECT PURPOSE	PROJECT SCOPE
Provide ResNet presentation screens for all reservations personnel	3,000 PCs in 8 reservations offices and Iron Range Reservations Center (IRRC) (Note: These numbers include the completion of the 1995 ResNet project.)
Connect ResNet to an information pipeline and to other distributed systems at Northwest and alliance partners	Four applications: • Sales • Specialty Sales • Support Desks • Integrated WorldPerks
Design for rapid evolution to meet changing business needs	Preproduction prototypes for intelligent call processing and keyword search

Peeter and his team worked hard to get buy-in from all stakeholders of ResNet. Peeter used the following words to describe the purpose of the 1996 ResNet kickoff meeting: "to launch the ResNet implementation and develop a shared responsibility for a successful outcome." By creating a solid sense of unity among all project stakeholders, everyone shared in the responsibility and success of the project.

Peeter held regular meetings with team members to handle potential scope changes. They accepted some small changes in scope, but only if those changes made business sense and would not be detrimental to the whole project. The number of PCs and software applications never changed from the original plan, but the sales agents requested additional capabilities from the ResNet software.

As mentioned in Chapter 14, *Executing*, people were assigned to ResNet to develop enhancements to the software even as it was being presented to the sales agents. The ResNet screen included the capability to send enhancement requests to the software developers. Kathy Christenson was surprised and yet excited about the number of requests they received—over 11,000. She developed a change control process with the managers who sponsored the four main software applications—sales, specialty sales, support desks, and WorldPerks. Each of these managers had to prioritize the software enhancement requests and decided as a group what changes to approve. The developers of the system enhancements then implemented as many items as they could, in priority order, given the time they had. About 38 percent of the 11,000 suggestions were implemented.

QUALITY CONTROL

Because the software development team knew the reservation process and what shortcuts agents might take while using the new system, the team was able to develop user-friendly, foolproof software. For example, some sales agents were concerned about meeting their required performance statistics for the average length of calls and the percentage of direct sales. Some agents dreaded customers who wanted to make rental car reservations because of the increased call time. Therefore, the ResNet software developers streamlined the rental car reservation process. They added scripted prompts to help the sales agents ask about car rentals and make them more comfortable when trying to close sales directly by asking for the customer's credit card information.

The industrial engineers supporting ResNet took several important actions to control quality. In addition to analyzing the reservation process in detail and making suggestions on improvements, they helped select a random sample of sales agents to properly test the impact of ResNet. They also developed several charts for measuring the business benefits of ResNet.

Arvid Lee mentioned that he had never seen as much statistical analysis done on a project as was done on ResNet. As part of the beta project, the industrial engineers used statistical techniques to select a sample of reservation sales agents to test ResNet. At the time, there were over 4,000 reservation sales agents. They wanted to make sure their testing was not biased by factors such as gender, age, location, shift, or efficiency of the agents. They ensured that the agents involved in testing the benefits of the new system were a random sample of the total group of all NWA reservation sales agents. The final project audit mentioned that biasing factors, such as weather, new hires, and the changing sales environment, were isolated using multiple regression analysis to determine the true impact of ResNet.

Many people ignore or discount statistical analysis and quality control reports, but the people supporting ResNet developed several particularly useful reports for measuring the quality and progress of ResNet. Figure 15-1 shows a chart used to track the learning curves for new hires using ResNet versus NWA's native reservations system on TELEX terminals. The shapes of the curves are similar, but the ResNet agents started and ended at a shorter call handle time. This shorter call handle time was believed to be due to the friendlier design of the new interface provided by ResNet.
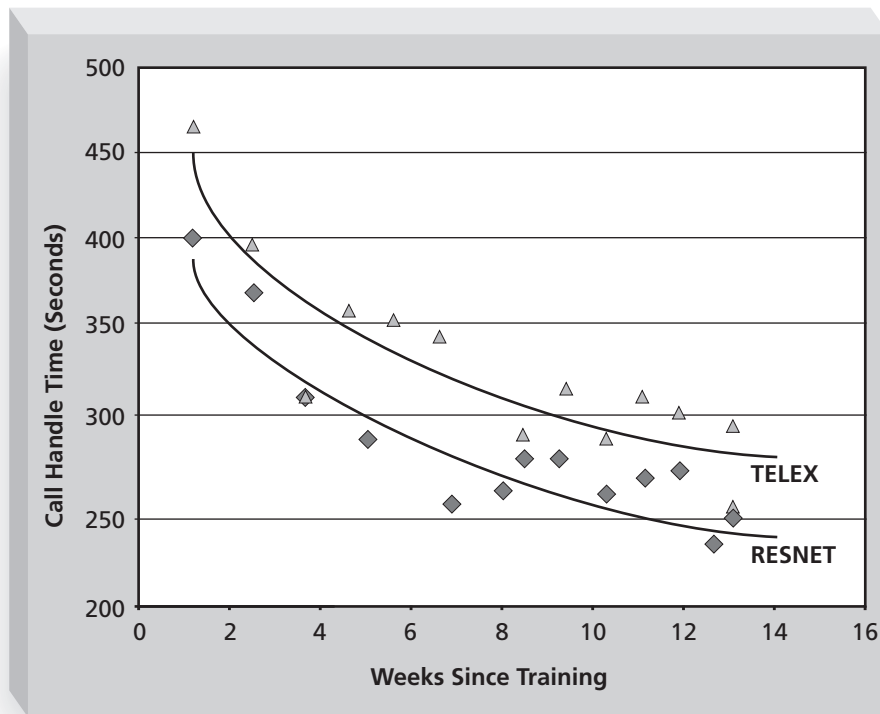
Figure 15-1. New Hire Call Handle Time Learning Curves

The industrial engineers also created charts plotting the predicted versus actual number of direct ticket sales per 100 calls, as shown in Figure 15-2. The forecasting model they developed proved to be 87 percent accurate in forecasting performance on the TELEX system. Because the high accuracy percentage showed that the engineers had very good forecasting capabilities, senior management believed their estimates for the direct ticket sales projections for ResNet. Increasing the number of direct ticket sales would provide great financial savings to NWA.
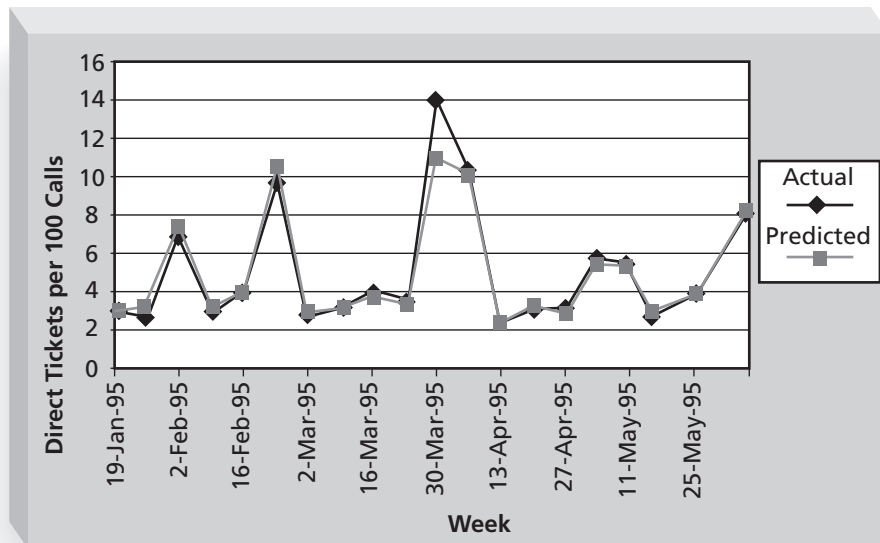
Figure 15-2. Direct Tickets per 100 Calls — Actual vs. Predicted

Having forecasts and tracking their progress against the forecasts helped the ResNet team and sales agents using the new system focus on the project's business goals. The immediate feedback available each week from these charts prompted the team to push forward. Reservation sales agents actually looked forward to seeing these quality control reports.

PERFORMANCE AND STATUS REPORTING

In addition to quality control reports, the ResNet team generated other types of performance and status reports. Emphasis was placed on key issues, decisions that needed to be made, and numerical progress on the project. Important numbers tracked were the number of PCs installed, the average call handle times for sales agents, and the number of calls resulting in direct ticket sales. This emphasis on issues, decisions, and progress helped keep people, especially senior management, interested and involved in reading and listening to performance reports.

Figure 15-3 shows a sample status report created by a ResNet team member. The format of the weekly status report included four sections: milestones, issues, accomplishments, and goals. The first section listed milestones along with planned and actual target dates, whether the item was completed, on schedule, or behind schedule. The second section listed issues requiring discussion and

assistance. The majority of status reports included some items in this section, consistent with Peeter's directive to focus on issues and decisions that had to be made, instead of boring people with technical facts. The final two sections listed the last period's accomplishments and the next period's goals.

•	**Milestones**	**Plan**	**Actual**	**Status**
	— Complete 3270 testing	5 Jun	9 Jun	Completed
	— Event Recorder Activated in Tampa	6 Aug		On schedule
	— Presentation to NWA Finance Com	6 Sep		On schedule
•	**Issues Requiring Discussion/Assistance**			
	— Need definition of WORLDSPAN/CORDA Change Management Process			
	— IMPACT: Need process that notifies ResNet of scheduled system changes			
	— ASSIGNED TO: J. Huss			
•	**Last Period's Accomplishments**			
	— Completed initial design of Event Recorder analysis and began coding			
	— Researched slow response times in Tampa. Looked at Baltimore response times			
	— Completed minor adjustments to measurement reports per customer request			
•	**Next Period's Goals**			
	— Conduct formal review session for Address Verification approval			
	— Beta test Event Recorder in the Hotline area in Bldg C			

Figure 15-3. Sample Weekly Status Report

The graphical progress report described in Chapter 14 (*see* Figure 14-2) also helped communicate project status. Every few weeks each office received an office layout chart that showed what installations were completed. This report, along with the learning curve charts for new hires' call handle time and the charts plotting direct ticket sales, helped keep the ResNet project on track in meeting performance goals. The staff focused on meeting key business goals of the project, and the report formats kept ResNet stakeholders informed of progress.

MANAGING RESISTANCE TO CHANGE

Arvid and Kathy, the information systems and application development team leaders, did not have the traditional view of change management as the process of handling requests to change project scope, time, or cost. They were used to developing good project plans and executing them accordingly. They viewed change management as dealing with people's natural resistance to change, especially when that change involves new technology. The resulting change management process was a key factor in managing the project and ensuring its success.

NWA formalized the importance of change management in their organizational structure for large information technology projects. The ResNet project

included a full-time analyst responsible for ResNet change management and several reservation sales agents responsible for training and awareness. Nancy Strobel was the head of ResNet Change Management and reported directly to Peeter. She worked with a team of people from the reservation offices to help people get involved in, get prepared for, and deal with the changes resulting from a new reservation system. They prepared a change management plan and were instrumental in getting all of the reservation sales agents and their managers to support ResNet. As part of their change management tactics, they helped develop and implement themes for each office, as described in Chapter 14, *Executing*. For example, they helped create posters with a Broadway show theme saying "ResNet—Coming Soon". They also provided special ResNet wrist pads, coffee mugs, and other items to get the agents excited about the new system.

The change management team was also instrumental in identifying people who might be resistant to the new system. Because the reservations sales agents would be most affected by the new reservation system, the change management team decided to create a videotape after the ResNet beta test. Below are the opening remarks from this videotape:

> "Recently we began testing a new reservation system called ResNet with agents from several of our offices. At the end of the test, we sat down with these agents and asked them their candid opinion of ResNet. Now, we know that change can be difficult. But what we found and what you're about to hear will hopefully show you that this is change for the better. Our vision is that ResNet will improve customer service, increase efficiency and revenue, and ultimately make your job easier. Once again, you will be hearing from your peers—agents who have used this new system—giving their honest opinion of ResNet."[1]

The videotape included comments from many different sales agents, representing several sales offices. There were male and female sales agents of various nationalities and age groups in the videotape. It was very effective in getting the sales agents interested in the new system and calming some of their fears. For example, a couple of the sales agents in the videotape mentioned that it was hard to get used to the new system at first, but that it was definitely worth it. Several agents mentioned that they had fewer headaches because of the new screen colors, and their job performance and job satisfaction improved with the new system.

The change management team also decided that every single reservation agent should get at least thirty minutes of one-on-one training on ResNet. This one-on-one training helped personalize the experience and allowed people to feel comfortable asking questions. Providing this individualized training for about 4,000 sales agents showed that the ResNet team cared about the sales agents and was willing to invest the time and money to help them adjust to the new system.

[1]Comments made by NWA Director Crystal Knotek. Northwest Airlines "ResNet," JUNTUNEN VIDEO, Inc. April 4, 1995.

CASE-WRAP UP

Peeter's idea to have status review meetings with upper management focus on discussing issues and making decisions was very successful. The managers were engaged in the meetings and offered good suggestions for keeping ResNet on track. Peeter made sure his team concentrated on using both business and technical terms at these meetings. They also used charts to track the project's numerical progress, such as the number of PCs installed to date. This focus on decision-making and numerical measures of progress worked well to get senior management's support in controlling the project.

The change management team was instrumental in helping sales agents adjust to the new information system. The sales agents involved enjoyed creating the beta test videotape, and other agents enjoyed watching it. The agents also appreciated the one-on-one training on ResNet, and they looked forward to seeing their progress in reducing call handle times and increasing direct sales in the quality control charts. All stakeholders were very pleased to see the financial results of ResNet when the final audit report showed that the increase in direct sales attributable to ResNet greatly surpassed expectations. Instead of increasing direct sales by 5.5 percent as planned, ResNet had increased direct sales by 17.7 percent. This 17.7 percent increase meant an additional $2.3 million in 1996 commission savings.

CHAPTER SUMMARY

Controlling is the process of measuring progress toward project objectives, monitoring deviation from the plan, and taking corrective action to match progress with the plan. Controlling cuts across all phases of the project life cycle.

Peeter made keeping on schedule a priority and focused on achieving milestones one at a time. The ResNet team faced several challenges in meeting project schedules, and they delayed the Detroit office installation to meet more important business needs. They did, however, successfully complete all of the ResNet projects according to schedule.

The ResNet project was designed to accept software enhancement requests, but the software developers could not implement all of the suggested changes. Managers prioritized enhancements, and the software developers completed as

many as they could while still meeting schedule deadlines. They implemented about 38 percent of 11,000 suggested enhancements.

Quality control techniques were a factor in communicating progress and pushing staff toward project success. Industrial engineers played an important role in project control.

Performance and status reports focused on issues and tracking key performance numbers.

The ResNet project included a full-time analyst for change management in addition to reservation sales agents responsible for training and awareness. NWA understood the importance of helping people adjust to changes and invested funds in creating a videotape about ResNet for the sales agents and in one-on-one training.

DISCUSSION QUESTIONS

1. Recall that the 1995 Standish Group study of information technology projects found that the average schedule overrun was 222 percent. Also recall that schedules are the main source of conflict on projects. Discuss Peeter's decision to focus on meeting schedule milestones. Could this approach be taken on more information technology projects? Justify your answer.

2. The ResNet group adopted a philosophy of giving up some system functionality to meet milestones. What do you think about this approach? Could this approach be taken on more information technology projects? Justify your answer.

3. Discuss the charts created for quality control (Figures 15-1 and 15-2). Do you think most users would understand and appreciate these types of charts? Do you think they influenced the reservation sales agents to work harder because they knew their progress on reducing call handle time and making direct sales was being tracked? Could this approach be taken on more information technology projects?

4. Discuss the format of the sample weekly status report. What do you like/dislike about it? Does emphasizing issues and decisions make sense? Could this approach be taken on more information technology projects?

5. Discuss the use of a change management team on ResNet. Could this approach be taken on more information technology projects?

EXERCISES

1. Read the article by Elton and Roe listed in the Suggested Readings. They provide and critique project management suggestions made by Eli Goldratt in his books *The Goal* and *The Critical Chain*. Write a paper summarizing the key points of this article and how it relates to the ResNet project. Be sure to address the authors' point that measurements should induce the parts to do what is good for the whole. Also discuss Goldratt's view that the fewer the milestones, the fewer the delays, and how it relates to ResNet.

2. Find two examples of recent status reports for projects. Compare the information they contain with the example in Figure 15-3. Write a one- to two-page paper summarizing and analyzing your findings. Include the two examples you find as attachments. Include suggestions on how to prepare good status reports in your paper.

3. Do an Internet search on "project control." Summarize some of the many vendors that offer their services to help control projects. Try to find any real advice or information on what helps control projects, especially in information technology.

4. Research quality control techniques. Write a two to three-page paper summarizing at least two different techniques and try to find examples of how they helped keep projects under control.

5. Research books and articles on helping people deal with change, especially new technologies. Kanter's book (*see* the Suggested Readings list) is a classic in this area. Summarize information from three good sources on change management and provide your opinion on their recommendations.

MINICASE

Peeter did an excellent job of controlling the ResNet projects, but he faceed several challenges and used unique approaches to managing change.

Part 1: Review the information provided in *What Went Wrong*? and the paragraph following it. Pretend that you are Arvid Lee and that you want to rally other members of the ResNet team to convince Peeter and Fay not to change the sequencing of office installations. Develop a plan for how you would convince your teammates to take a stand. Include in the plan how the team would convince Peeter and Fay not to make the schedule changes.

Part 2: The ResNet team's approach to scope change control was unique. Specific people were assigned to develop enhancements to the software, but these people could not handle all of the enhancement requests. Develop a weighted scoring model that could be used to help prioritize which enhancement requests should be implemented. For example, criteria might be the potential value of the new enhancement, how long it would take to implement, how many agents would use the new enhancement, and so on (*see* Chapter 4, *Project Scope Management*, for information on weighted scoring models). Also develop a form for submitting enhancement requests.

SUGGESTED READINGS

1. DeMarco, Tom. *The Deadline*. New York: Dorset House Publishing, 1997.

Tom DeMarco has published several articles and books related to managing software development projects. This book is a business novel that illustrates the basic principles that affect the productivity of software development teams.

2. Elton, Jeffrey and Justin Roe. "Bringing Discipline to Project Management." *Harvard Business Review* (March/April 1998).

> *This article discusses Eli Goldratt's books on project control and offers suggestions for using a more disciplined approach to project management. Suggestions include having measurements that induce the parts to do what is good for the whole, having strong senior management involvement, and focusing on personal skills.*

3. Goldratt, Eliyahu and Jeff Cox. *The Goal: A Process of Ongoing Improvement*, Great Barrington, MA: North River Press, 1994.

> *In this book Goldratt uses a fictional story to illustrate the fundamentals of running a business. He describes several problem-solving techniques for managers who lead organizations through change and improvement, which are inevitable in any industry.*

4. Kanter, Rosabeth Moss. *Change Masters: Innovation and Entrepreneurship in the American Corporation*. New York: Simon & Schuster, 1985.

> *Dr. Kanter's book describes how to be effective in overcoming the kind of "stalled" thinking that inhibits progress in almost all organizations. The author draws strongly from her own research in several different organizations to offer strategies for mastering change and ensuring progress.*

16

Closing

Objectives

After reading this chapter, you will be able to:

1. *Understand the importance of formally closing projects*
2. *Discuss closing processes and outputs and how they were used on ResNet*
3. *Describe the tools and techniques used to aid project closing on ResNet*
4. *Explain how NWA measured the business benefits of ResNet*
5. *Describe the methodology and findings in the ResNet final audit report*
6. *Discuss the lessons learned from the ResNet projects*
7. *See how NWA continues to enhance ResNet and develop the discipline of project management in the 21st century*
8. *Relate some of the closing events in ResNet with concepts described in previous chapters*

The ResNet team held a final recognition event as part of closing the ResNet project. As usual, it was a big affair. The software development team wrote and performed a "developers' rap" to share their experiences on the project. In addition to having a recognition event, the project team conducted a formal audit on the project to document its value to Northwest Airlines. The audit was designed to answer the following questions: Did the project deliver what it said it would? Could the ResNet team demonstrate that ResNet was indeed helping sales agents in booking more direct sales and decreasing their call handle times? Should the company take on other large information technology projects like this again?

WHAT IS INVOLVED IN CLOSING PROJECTS?

The closing process involves gaining stakeholder and customer acceptance of the final product and bringing the project, or project phase, to an orderly end. It includes verifying that all of the deliverables have been completed, and it often includes a project audit. Even though many information technology projects are canceled before completion, it is still important to formally close them and reflect on what can be learned to improve future projects. As philosopher George Santayana said, "Those who cannot remember the past are condemned to repeat it."

It is also important to plan for and execute a smooth transition of the project into the normal operations of the company. Most projects produce results that are integrated into the existing organizational structure. For example, ResNet produced a new reservation system interface that replaced the native TELEX terminals. The sales offices adopted the new system, and the Information Services Department provided maintenance for the system. Other projects result in the addition of new organizational structures, such as a new department to manage a new product line.

When senior management cancels projects, they sometimes do so in one of two ways: extinction or starvation. For example, if NWA decided not to fund the 1995 or 1996 ResNet projects, the project would have been extinct. If management had only provided a fraction of the money required to successfully complete any of the ResNet projects, the projects would have terminated by starvation. Project termination by starvation is very hard on people and is usually done when organizations are unwilling to admit project failure. Fortunately for NWA and the ResNet team, the ResNet projects were very well managed, successfully completed, and integrated into the existing organizational structure. Even successful projects, however, must be closed properly.

Table 16-1 lists the knowledge areas, processes, and outputs of project closing. During the final closing of any project, project team members should take the time to communicate project results by documenting the project and sharing lessons learned. If items were procured during the project, the project team must formally complete or close out all contracts. Closing activities on the ResNet project described in this chapter include administrative closure, a final project audit, a final recognition event, personnel transition, and discussions of lessons learned. This chapter also provides a summary of another ResNet project, ResNet+, which addressed new business needs related to the ResNet system, and a description of ResNet+ and project management at NWA in the 21st century.

Table 16-1: Closing Processes and Output

KNOWLEDGE AREA	PROCESS	OUTPUTS
Communications	Administration Closure	Project Archives Project Closure Lessons Learned
Procurement	Contract Close-out	Contract File Formal Acceptance and Closure

ADMINISTRATIVE CLOSURE

Administrative closure involves verifying and documenting project results to formalize stakeholders' acceptance of the product(s) of the project. It includes collecting project records, ensuring the product(s) meet final specifications, analyzing whether the project was successful and effective, and archiving project information for future use. On the ResNet project, inputs to administrative closure were performance measurement reports (described in Chapters 14 and 15) and the product documentation or specifications used in developing and procuring the hardware and software. Because stakeholders were active participants in ResNet, they knew the project was completed when all the ResNet workstations were installed, all the agents were trained, the system had been thoroughly tested, and the benefits had been measured.

NWA had several reviews of the benefits of ResNet. The beta test documented sales agents' reactions to the new reservations software and measured their performance in handling calls and making more direct sales. In 1996, a formal ResNet benefits review meeting summarized sales agents' performance twenty weeks after ResNet was implemented in the Tampa and Baltimore offices. Table 16-2 shows the results, as documented in a memo from Peeter Kivestu to Fay Beauchine on March 13, 1996. Note that call handle time decreased, direct sales increased, and new hire training took less time. Developing measurement techniques and measuring progress toward meeting business goals helped the ResNet team close the beta and ResNet 1995 projects and receive funding for the 1996 project.

Table 16-2: ResNet Benefits Results from March 1996 Benefits Review

MEASUREMENT	RESULT
Call Handle Time	4.4% Reduction
Direct Ticket Sales/100 Calls	6.0% Increase
New Hire Training	Better Call Handle Time with 25% Less Training

RESNET AUDIT

A formal ResNet audit was completed on December 10, 1996. Project audits are a good technique for formally reviewing project progress and results. The ResNet audit was designed to address two questions: What benefits, in terms of selling and call handle time, have been realized by the Reservations Department as a result of ResNet, and how do those real results compare with projected results in the PR2 plan? The answers to these questions were documented in the audit as follows:

■ The Reservations Department has significantly increased selling as a result of management leadership, the market environment, and the opportunities provided by ResNet as a selling tool.

■ While increased selling, new hires, E-Ticket sales, and other factors have increased reservations' average call handle time for 1996, statistics support a handle time benefit from ResNet conversion.

■ Of the two items audited, the higher than expected increase in selling compensated for the shortfall in call handle time, resulting in a net gain of $0.8 million to Northwest Airlines in 1996 versus the PR2 projections.[1]

The actual call handle time improvement of 5.4 percent, based on the 1996 audit, was slightly lower than the PR2 projections of 6.7 percent. The projected financial benefits of ResNet were based primarily on an improvement in call handle times and an increase in direct sales. The real improvement in call handle times was lower than the projection, resulting in lower financial benefits from that area. However, it did not result in lower overall financial benefits because there was a greater increase in direct sales than what was originally projected.

The audit report included several charts to portray the impact of ResNet on selling, the effect of major factors on average call handle time, the ResNet agents' call handle times after the learning curve effects, and so on. Figure 16-1 shows the chart used in the audit report to display the impact of ResNet on selling.[2] Notice that its simple format helped to communicate one of the significant benefits of this new system—a 17.7 percent increase in direct sales over the old system (referred to as TELEX because of the hardware it ran on). The PR2 goal for increased selling was only 5.5 percent. This increase in direct sales translated into an additional $2.3 million in 1996 commissions savings above the PR2 projection.

[1]Reservations Sales & Services, "ResNet Audit," Northwest Airlines internal document, December 10, 1996.
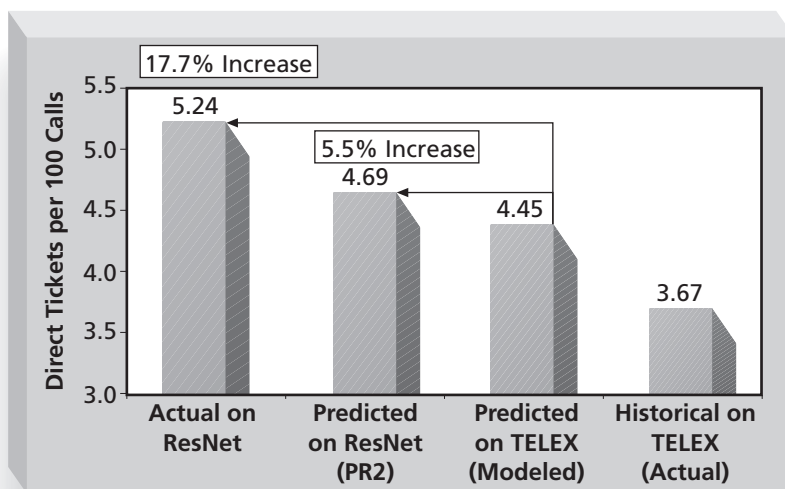[2]*Ibid.*

Figure 16-1. Selling Impact of ResNet

What Went Right?

The audit methodology showed the amount of rigor that NWA put into its project audits and benefits measurement methodology. All three ResNet projects made good use of experts who understood the importance of using a sound benefits measurement methodology. These experts analyzed historical information, ensured that data was not biased, and used appropriate statistical techniques to develop and then measure the benefits of ResNet. The following points were included in the audit to describe the selling audit methodology:

■ In order to create a stable population for sampling, agents in the survey were required to be full-time, to be working at least 20 hours per week, and to have a seniority date prior to 1/1/95.

■ On the basis of four months of historical performance, ongoing TELEX sales data, and statistical modeling, direct ticket sales per 100 calls on the old TELEX system were predicted.

■ Actual ResNet selling performance was then compared to the predicted TELEX performance for three national offices and MSP International.

■ Biasing factors, such as weather, new hires, and the changing sales environment, were isolated using multiple regression analysis to determine the true impact of ResNet.[3]

[3]*Ibid.*

RESNET FINAL RECOGNITION PARTY AND PERSONNEL TRANSITION

Peeter and his team knew how important strong starts were for ResNet. They decided to also have a strong finish. They held a large luncheon to celebrate ResNet's success and recognize the people who worked so hard on the project. Kathy and her team of software developers wrote a rap song to describe their experiences on the project. You can find the words to the rap in Figure 16-2. Peeter authorized a small amount of funds to hire a professional actor to help the group perform this rap. Many people received awards and gifts to recognize their contributions to the project. The final recognition event was a fun way to share in the celebration of finishing this important and highly successful project.

[click, click, click, click]
Gotta Code, Code [click, click]
Gotta Cooode, Code [click, click]
Gotta Code, Code [click, click]
Gotta Load…
Gotta load to Code.
[click, click]
We developed ResNet, yes siree..
We hadta get it done in big hurry.

We were given a timeline that was set...
the bosses said it must be met.

Started with some charts, listened to some calls...
spent lots of time, climbin the walls.

Hadta come in early, hadta stay real late…
Hadda deadline comin, and it couldn't wait.
[click, click]
Gotta Code, Code [click, click]
Gotta Cooode, Code [click, click]
Gotta Code, Code [click, click]
Gotta Load…
Gotta load to Code.
[click, click, click, click]

Eleven applications make ResNet cool...
But before we coded, we hadta go to school.

Popups, Quadrants, command cells too...
How to make'em fit on a screen of blue?

Config class gave us an over view...
Went to Baltimore to really get a clue.

Alpha test, Beta tests were a must...
If we didn't pass'em, we'd a had a bust.
[click, click]
Gotta Code, Code [click, click]
Gotta Cooode, Code [click, click]
Gotta Code, Code [click, click]
Gotta Load…
Gotta load to Code.
[click, click, click, click]

* Written by Nancy Desch, Northwest Airlines

National, International then Supervisor...
By this time - everyone was wiser.

On came the WorldPerks Application...
That's when we realized the fun begun.
CTI, ResDoc, Iron Range too...
Everything - suddenly, seemed brand new.

TBM and Rates together as one...
Beta in Detroit, Fun, Fun, Fun.
ET's, DT's, and MetroMail...
Calculate those taxes for the next sale.

Specialty Sales 12 desks strong…
Who would've thought they'd all belong.
Consolidators, Groups, conventions and Cruises..
The way we've coded, nobody loses.
[click, click]
Gotta Code, Code [click, click]
Gotta Cooode, Code [click, click]
Gotta Code, Code [click, click]
Got a load…
Gotta load to Code.
[click, click, click, click]

We built an application for CRC…
Meal Dispatch and IMC.
They call their office Jurassic Park…
Now with ResNet they're not in the dark.

Service Support had so much to do
Using ResNet, they're right on Queue.

Sales Action Center, our grand finalee...
built to help the travel agency.

Promote, distribute, activate...
The IS group - kept us straight.
With each new office to define...
we hadta rely on our great hotline.

Challenging, though the task may be
We managed to keep our sanity.

Figure 16-2. ResNet Developers' Rap

Another aspect of project closing is transferring project personnel back into other parts of the organization. Recall that Northwest Airlines had a strong functional organization. People on the project returned to their functional areas and started working on other assignments. A few information services personnel were assigned to maintenance support for ResNet, and others, including Arvid Lee, started working on the next important information technology project for NWA. In 1998 Arvid was selected to be the project manager for the ResNett project, as described later in this chapter. A few people, including Kathy Christenson, transferred from the Reservations and Marketing Departments to the Information Services Department to begin new careers in information technology. Kathy was selected to be the Account Manager for ResNet+, and Peeter Kivestu is now a vice president at NWA.

What Went Wrong?

NWA still struggles with transferring people, roles, and responsibilities between projects and on-going operations. For example, there were problems after completing the Computer Telephony Integration (CTI) work for ResNet 1996. This new technology provided better call handling by having customers respond to telephone prompts before talking to a sales agent. When the ResNet team had completed the work, the functional group that should have taken over support did not understand or willingly accept their new roles and responsibilities. Also, NWA did not budget enough people to support this new technology. This lack of transition planning caused several conflicts after the ResNet project ended. Senior management eventually had to intervene to resolve these conflicts.

LESSONS LEARNED

Although no formal lessons learned were written after completing the ResNet project, former project members continue to share their experiences and take actions based on lessons they learned from the project. Peeter, Kathy, and Arvid highlight the following as lessons they learned from the ResNet project:

■ Let workers have fun. Many information technology professionals are introverted, and this characteristic often causes communications problems. Creating a fun working environment helps technical people and other project stakeholders take more interest in information technology projects and promotes buy-in, creativity, and teamwork.

■ Beginnings are important. It is easy to underestimate confusion, especially when defining the goals of a project. The project manager needs to get people together early to discuss key project issues. It is also important to have a strong beginning at each phase of a project.

- Top management support is critical. Fay Beauchine was the main sponsor of ResNet, and she provided support throughout the project.

- Managing change is 50 percent of project management. Everyone is different, so different approaches must be used to help people adjust to change. Lots of communication in various forms is crucial.

- Make management reviews interactive. During a review, always include the decision to keep management actively engaged. In addition, use business terms and focus on issues, not just status.

- Set realistic milestone dates, and then stick to the schedule as much as possible. Vary the scope, if necessary, and prioritize user requirements to meet dates. Missing dates often produces chaos. Reach one incremental goal at a time.

- Plan at a workable level. It is easy to get bogged down in too much detail. Focus on getting work accomplished.

RESNET+

Business and market forces usually require most new information systems to change, and ResNet is no exception. In July 1998, NWA launched a new ResNet project called ResNet+. Kathy Christenson was the Account Manager for the ResNet+ project, and Arvid Lee was the project manager for this $12.5 million project.

Using their experiences from previous ResNet and other information technology projects, NWA focused on business needs as the basis for ResNet+. They were negotiating more global alliances with other companies, customers were becoming more computer savvy and accessing flight information on the Web, and new technologies such as computer-based training (CBT) provided opportunities to reduce training costs.

Figure 16-3 shows a chart that Kathy Christenson created to document the ResNet application and system requirements from 1995 to 1999 and beyond. The x-axis represents time, and the y-axis represents ResNet application size in megabytes (MB). ResNet 1995 and 1996 applications are shown using various symbols on the line graph. Important business decisions, such as integrating the WorldPerks operation, improving E-ticketing, and integrating with KLM airlines, are shown above the line graph. The figure shows that additions to the ResNet application and related tools on the ResNet PCs had grown steadily since January 1995. The figure also shows that ResNet had continued to support new business initiatives.
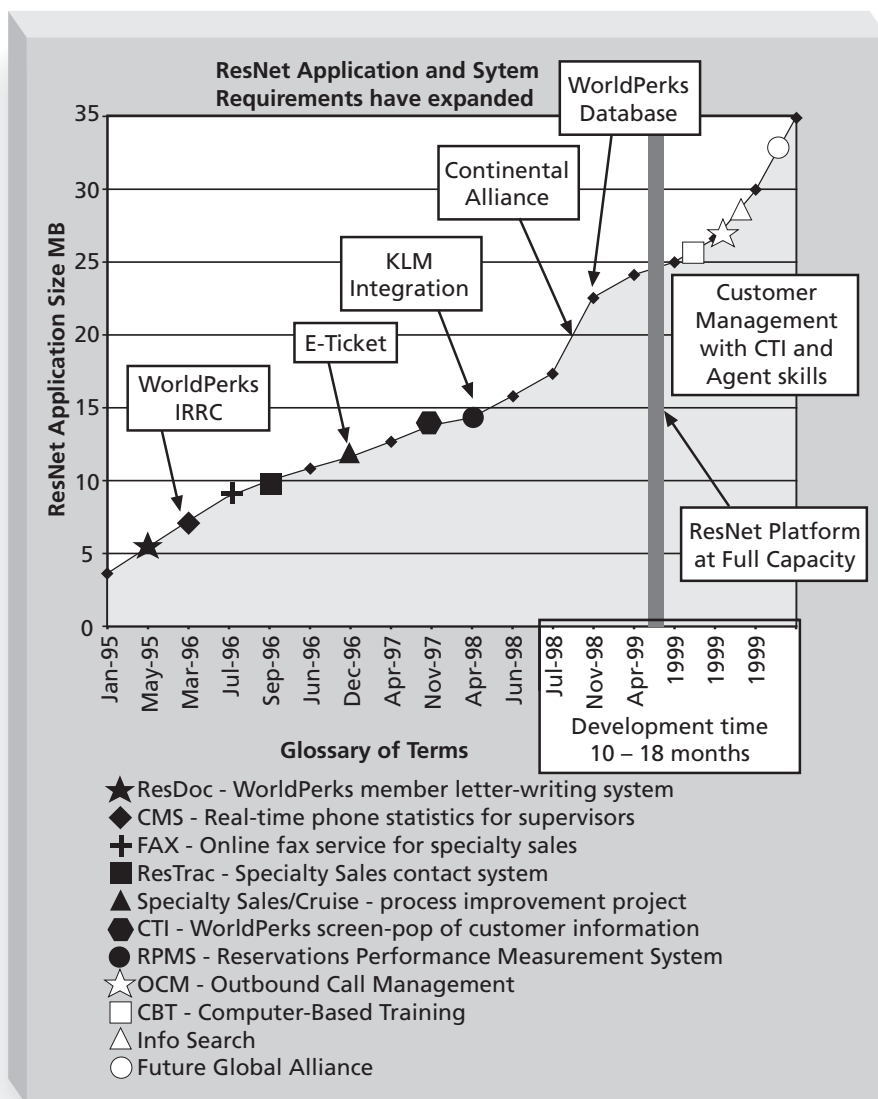
Figure 16-3. Business Need for ResNet+

You can see from the figure that in mid-1999, the ResNet PCs would have reached full capacity. The ResNet+ project upgraded the ResNet PCs to NT workstations and provided new software applications for the NWA reservations sales agents, such as computer-based training and an information search engine.

RESNET+ AND PROJECT MANAGEMENT AT NWA IN THE 21ST CENTURY

NWA continues to modify and enhance ResNet+ to provide additional functionality and to address increases in Web-based ticketing. The ResNet+ project ended in May 2001, delivering all of the planned scope under budget and slightly behind schedule. Arvid says they would have been on schedule, but the supplier of the computer-based training part of the project ran into difficulties and fell slightly behind schedule. The success of the original ResNet projects also prompted NWA to expand its internal work in developing the profession of project management.

As described in the previous section, ResNet+ involved upgrading the original ResNet PCs to NT workstations and providing new software applications. The major new functions of the ResNet+ software include:

- New business functions: The ResNet+ application is regularly updated to support required new business functions. For example, NWA implemented a new frequent flier system and new marketing programs with alliance partners. ResNet+ included new software to address these new business functions. New software was also required to address changes made to Worldspan, the main reservation system and database to which ResNet+ interfaces. Agents are largely insulated from all technical changes, however, as their system presentation and processes remain relatively constant. This approach is a major benefit because training/retraining costs are minimized, learning curves for new functions are reduced, and agent productivity, customer service, and revenue generation are maintained at a high level.

- Computer-based training: New call center agents at NWA can now complete a full training curriculum online. The training includes step-by-step training, simulated telephone calls, full online simulations, "try-it" sessions, and learning assessments. Training updates for new system features and marketing programs are easily delivered to existing call center employees.

- ResQuest: NWA has enhanced the ResNet+ workstation to use ResQuest, an integrated intranet-based online reference system, which provides access to nearly 40,000 documents. These documents cover a wide range of topics required by the agent to answer customer questions and to sell and service customer travel itineraries. The customer may have questions about products or services offered by NWA, its Alliance airline partners, and other business partners for car rentals, hotel reservations, and so on. ResQuest includes a search engine that enables the agent to find information quickly via keyword searches. The search engine utilizes synonyms, "soundex" searches, similar spelling, and so on, to aid the search. Examples of reference information include geographic maps, policies and procedures, aircraft seating schematics, copies of recent promotional materials, sample tickets, and other documents that NWA may have sent to customers.

The number of people making flight reservations and purchasing other travel-related products and services over the Internet has increased dramatically in the last few years. NWA and other travel companies will continue to offer new and improved services from their Web sites. The ResNet+ application fully supports travel itineraries booked directly by customers via the Internet. Customers can call NWA agents to add, change, or cancel those itineraries.

Some people might ask if ResNet+ or similar applications will be totally converted to Web-based applications. Arvid states that converting to a Web-based application is not an automatic "no-brainer" decision, as some people might expect. The current ResNet+ interface has been designed for high productivity. Web-based presentations may be more visually attractive, but often they are not more productive. A major financial investment is often required to convert systems to Web-based applications, and any major financial investment must be supported by a demonstrated financial benefit. The ResNet+ application continues to be a very successful business project and system.

Project management is gaining acceptance and momentum as a recognized discipline at NWA. The initial ResNet project was a strong catalyst for that acceptance because it is an excellent example of the value of effective project management. Most sponsors of major projects at NWA specifically request project managers because they believe this will improve the success of the project. NWA has established a formal project management office (PMO), which in 2001 was staffed by more than twenty-five project managers. Arvid's title is now project manager, and he is part of the PMO. As mentioned earlier, Peeter Kivestu moved on to become a vice president at NWA after completing the ResNet 1996 project. His experience and success as a project manager helped prepare him well for an executive management position.

The project management office encourages NWA project managers to seek PMP certification and is actively developing and promoting a standard project methodology to support infrastructure and application development projects. However, NWA realizes that establishing a project management office, in itself, is not a magic guarantee of project success. The willingness of an organization to embrace the discipline of project management is still a key to successful projects.

CASE-WRAP UP

ResNet was and continues to be a highly successful information technology project for Northwest Airlines. Peeter and his team delivered a new reservation system interface that enabled sales agents to increase direct ticket sales and reduce call handle times. The call centers moved from being a financial drain on the company to being a very profitable part of the company. In 1996, ResNet saved NWA over $15 million, and

savings were over $33 million in 1997. Sales revenues were over $1.2 billion dollars in 1998, compared to $300 million in 1993. The ResNet projects met stakeholder expectations, and everyone involved had the added benefit of enjoying their work on the project. Peeter proved that a large information technology project could be managed well by using good project management, and Kathy Christenson and Arvid Lee are continuing to lead ResNet into the 21st century.

CHAPTER SUMMARY

The closing process group involves gaining acceptance of the end product and bringing the project to an orderly conclusion. It includes verifying that all of the deliverables have been completed and often includes a project audit.

Administrative closure activities on ResNet included creating a final project audit and holding a final recognition event. The purpose of the project audit was to determine the impact of ResNet on the direct ticket sales rate and agent call handle time, compare actual performance improvements to projections, and determine the bottom line impact of actual performance versus the plan.

Results of the audit found that ResNet exceeded expectations by increasing direct ticket sales by 17.7 percent, when the plan projection was 5.5 percent. The call handle time reduction of 5.4 percent was less than the plan estimate of 6.7 percent, but the increase in sales more than made up for the longer call handle time.

The final recognition luncheon provided a fun way to share in the success of the project. Giving people awards and gifts helped provide closure and a shared sense of community for NWA employees.

Lessons learned by members of the ResNet project included making projects fun, having strong beginnings, having strong top management support, actively managing change, focusing on decisions at project review meetings, focusing on meeting schedule deadlines, and planning at a workable level.

NWA initiated a project in 1998, ResNet+, to further enhance ResNet so that the system would continue to support reservations success. NWA continues to modify and enhance ResNet+ in the 21st century to provide additional functionality and to address increases in Web-based ticketing. NWA established a project management office and continues to promote the discipline of project management.

DISCUSSION QUESTIONS

1. Describe the key processes and outputs of the project closing process group. Describe some of the outputs of closing the ResNet project.

2. Review the goals of the ResNet final audit report. What was the focus of the audit? Why was it important to document the methodology assumptions? What other questions could be included in a final project audit?

3. Which lessons learned do you think Peeter, Kathy, and Arvid will most likely use on future projects?

4. Which lessons learned do you think will be hardest to replicate on future projects? Explain your answer.

5. Discuss some of the changes NWA made in ResNet+ and some of the changes in their approach to project management in the 21st century.

EXERCISES

1. Research information on project audits. Write a one- to two-page paper summarizing at least two articles on this topic. Be sure to include items such as purposes and contents of audits and when they should be done.

2. Interview two to three people who worked on the same information technology project. Ask each person what lessons he or she learned from working on the project. Did they have similar answers to this question? How do their lessons learned compare to those described by people who worked on ResNet? Document your findings in a one- to two-page paper.

3. Chapter 9, *Project Communications Management*, suggests that people take time to formally document lessons learned from projects and share those lessons with others. Read at least two articles (from the Internet, magazines, books, or personal interviews) about formal lessons learned. Suggested Reading 4 is one possible source. Do most projects include formal lessons learned at the end? Why or why not? Write a one- to two-page paper summarizing your findings.

4. People assigned to ResNet returned to their functional areas after the project ended. Many projects do not draw people from strong functional organizations, so reallocating people is often an important issue in closing projects. Read at least two articles that address the issue of staffing and what happens to people after projects are completed. Summarize the issues involved in project staffing in a one- to two-page paper.

5. Review the suggested reading by Todd Weiss and other recent articles related to online ticket sales. Changes in the market often affect information systems in terms of their required functionality and their financial benefits. In a one- to two-page paper, summarize the issues involved in online ticket sales as they relate to profitability for airlines and travel agencies.

MINICASE

An important output of the closing process is creation and sharing of lessons learned. As good as they were at project management, the ResNet team did not write any formal lessons learned.

Part 1: Assume that you have been asked by Northwest Airlines to develop a template for all project teams to start documenting their lessons learned. Create a template, then use it to document the lessons learned on ResNet.

Part 2: In addition to documenting lessons learned, it's critical to share them with others. Develop a proposal on how organizations can share lessons learned among people and projects. Include specific policies that organizations could create, and explain how they might use technology to facilitate sharing of lessons learned.

SUGGESTED READINGS

1. Collier, Bonnie, Tom DeMarco, and Peter Fearey. "A Defined Process for Project Postmortem Review." *IEEE Software* (July 1996).

    The authors describe a practical approach for holding project postmortem reviews. A postmortem review is like lessons learned that document what went right and wrong on a project.

2. Greco, Susan, Christopher Caggiano, and Marc Ballon. "I Was Seduced by the New Economy." *Inc* (February 1999): 34–46.

    Inc. magazine's cover story describes the lessons several smart CEOs learned the hard way about doing business in the late 1990s. Several myths they discussed include the need to be a virtual organization, the belief that technology makes life easy, and the belief that businesses must be on the Web in a big way.

3. Ruskin, A. M. and W. E. Estes. "The Project Management Audit: Its Role and Conduct." *Project Management Journal* (August 1985).

    This article describes what project audits entail and offers suggestions on performing a project audit.

4. Segil, Larraine. "Global Work Teams: A Cultural Perspective." *PM Network* (March 1999): 25–29.

    Staffing and creating teams are issues throughout a project's life cycle. This article discusses issues related to global work teams. The author's suggestions also apply to transitioning people on and off projects.

5. Weiss, Todd R. "Travelocity Strikes Back as Northwest and KLM Drop Online Ticket Commissions." *Computerworld* (March 2, 2001).

    This article describes how Internet travel agency Travelocity.com Inc. began charging a $10 fee on all Northwest and KLM tickets for travel in the U.S. and Canada one day after those airlines dropped their commissions on plane tickets sold online. Links are provided to related stories from www.computerworld.com.

6. Whitten, Neal. "Are You Learning From Project to Project?" *PM Network* (March 1999): 16.

    This short article stresses the fact that many projects do not have a mandatory post-project review, and even fewer require project managers on new projects to review other lessons learned.