The Planning Cycle

William Johnson, MS, CPHIMS, FACHE, FHIMSS

ABSTRACT

Information technology planning can be described as a continuous cyclical process composed of three phases whose primary purpose is optimum allocation of scarce resources.

In the assessment phase, planners assess user needs, environmental factors, business objectives, and IT infrastructure needs to develop IT projects that address needs in each of these areas.A major goal of this phase is to develop a broad IT inventory.

The prioritization phase seeks to ensure optimum allocation of scarce resources by prioritizing IT projects based on:

- *Costs—total life cycle costs.*
- *Benefits—both quantitative and non-quantitative, including support for the organization's strategic business objectives.*
- *Risks—subjective assessments of technological and non-technological risks.*
- *Implementation requirements—time and personnel requirements to implement the system.*

The scheduling phase incorporates sequencing considerations, personnel availability, and budgetary constraints to produce an IT plan in which project priorities are adjusted to meet organizational realities.

KEYWORDS

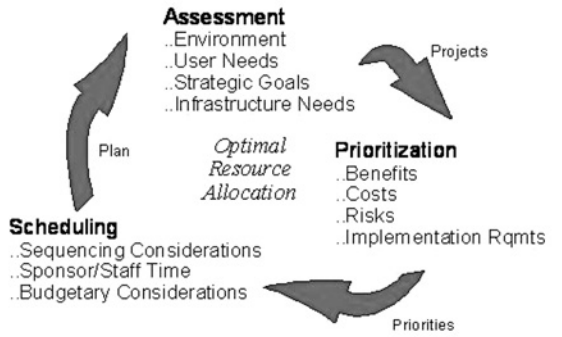
■ Assessments ■ Benefits ■ Costs ■ Information technology ■ Planning ■ Portfolio ■ Priorities ■ Risks ■ Scheduling

The primary purpose of all organizational planning, including IT planning, is simple. It aims to ensure the optimum allocation of scarce resources to meet anticipated organizational requirements. Scarce resources include both IT and non-IT resources. If an organization had unlimited resources, it would not need to engage in planning. It could afford to undertake any and all projects that arose because the resources needed to accomplish these projects would always be available. Few, if any, organizations have this luxury, and most devise some means of allocating resources among competing needs.

At one extreme are those allocation methodologies that involve little or no planning, such as "first-in, first-out." This methodology queues projects as they arise and assigns resources to the oldest project in the queue as resources become available. The "loudest customer" technique assigns resources to projects with the most vocal stakeholders.

At the other extreme are those organizations that engage in planning. They know they must plan in order to allocate limited resources among many competing needs. Their planning results in an IT portfolio of projects that is based on consideration of many wide-ranging needs. The IT portfolio also balances many constraining factors, such as project risks and personnel availability. For them, the ultimate goal of the planning process is to produce a schedule of projects that addresses significant information and information processing needs and considers relevant constraining factors.

The planning cycle (see Figure 1) graphically depicts the need to allocate scarce IT and non-IT resources among competing demands. An optimum allocation of these resources results from proper execution of planning tasks within the cycle. The concept of planning being a cyclical process derives from the experience that no IT plan is ever finished. Demands for new IT projects continually arise, even after an IT plan is approved and finalized.



The Planning Cycle
Figure 1

Three major phases comprise the planning cycle—assessments, prioritization, and scheduling. This article describes each of these phases, their roles in resource allocation, and how the planning cycle methodology is used at Fauquier Hospital, an 86-bed acute care hospital in Virginia.

The Assessments Phase

The assessments phase in IT planning begins whenever an IT planner believes a need exists for some sort of IT solution to a problem. In reality, this occurs all the time, but for purposes of the planning cycle framework, this phase is the beginning of the planning process.

The primary purpose of this phase is to identify significant information and information processing needs. This phase also seeks to determine external forces that should be considered during the planning process and development of standards for the organization's IT environment. This implies a broad perspective in that assessments should address users' information and information processing needs, as well as business objectives, IT infrastructure, and environmental forces.

The most tangible goal of the assessments phase is to produce an inventory of IT projects that reflects deficiencies identified during the assessments and accounts for forces in the organization's environment. We use the term inventory, as distinct from portfolio, because an inventory is a simple listing of projects. An IT portfolio is an inventory that has been refined as a result of the prioritization and scheduling phases.

User needs. Two dimensions exist regarding assessment of user information and information processing needs. In the first dimension, assessments occur either as planned or unplanned events. Planned needs assessments take a variety of forms, including regular periodic assessments conducted on a formal, organization-wide basis. Such assessments might be department-oriented; in other words, each individual assessment focuses on one department. Conversely, a functional needs assessment focuses on major functions that often span different departments. For example, an assessment of the billing function might

1. Some jobs in our organization require employees to develop plans or to submit information to be used in planning for future activities; an example would be preparing a budget. If your job requires that you engage in such planning activities, do you have access to all the information you need to do so?	Y	N	N/A
• If the answer is no, what additional information do you need to improve your planning efforts?			
2. All jobs in our organization require that employees periodically update their professional skills through education. Some sources of educational information would include professional periodicals, the Internet, and information received via electronic mail on computers. If your job requires that you maintain your professional skills through such education, do you have sufficient access to these kinds of educational information?	Y	N	N/A
• If the answer is no, what additional educational information of this type do you need?			

Table 1. Department needs assessment.

encompass both the coding and billing departments.

A limited number of tools exist for planners conducting high-level assessments. Table 1, Needs Assessment Questionnaire, shows part of one such tool, which is a questionnaire used at Fauquier Hospital by its IT staff when meeting with department managers. This tool helps determine departments or functions that have major gaps in information needs.

Unplanned needs assessments typically occur frequently within healthcare organizations. Users want to acquire and implement some information system that is unplanned and unbudgeted. In these "cart-before-the-horse" cases, a planner's goal is to validate how close the desired system meets user needs.

A second dimension of user need assessments is that they can be either high-level or detailed. Table 1 most often would be used to conduct a high-level user needs assessment. If this assessment reveals areas of major information gaps, detailed needs assessments then would be conducted in these areas. Detailed assessments identify end users' specific information and information processing needs, which can become the basis for specifications for solutions to satisfy such needs. Detailed needs assessments also can be used by planners to validate how close the desired system meets user needs during unplanned assessments.

Table 2, Detailed Needs Assessment, exemplifies the kind of documentation commonly used in system selections. The end result of the high-level and detailed user needs assessments is identification of potential IT projects that address gaps between existing and needed capabilities. At Fauquier Hospital, IT staff have developed detailed needs assessments for use in systems selections. Some of these are based on generic templates, such as those available on the Internet. The Web site of the College of Healthcare Information Management Executives is a good source of such templates. The hospital also has purchased commercial off-the-shelf needs assessments, such as those available from Online Consultant©.

Business objectives. IT planners increasingly recognize that an organization's IT plan can help it attain its business objectives, as outlined in its strategic plan. Business goals represent an important form of need that IT projects can address. Gartner Group identifies five categories of projects that can help organizations meet business objectives:

- Projects that help an organization meet legal requirements imposed on it from outside and which may result in legal or financial penalties.
- Projects that may either enhance a revenue stream or generate a new one.
- Projects that enable an organization to avoid or reduce costs.
- Risk mitigation projects, which are similar to an insurance policy.
- Projects that give organizations a first-mover advantage, which facilitate "execution of strategic vision and objectives in an uncertain environment. They are educated bets on the future."[1]

The IT planning process needs to be an integral part of an organization's strategic planning. As the strategic plan is revised, IT planners should assess ways in which information technology can play a role in each of the categories listed above. Appropriate projects can be developed during this assessment.

Planners possess a variety of planning methodologies, techniques, and tools that facilitate the alignment of the IT plan with the strategic plan. These include interviewing tools and group consensus techniques. Hoyt outlines an IT planning methodology that is well-suited for aligning the IT plan with the organization's strategic plan.[2]

IT infrastructure. IT infrastructure needs must be incorporated in the planning process. An organization's IT

Requirement	Not Needed	Needed	Highly Desirable	Mandatory
System will permit creation of an employee record.				
Employee record will contain employee name.				
Employee record will contain employee home address.				
Employee record will contain employee home phone number.				
Employee record will contain employee Social Security Number				
Employee record will contain employee identification number.				

Table 2. Detailed needs assessment.

infrastructure supports systems and applications that satisfy user needs and business objectives. Without adequate infrastructure, it becomes difficult, if not impossible, to meet user needs and business objectives. Typically, IT staff conducts these types of assessments, which result in an inventory of projects that cover network (software, cabling, and equipment), servers, workstations, and office automation software.

Assessment of infrastructure needs also encompasses adoption of infrastructure standards to which an organization will adhere as it develops its IT portfolio. These standards facilitate optimization of the portfolio from a technical standpoint. Commonly addressed standards include workstation and network operating systems, computer processors, database management systems, network protocols, and many more components of the organization's IT environment.

In 2002 and 2003, assessments at Fauquier Hospital determined that the organization's infrastructure needed extensive modernization. This process resulted in a project to eliminate support for the Novell network operating system in favor of standardization on Windows 200x. These simplified support requirements streamlined the facility's IT architecture.

Environmental factors. An assessment of environmental factors seeks to accomplish two tasks. First, it identifies IT projects that must be completed to address information and information processing needs that might arise from forces in an organization's environment. Often, these are not recognized during the planner's assessment of user needs. This part of the assessment attempts to answer the question: "What forces exist in an organization's environment that should be considered in developing its IT plan?" Many of these forces are healthcare-related. For example, what changes in healthcare reimbursement regulations are likely to occur within the next five years, and how might they affect the billing system?

The healthcare environment includes both an organization's local environment as well as the national healthcare environment. Competition from local providers, medical staff attitudes, and population changes are some of the local environmental forces that potentially can be addressed by IT projects. Similar reasoning applies to the national healthcare environment. Some of the national healthcare factors include reimbursement, regulatory policies, and healthcare quality and patient safety concerns.

Fauquier Hospital's planning process has yielded a number of IT projects that enhance quality and patient safety, including electronic medication administration record and computerized provider order entry projects. An IT planner's assessment of the healthcare environment may uncover IT initiatives that sometimes result in changes in the organization's strategic plan and business objectives.

A second task of an environmental assessment involves assessing the information technology industry itself. This task seeks to assess how future changes in the IT environment will affect projects that address user needs, business goals, and infrastructure needs. An evolving IT environment presents a constantly changing variety of technologies that must be analyzed and adopted or rejected. Success of IT projects and the IT plan depends on quality of this analysis.

Changes in operating systems, hardware, user interfaces, applications, and communications technologies present both opportunities and hazards, depending on how the future effects of these technologies are assessed. Evaluating these forces requires constant monitoring of the industry through literature, conferences, and education. The IT planner attempts to determine which technologies will become obsolete and which will become mandatory.

"The most tangible goal of the assessments phase is to produce an inventory of IT projects that reflects deficiencies identified during the assessments and accounts for forces in the organization's environment."

Prioritization Phase

By itself, an IT inventory produced during the assessments phase offers only partial value in terms of optimizing allocation of scarce resources. It informs an organization of the universe of applications and systems needed. The prioritization phase adds value to the planning process by giving a rationale for why some IT projects should be initiated before others.

As the planning cycle in Figure 1 shows, the output of the assessments phase—IT Projects— becomes the input of the prioritization phase. If resources were not scarce, there would be no need for this phase in the planning process, but because this is not the case, some mechanism must be adopted to allocate resources to those projects that are "most worthy."

There is a reason for using the phrase "most worthy" instead of something like "yielding the greatest benefit." Optimal allocation of scarce resources means different things to different organizations. A small hospital with very limited revenue may be more concerned about costs of projects than with benefits of projects, compared to a large hospital with substantial revenue. To this small hospital, project worthiness is based more on costs than on any other factor. But, cost is only one factor to consider in determining worthiness. Many others could be considered during project prioritization, and each organization's success depends on which it includes. Paramount factors are costs,

benefits, risks, and implementation requirements.

The primary goal of the prioritization phase is to develop an ordinal ranking by worthiness of all projects in the IT inventory. This ranking is a result of each project's composite priority, based on individual project rankings for each of the above factors. For example, if there are 50 projects in the inventory, four separate rankings—by costs, benefits, risks, and implementation requirements—from 1 to 50 are developed. The final composite priority ranking merges these four rankings.

An IT planner makes three assumptions in the prioritization phase. First, the planner assumes that for each project there will be one vendor of the application or system envisioned in that project that will be selected over all other vendors. This is the most likely vendor. Many of the estimates of costs, risks, and implementation requirements will be based on the most likely vendor for the project. To derive these estimates, planners can contact the most likely vendor and secure costs and implementation requirement estimates from that vendor's sales representative.

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A second assumption made by the planner is that estimates regarding each project in the IT inventory are equally inaccurate. This assumption results from knowledge that no estimate is ever perfect and that it is impossible to estimate beforehand how imperfect each estimate will be. To rank projects, it is necessary to assume that estimates are all equally inaccurate. This applies to estimates made with regard to all four factors to be considered.

The final planning assumption is that when ranking projects by each of the four factors above, the other three are ignored. For example, when ranking all projects by costs alone, the benefits, risks, and implementation requirements factors are ignored. When ranking by risks, the other three factors are ignored. A planner assumes all other factors are equal during individual rankings. The final composite ranking combines rankings for all four factors.

Costs. True cost of an IT project includes all costs throughout the entire lifecycle of the application or system being implemented. Rapid technological obsolescence enables planners to adopt a standard for the number of years to include in the lifecycle—five years being reasonable—for all projects. Cost categories to be considered include one-time (hardware, software, implementation fees, and personnel implementation costs) and ongoing (vendor support fees and personnel costs to maintain the system).

Two cost estimation techniques are available. The first is to use experience from previous similar projects and systems. This can be obtained from the organization's own experience or that of others. The second technique requires a planner to choose a most likely vendor, contact that vendor, and secure cost estimates. Either technique works because the planner assumes that the cost estimates of all projects are equally inaccurate.

Planners can apply a reliability index to costs that they believe are highly inaccurate. The reliability index is a multiplier, such as 1.25, that is multiplied by any cost element thought to be very unreliable. For example, suppose a planner believes ongoing support costs are very difficult to estimate and, therefore, unreliable. The planner might multiply ongoing support costs for all projects by 1.25, thereby making this cost element larger for all projects. This gives a cost advantage to all projects that have lower ongoing support costs.

Ranking projects based on costs becomes fairly straightforward at this point. Projects are ranked based on total system lifecycle costs from the least expensive to most expensive. The assumption is that the least expensive project is most worthy and the most expensive is least worthy, if all other factors are equal—benefits, risks, and implementation requirements are ignored at this point. If no other factors were considered, an organization would begin implementing the least expensive project and continue subsequent implementations based on project cost rankings.

A beneficial byproduct of the cost estimation and ranking process consists of detailed information on each project's capital and operating costs. At Fauquier Hospital, this information is submitted as part of the annual budget submission. The information is used to prepare upcoming fiscal year budgets for capital and operating expenses.

Benefits. It is at least as difficult to determine the benefits of a project as it is to estimate its cost. There are varying degrees of difficulty in quantifying benefits. For example, there are easily quantifiable benefits, such as reducing salaries expenses and decreasing patients' waiting times. Then, some benefits are difficult to quantify, such as those that increase an organization's prestige or reduce its litigation risk.

The IT planner's task is to catalog each project's benefits, whether they are easy or difficult to quantify. Support for the organization's strategic plan and business goals are addressed at this point. Some organizations may choose to give these projects higher weights for benefits ranking than other projects. Projects with quantifiable benefits are typically easiest to rank. This is because the quantification results in a metric that can be compared with similar metrics from other projects. Money is one such metric.

IT projects with quantifiable monetary benefits that can be reliably estimated are increasingly hard to find. For this reason, subjective methods for ranking projects in the

FACTOR	CRITERIA	POSSIBLE POINTS	PROJECT A's POINTS	PROJECT B's POINTS
Age of oldest technology used in system	0 – 3 years old	0		
	4 – 10 years old	15		15
	11 – 20 years old	25	25	
	Over 20 years old	10		
Age of youngest technology used in system	0 – 3 years old	0		0
	4 – 10 years old	15	15	
	11 – 20 years old	25		
	Over 20 years old	5		
# of interfaces	None	25		
	1	10		10
	2 – 5	5	5	
	More than 5	0		
# different server operating system platforms	All same	25	25	
	2	10		10
	3	5		
	More than 3	0		
# organizations using same system	None	0		
	1 – 5	5		5
	6 – 20	15		
	21 – 100	20	20	
	Over 100	25		
Total Points			90	40

Table 3. Technological risk worksheet.

inventory by their benefit levels must be used. Fauquier Hospital uses a group decision-making technique in which senior managers first review a short project benefits synopsis for each of the projects to be ranked. Each project's name is annotated on a small index card, and senior managers gather around a large table on which the cards are laid out in random order. They arrange the cards to produce an ordinal ranking of projects from highest to lowest in terms of each project's perceived benefits worthiness. This technique works best if each manager is given complete freedom to rearrange the order of cards established by other mangers and if discussion is minimized.

Risks. A third factor to consider in the prioritization phase is risk. Organizations differ in their risk tolerance, and the degree of risk adversity should be considered during this phase. With IT projects, major risk components include vendor risk, user acceptance risk, and technological risk.

Vendor risk primarily includes the likelihood that products may be purchased from a vendor that may go out of business or be sold to another vendor. This type of risk often results in discontinued marketing of and support for the system or application purchased. Techniques to evaluate this type of risk include assessments of the financial health, client base, and product outlook of the most likely vendor. Vendor risk levels can be assigned according to results of these assessments.

User acceptance risk results from human beings' inherent resistance to change and, thus, purchasing an application that employees may reject. Funds expended and personnel time devoted to implementing the application are wasted and represent a misallocation of scare resources. A famous example of this type of risk occurred in January 2003 when physicians rejected a new computerized provider order entry system at Cedars-Sinai Medical Center in Los Angeles after only two months of use. Each organization's IT planners must assess the degree of user acceptance and assign project risk levels accordingly.

"The scheduling phase takes theoretical priorities derived in the assessments phase and introduces them to reality."

The greatest risk, technological risk, arises from rapid changes in information technology. A new technology can make an existing technology obsolete, thereby necessitating

PROJECT	VENDOR RISK	Wt	USER ACCEPTANCE RISK	Wt	TECH RISK	Wt	AVG
A	3	.25	3	.25	2	.5	2.5
B	1	.25	2	.25	1	.5	1.25
C	2	.25	1	.25	3	.5	2.25

Table 4. Risk rankings for two projects.

its replacement, which is more waste of scarce resources. Some newer technologies may be extremely difficult or impossible for an organization to implement. Technological risk can be rated and ranked based on a subjective evaluation of many factors. Some of these factors include:

- The age of the technologies being implemented. Older technologies are more likely to be replaced, whereas immature technologies may not be accepted.
- The number of interfaces in the system being implemented. Systems with more interfaces make a project more risky because they are harder to implement and maintain.
- The number of different server operating systems. Complex systems with many different operating systems are more difficult to implement and maintain.
- The extent of use of technologies being implemented. Technologies in widespread use have a higher probability of successful implementation.

For technological risk, a score sheet that incorporates these kinds of factors can be used. The Technological Risk Worksheet, as shown in Table 3, is an example of such a score sheet based on a maximum of 125 points, with a higher score being more desirable. Table 3 shows that Project B has more than twice the technological risk of Project A because its score is less than half that of Project A. This technique was originally developed at Fauquier Hospital to facilitate explanation of the concept of technological risk to managers. By associating numerical scores with the various components of this risk, the facility was able to translate the mental risk assessment process into a more concrete process.

When combined with vendor and user acceptance risk evaluations, an ordinal ranking of projects by risk level can be developed. To obtain this result, individual project rankings by vendor, user acceptance, and technological risk are weighted and then averaged. The example in Table 4, Risk Rankings for Two Projects, assumes larger numbers represent less risk.

Each project's overall ranking is obtained in this manner, and all projects are ranked accordingly. Early in the planning cycle, it is difficult for planners to evaluate these risks, and they must rely on their knowledge of their organization's users and the technologies most likely to be employed. Additionally, it becomes advantageous to assign a most likely vendor for each project to evaluate vendor risk.

Implementation requirements. A final factor to be considered in prioritizing IT projects involves each project's implementation requirements. Implementation can be the most difficult phase of a system's lifecycle, and there are many examples of projects that have failed during this stage. Estimating these requirements becomes a critical but difficult task. It is advantageous to estimate implementation requirements as part of the cost estimation process because implementation costs are part of a project's lifecycle costs.

The organization's personnel who will be actively involved in the project are the most important of all implementation resources. A planner can use costs of such personnel as a tool for ranking projects in terms of their implementation requirements. To do this, three pieces of information must be estimated:

- Who will participate in each project's implementation?
- How long will they participate?
- What is the average individual salary expense for the organization?

Using this information, a final ranking of projects by their implementation requirements is relatively straightforward. Each project's personnel implementation cost is calculated by multiplying those three pieces of information. Then, projects are ranked according to such costs, from highest to lowest.

Estimating each project's implementation requirements is one of the hardest tasks in IT planning. Fauquier Hospital typically contacts the most likely vendor of a particular system being considered and asks them to supply the above three pieces of information. For example, the facility contacted its HIS vendor in 2003 and requested implementation information on its emergency department information system before including that project in the facility's 2004 IT plan.

Composite rankings. Composite rankings bring all prioritization factors together to achieve an overall composite ranking in terms of project priorities. The example in Table 5 shows how five projects were ranked

PROJ	COSTS	Wt	BENEFITS	Wt	RISKS	Wt	IMPLEMENTATION RQMTS	Wt	COMP
A	3	.25	3	.25	3	.25	4	.25	3.25
B	2	.25	1	.25	2	.25	2	.25	1.75
C	1	.25	5	.25	1	.25	1	.25	2.0
D	5	.25	2	.25	5	.25	5	.25	4.25
E	4	.25	4	.25	4	.25	4	.25	4.0

Table 5. Composite rankings.

on each of the four factors—costs, benefits, risks, and implementation requirements. The example then adds another dimension by assigning weights to these factors. In this example, each factor is equally weighted. The resulting ranking of projects from highest to lowest priority is B, C, A, E and D, and, as a result, the first project to begin implementation would be Project B.

Each organization can elect to weight individual factors based on its unique situation and preferences. For example, a small hospital may elect to give the following weights: cost, 40 percent; benefits, 25 percent; risk, 20 percent; and implementation requirements, 15 percent. A large hospital may assign the following weights: cost, 20 percent; benefits, 50 percent; risk, 15 percent; and implementation requirements, 15 percent.

This ranking of IT projects represents an optimal allocation of scarce resources to those projects that are most worthy in terms of each project's costs, benefits, risks, and implementation requirements.

Scheduling Phase

The scheduling phase takes theoretical priorities derived in the assessments phase and introduces them to reality. In priority sequence, a planner assigns start and stop dates for implementing each project. The planner derives these dates from information obtained during the prioritization phase. Each project's start date depends on its position in the priority ranking and three other factors—project sequencing, personnel availability, and budgetary considerations. The goal of this phase centers on developing a schedule of project implementations that takes project priorities and these three factors into account.

Project sequencing. A project to implement a new Picture Archiving Communications System may have higher priority than a project to replace outdated network equipment. However, replacing outdated network equipment may have to occur first if the IT infrastructure is to be able to support the PACS operation. This example shows how IT planners must consider project sequencing in determining the order of project implementation. Project A may have higher priority than Project B, but Project B may be a necessary prerequisite to Project A. Infrastructure projects sometimes must be done before applications projects. It may be necessary to implement an ancillary system to act as a feeder system to an online medical record, although the medical record may have a higher priority.

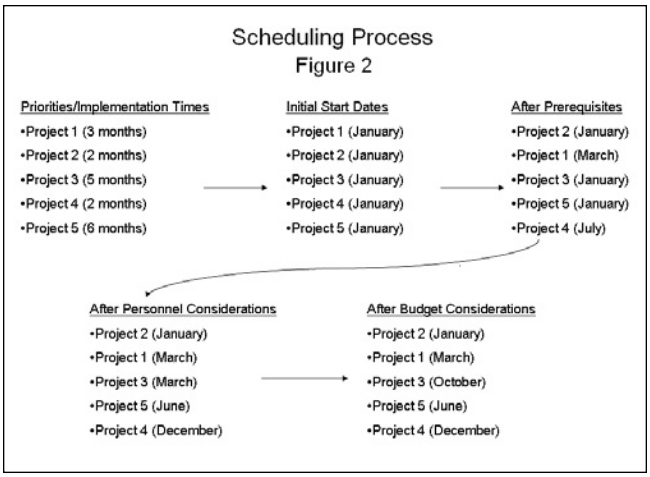
The sequencing process requires an evaluation of each project's implementation timing relative to every other project. What results is a sorted project list, with the first sort coming by prerequisite and the second sort based on priority. An example of project sequencing at Fauquier Hospital came when staff decided to schedule implementation of an electronic medical administration record before computerized provider order entry. The decision was made because the medication administration system must be operational first to optimize the use of CPOE.

Personnel availability. Personnel availability also must be considered after prerequisites are known. Personnel required for a project's implementation may not be available during that time frame because of many factors, including individuals' workloads, personal issues, and cases in which staff required for system implementation may be involved in implementing other systems.

In scheduling an IT project, the planner must determine who in the organization will be involved in that project and whether they will be available during anticipated implementation time frames. Personnel availability becomes particularly acute in smaller organizations, such as Fauquier Hospital, where staff can become involved in multiple projects. Fortunately, much of the information required concerning personnel availability is developed during the prioritization phase because this information was required to estimate project costs and implementation requirements.

It may be necessary to postpone a start date for a particular project if personnel will not be available. For example, a new human resources information system may be originally scheduled to start in January and end in June; the next highest priority project may involve implementing upgrades to the organization's automated timekeeping system. If the same analyst is involved in both projects, the start date for the timekeeping project may have to be delayed until July, after the human resource system is fully in operation.

Budgetary constraints. Finally, IT planners must



consider budgetary constraints. Funding for particular projects may not be available during anticipated implementation time frames, and these projects may need to be scheduled to start at more financially opportune times. Close cooperation with the organization's CFO becomes critical in this process.

Information from the prioritization phase is useful because total lifecycle costs for each project were estimated during that phase. With this information, IT planners can provide their CFOs with total IT project spending according to expense type (capital vs. operating) and by expense time period (quarterly IT capital budgets, for example).

Accurate cost estimates greatly facilitate the CFO's ability to provide budgetary constraints. At Fauquier Hospital, detailed cost information has proven useful during budget negotiations when total spending has to be limited to a specific amount. For example, the hospital recently decided to defer a high-cost project to replace an older records imaging system and, instead, decided to fund several lower-cost initiatives.

Scheduling process. At this point in the planning cycle, a listing of IT projects, ranked in priority order, can be transformed into a project implementation schedule. A planner begins with the highest priority project; checks to see if there are any prerequisite projects and if personnel and money are available. The planner then schedules the project if all conditions are satisfied. If not, any prerequisite projects are scheduled first, and the target project is scheduled when personnel and money are available. The planner repeats this process for each project until all projects are scheduled. Each project can start as early as possible as long as all sequencing considerations, personnel availability issues, and budgetary constraints are satisfied.

At Fauquier Hospital, Gantt charts make excellent pictorial representations of the final product of the planning cycle. A master Gantt chart is regularly updated to depict the implementation timelines for all projects contained in the multi-year IT plan (see Figure 2).

Conclusion

After an IT plan is finalized and approved, each project enters the implementation phase of the system lifecycle, according to timeframes established in the plan. Project implementation is not a phase in the planning cycle. The Planning Cycle represents one phase of the system lifecycle, while implementation is another phase. Planning is a continuous process, and no IT plan is ever finished. As new IT projects arise, the IT plan must be updated to accommodate them, although they are not necessarily prioritized and scheduled ahead of existing projects. A new project's place in the schedule depends on its priority in relation to other existing projects and scheduling considerations. The same phases that are contained in the planning cycle should be used for each new project; in other words, assess the need for the project, re-evaluate all project priorities in light of the new project, and schedule accordingly.

While this is a continually occurring process, planners should also engage in formal execution of the planning cycle on an organization-wide, regular basis. Annual or bi-annual updates of the entire IT plan, following the three phases of the planning cycle, offer an opportunity to re-evaluate each existing project. Such updates also provide an opportunity to reassess overall priorities.

IT planning achieves an optimal allocation of scarce resources by proper execution of three phases. The assessments phase encompasses needs of the entire organization and its environment. In the prioritization phase, planners derive project priorities based on the consideration of four factors that most affect an organization's ability to implement and maintain IT. The scheduling phase assigns implementation timeframes to projects that are based on the organization's abilities to implement these projects. Collectively, these tasks comprise the planning cycle.

About the Author

William Johnson, MS, CPHIMS, FHIMSS, FACHE, is currently CIO of Fauquier Hospital, Warrenton, Va. Mr. Johnson's professional interests lie in IT planning, IT staffing metrics, and Web technologies. He can be contacted at billjohnsoncio@yahoo.com.

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