# Project Management

### **Project Initiation**

Project Initiation, the point at which an organization creates and assesses the original goals and expectations for a new system.

The first step in the process is to identify a project that will deliver value to the business and to create a system request that provides basic information about the proposed system.

Next, the analysts perform a feasibility analysis to determine the technical, economic, and organizational feasibility of the system; if appropriate, the system is selected and the development project begins.

# Introduction

- The first step in any new development project is for someone a manager, staff member, sales representative, or systems analyst to see an opportunity to improve the business.
- New systems start first and foremost from a business need or opportunity.
- Many ideas for new systems or improvements to existing ones arise from the application of a new technology, but an understanding of technology is usually secondary to a solid understanding of the business and its objectives.

#### a). Project Identification

- A project is identified when someone in the organization identifies a business need to build a system.
- This could occur within a business unit or IT, come from a steering committee charged with identifying business opportunities, or evolve from a recommendation made by external consultants.
- Examples of business needs include supporting a new marketing campaign, reaching out to a new type of customer, or improving interactions with suppliers.
- Sometimes, needs arise from some kind of 'pain' within the organization, such as a drop in market share, poor customer service levels, or increased competition. Other times, new business initiatives and strategies are created, and a system is required to enable them.

- Business needs also can surface when the organization identifies unique and competitive ways of using IT.
- Many organizations keep an eye on emerging technology, which is technology that is still being developed and is not yet viable for widespread business use.
- For example, if companies stay abreast of technology such as the Internet, smart cards, and scent-technology in their earliest stages, they can develop business strategies that leverage the capabilities of these technologies and introduce them into the marketplace as a *first mover*.
- Ideally, they can take advantage of this first-mover advantage by making money and continuing to innovate while competitors trail behind

### b). System Request

- A system request is a document that describes the business reasons for building a system and the value that the system is expected to provide.
- The project sponsor usually completes this form as part of a formal system project selection process within the organization.
- Most system requests include five elements: project sponsor, business need, business requirements, business value, and special issues.
- The sponsor describes the person who will serve as the primary contact for the project, and the business need presents the reasons prompting the project.

- The **business requirements** of the project refer to the business capabilities that the system will need to have, and the business value describes the benefits that the organization should expect from the system.
- Special issues are included on the document as a catch-all for other information that should be considered in assessing the project.
- For example, the project may need to be completed by a specific deadline.
- Project teams need to be aware of any special circumstances that could affect the outcome of the system.

## c). Feasibility Analysis

Once the need for the system and its business requirements have been defined, it is time to create a more detailed business case to better understand the opportunities and limitations associated with the proposed project.

**Feasibility analysis** guides the organization in determining whether or not to proceed with a project.

Feasibility analysis also identifies the important risks associated with the project that must be addressed if the project is approved.

- As with the system request, each organization has its own process and format for the feasibility analysis, but most include three techniques: technical feasibility, economic feasibility, and organizational feasibility.
- The results of these techniques are combined into a *feasibility study* deliverable, which is given to the approval committee at the end of project initiation.

### i). Economic Feasibility

The second element of a feasibility analysis is to perform an economic feasibility analysis (also called a cost—benefit analysis), which identifies the financial risk associated with the project. It attempts to answer this question: Should we build the system?

Economic feasibility is determined by identifying costs and benefits associated with the system, assigning values to them, and then calculating the cash flow and return on investment for the project.

The more expensive the project, the more rigorous and detailed the analysis should be.

## Identifying Costs and Benefits

- The first task when developing an economic feasibility analysis is to identify the kinds of costs and benefits the system will have and list them along the left-hand column of a spreadsheet. lists examples of costs and benefits that may be included.
- Costs and benefits can be broken down into four categories:
- (1) development costs, (2) operational costs,
  (3) tangible benefits, and (4) intangibles.

 Development costs are those tangible expenses incurred during construction of the system, such as salaries for the project team, hardware and software expenses, consultant fees, training, and office space and equipment. Development costs are usually thought of as one-time costs.

- Operational costs are those tangible costs required to operate the system, such the salaries for operations staff, software licensing fees, equipment upgrades, and communications charges.
- Operational costs are usually thought of as continous/ongoing costs.

- Tangible vs. Intangible costs:
- o Tangible Costs Includes revenue that the system enables the organization to collect, such as increased sales.
- o Intangible Costs Are based on intuition and belief rather than —hard numbers.

### Assigning Values to Costs and Benefits

- Once the types of costs and benefits have been identified, analysts assign specific dollar values to them.
- This may seem impossible; how can someone quantify costs and benefits that haven't happened yet? And how can those predictions be realistic?
- Although this task is very difficult, they have to do the best they can to come up with reasonable numbers for all the costs and benefits.
- Only then can the approval committee make an educated decision about whether or not to move ahead with the project.

### Organizational Feasibility

- The final technique used for feasibility analysis is to assess the organizational feasibility of the system, how well the system ultimately will be accepted by its users and incorporated into the ongoing operations of the organization.
- There are many organizational factors that can have an impact on the project, and seasoned developers know that organizational feasibility can be the most difficult feasibility dimension to assess.
- In essence, an organizational feasibility analysis attempts to answer this question: If we build it, will they come?

- One way to assess the organizational feasibility of the project is to understand how well the goals of the project align with business objectives.
- Strategic alignment is the fit between the project and business strategy the greater the alignment, the less risky the project will be from an organizational feasibility perspective.
- For example, if the marketing department has decided to become more customer focused, then a CRM project that produces integrated customer information would have strong strategic alignment with marketing's goal.
- Many IT projects fail when the IT department initiates them, because there is little or no alignment with business unit or organizational strategies.

# **Project Selection**

- The approval committee met and reviewed the Internet Sales System project along with two other projects one calling for the implementation of a corporate Intranet and another proposing in store kiosks that would provide customers with information about the CDs that the store carried.
- Unfortunately, the budget would allow for only one project to be approved, so the committee carefully examined the costs, expected benefits, risks, and strategic alignment of all three projects.

- Currently, a primary focus of upper management is increasing sales in the retail stores and the Internet system and kiosk project best aligned with that goal.
- Given that both projects had equal risk but that the Internet Order project expected a much greater return, the committee decided to fund the Internet Sales System.

# Project Management:

- Project management is the process of planning and controlling the development of a system within a specified time frame at a minimum cost with the right functionality.
- A project manager has the primary responsibility for managing the hundreds of tasks and roles that need to be carefully coordinated.
- Today, project management is an actual profession, and analysts spend years working on projects prior to tackling the management of them.

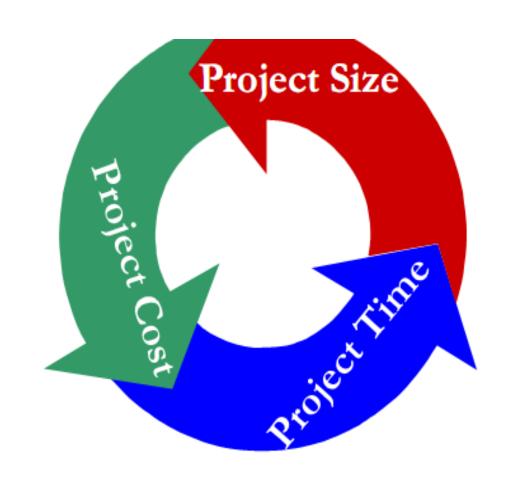
- In a 1999 Computerworld survey, more than half of 103 companies polled said they now offer formal project management training for information technology (IT) project teams.
- There also is a variety of project management software available, such as Microsoft Project, Plan View, and PM Office, which support project management activities.

- Four Key Steps in Managing projects:
- o Identifying project size
- o Creating and managing the work plan
- o Staffing the project
- o Coordinating project activities

### **Identifying Project Size:**

• The science (or art) of project management is in making trade-offs among three important concepts: the size of the system (in terms of what it does), the time to complete the project (when the project will be finished), and the cost of the project.

- When- ever one lever is pulled, the other two levers are affected in some way.
- For example, if a project manager needs to readjust a deadline to an earlier date, then the only solutions are to decrease the size of the system (by eliminating some of its functions) or to increase costs by adding more people or having them work overtime.
- Often, a project manager will have to work with the project sponsor to change the goals of the project, such as developing a system with less functionality or extending the deadline for the final system, so that the project has reasonable goals that can be met.



### Project Estimation:

- Therefore, in the beginning of the project, the manager needs to estimate each of these levers and then continuously assess how to roll out the project in a way that meets the organization's needs.
- **Estimation** is the process of assigning projected values for time and effort, and it can be performed manually or with the help of estimation software packages such as Costar and Construx there are more than fifty available on the market.

• The estimates developed at the start of a project are usually based on a range of possible values (e.g., the design phase will take three to four months) and gradually become more specific as the project moves forward (e.g., the design phase will be completed on December 22).

# Project time using the Planning Phase Approach:

	Planning	Analysis	Design	Implementation
Typical industry standards for business applications	15%	20%	35%	30%
Estimates based on actual figures for first stages of SDLC	Actual: 4 person- months	Estimated; 5.33 person- months	Estimated: 9.33 person- months	Estimated: 8 person- months
SDLC = systems develop	pment life cycle.			

- Project Estimation Using The Function Point Approach
- Function Point Approach
- The function point approach to estimation uses a more complex—and, it is hoped, more reliable three-step process.
- First, the project manager estimates the size of the project in terms of the number of lines of code the new system will require.
- This size estimate is then converted into the amount of effort required to develop the system in terms of a number of person- months. The estimated effort is then converted into an estimated schedule time in terms of the number of months from start to finish terms.

Estimate system size (function points and lines of code) Estimate effort required (person-months) Estimate time required (months)

## Creating and managing the work plan

- Once a project manager has a general idea of the size and approximate schedule for the project, he or she creates a **work plan**, which is a dynamic schedule that records and keeps track of all the tasks that need to be accomplished over the course of the project.
- The work plan lists each task, along with important information about it, such as when it needs to be completed, the person assigned to do the work, and any deliverables that will result

- The level of detail and the amount of information captured by the work plan depend on the needs of the project (and the detail usually increases as the project progresses).
- The work plan is usually the main component of the project management software mentioned earlier.

Work Plan Information	Example
Name of task Start date Completion date Person assigned Deliverable(s) Completion status Priority Resources needed Estimated time Actual time	Perform economic feasibility Jan 05, 2005 Jan 19, 2005 Project sponsor: Mary Smith Cost-benefit analysis Open High Spreadsheet 16 hours 14.5 hours

Work Plan Example

# Identifying Tasks

- The overall objectives for the system should be listed on the system request, and it is the project manager's job to identify all the tasks that need to be accomplished to meet those objectives.
- This sounds like a daunting task how can someone know everything that needs to be done to build a system that has never been built before?

## The Project Work plan

- The project work plan is the mechanism that is used to manage the tasks that are listed in the work breakdown structure.
- It is the project manager's primary tool for managing the project.
- Using it, the project manager can tell if the project is ahead or behind schedule, how well the project was estimated, and what changes need to be made to meet the project deadline

#### Gantt Chart

- A Gantt chart is a horizontal bar chart that shows the same task information as the project work plan but in a graphical way.
- Sometimes a picture really is worth a thousand words, and the Gantt chart can communicate the high-level status of a project much faster and easier than the work plan.
- Creating a Gantt chart is simple and can be done using a spreadsheet package, graphics software (e.g., Microsoft VISIO), or a project management package.

#### Pert Chart

- A second graphical way to look at project work plan information is the PERT chart, which lays out the project tasks in a flowchart.
- PERT, which stands for program evaluation and review technique, is a network analysis technique that can be used when the individual task time estimates are fairly uncertain.
- Instead of simply putting a point estimate for the duration estimate, PERT uses three time estimates: optimistic, most likely, and a pessimistic.
- It then combines the three estimates into a single weighted average estimate using the following formula:

## Refining Estimates

- The estimates that are produced during planning need to be refined as the project progresses.
- This does not mean that estimates were poorly done at the start of the project; rather, it is virtually impossible to develop an exact assessment of the project's schedule before the analysis and design phases are conducted.

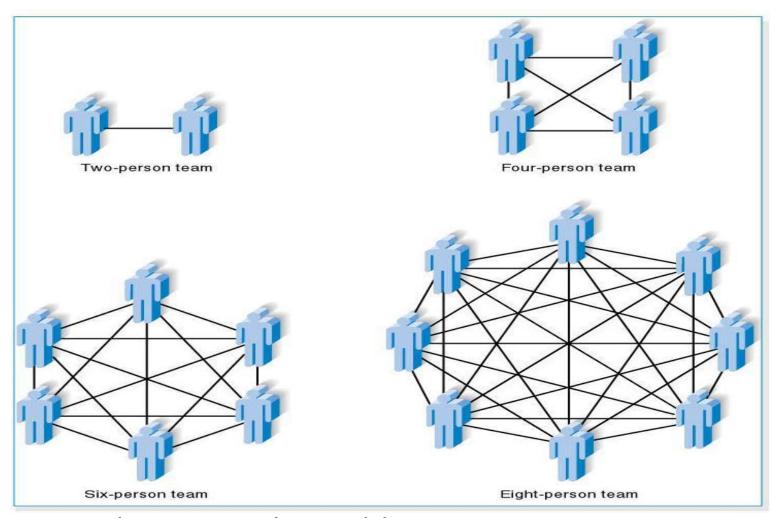
- A project manager should expect to be satisfied with broad ranges of estimates that become more and more specific as the project's product becomes better defined.
- Managing scope:
- o Scope creep
- o JAD and prototyping
- o Formal change approval
- o Defer additional requirements as future system enhancements

- Time boxing:
- o Fixed deadline
- o Reduced functionality, if necessary
- o Fewer —finishing touches

## Staffing the Project

- Staffing the project includes determining how many people should be assigned to the project, matching people's skills with the needs of the project, motivating them to meet the project's objectives, and minimizing the conflict that will occur over time.
- The deliverables for this part of project management are a staffing plan, which describes the number and kinds of people who will work on the project, the overall reporting structure, and the project charter, which describes the project's objectives and rules.

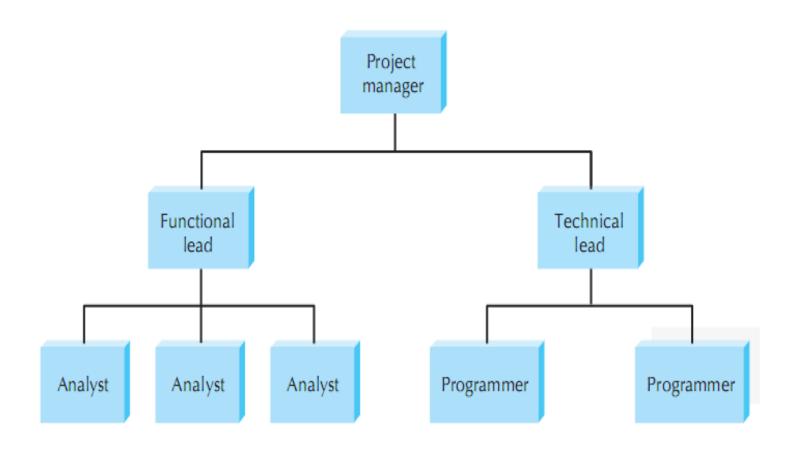
- Staffing levels will change over a project's lifetime
- o Adding staff may add more overhead than additional labor
- O Using teams of 8-10 reporting in a hierarchical structure can reduce complexity



Increasing complexity with larger teams

# Key Definitions:

- o The **staffing plan** describes the kinds of people working on the project
- o The **project charter** describes the projects objectives and rules
- o A **functional lead** manages a group of analysts
- o A **technical lead** oversees progress of programmers and technical staff members



#### Motivation

- Assigning people to tasks isn't enough; project managers need to motivate the people to make the project a success.
- Motivation has been found to be the number one influence on people's performance, but determining how to motivate the team can be quite difficult.
- You may think that good project managers motivate their staff by rewarding them with money and bonuses, but most project managers agree that this is the last thing that should be done.
- The more often managers reward team members with money, the more they expect it and most times monetary motivation won't work.

## Handling Conflict

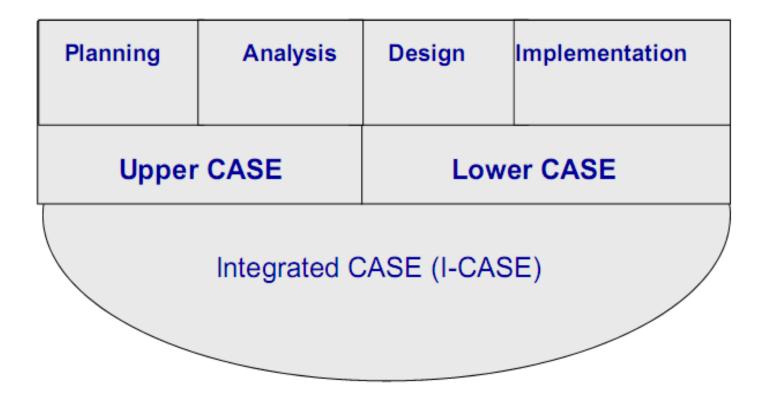
- The third component of staffing is organizing the project to minimize conflict among group members. *Group cohesiveness* (the attraction that members feel to the group and to other members) contributes more to productivity than do project members' individual capabilities or experiences.
- Clearly defining the roles on the project and holding team members accountable for their tasks is a good way to begin mitigating potential conflict on a project.

# **Coordinating Project Activities:**

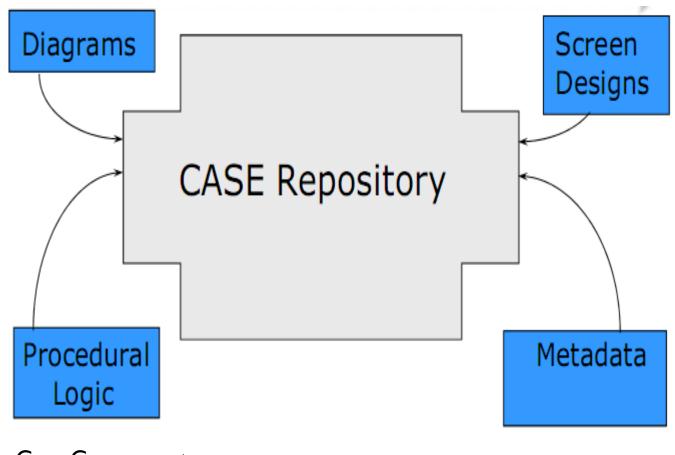
### Case Tools

- Computer-aided software engineering (CASE) is a category of software that automates all or part of the development process.
- Some CASE software packages are used primarily during the analysis phase to create integrated diagrams of the system and to store information regarding the system components (often called *upper CASE*),

- Whereas others are design phase tools that create the diagrams and then generate code for database tables and system functionality (often called *lower CASE*).
- Integrated CASE, or I-CASE, contains functionality found in both upper CASE and lower CASE tools in that it supports tasks that happen throughout the SDLC.
- CASE comes in a wide assortment of flavors in terms of complexity and functionality, and there are many good programs available in the marketplace (e.g., Visible Analyst Workbench, Oracle Designer/2000, Rational Rose, Logic Works suite). Footer Text



**Case Tools** 



Case Components

### Standards

- Members of a project team need to work together, and most project management software and CASE tools provide access privileges to everyone working on the system.
- When people work together, however, things can get pretty confusing.
- To make matters worse, people sometimes are reassigned in the middle of a project.
- It is important that their project knowledge does not leave with them and that their replacements can get up to speed quickly.

### Documentation

- A final technique that project teams put in place during the planning phase is good documentation, which includes detailed information about the tasks of the SDLC.
- Often, the documentation is stored in project binder(s) that contain all the deliverables and all the internal communication that takes place the history of the project.

## Managing Risk

- One final facet of project management is risk management, the process of assessing and addressing the risks that are associated with developing a project.
- Many things can cause risks: weak personnel, scope creep, poor design, and overly optimistic estimates.
- The project team must be aware of potential risks so that problems can be avoided or controlled well ahead of time.

Assign 2