Chapter 3

Managing the Information System Project

Introduction

- **Project management** is an important aspect of system analyst
  - Need to know project management skills more details about resources management, project management, change management, risk management
- **Project manager** refers **to system analyst**'s role in managing information system project
- Project manager works in an environment of change.
  - He identifies and solves problems
  - He is responsible of all aspect of system development project (time, cost, progress, etc. *see next slides*)
  - He is responsible either as a part or the whole project
- System analyst has specific tasks (identify **requirements**, allocate **budget** and keep **timing** constraints)

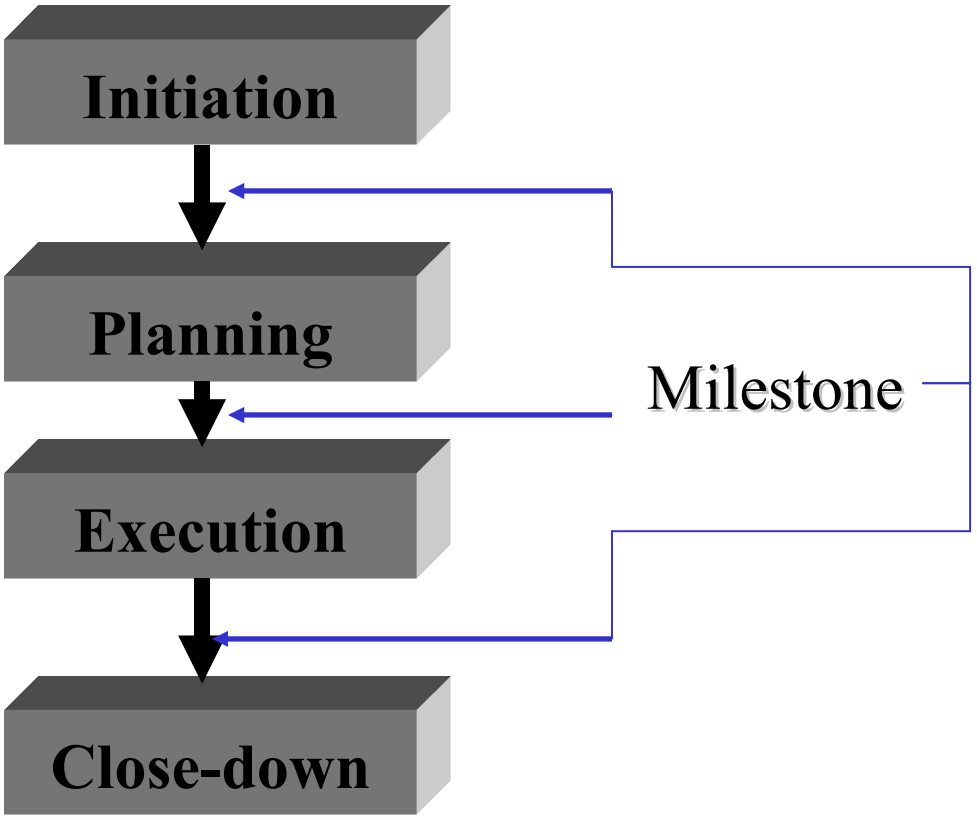
Basic Concepts

- **Project** is a **planned** undertaking of a **series of related activities** to reach an **objective** that has a **beginning** and an **end**
- **Objective of a project**
  - Solve a business problem (develop a MIS)
  - Take advantage of a business opportunities (develop BIS)
  - Other non rational reason: spend existing available resources, training and enhancing skills of employees
- **Where do projects come from?**
  - There is no standard and answer varies from organisation to organisation
- Several projects may be submitted and need selection by filling a "**Systems Service Requests**"

Basic Concepts

- **Project manager** is an individual with a diverse set of skills who is responsible for managing the project process when the project is accepted
- **Responsibilities of project manager** include: initiating, planning, executing and closing-down the project
- **Skills of project manager:** They include (see chapter 2)
  - Leadership
  - Management (resources, materials, funding)
  - Customer relationships
  - Technical problem solving
  - Conflict management
  - Team management & risk management
- **Skills needed by a project manager go beyond just building a system**

Project management



Project management is the controlled process of initiating, planning, executing and closing-down a project.

Phase 1 : Project initiation

- It is the phase where activities are performed to **assess the size**, **scope** and the **complexity** of the project & to establish procedures to support later project activities.

Phase-1: project initiation activities

1. **Establishing the project initiation team**
2. **Establishing relationship with the customer**
3. **Establishing the project initiation plan**
4. **Establishing management procedures**
5. **Establishing project management environment & project workbook**

Phase-1: project initiation activities

1. **Establishing the project initiation team**
   - **Size**: identify project team member who will work within the project
2. **Establishing relationship with the customer**
   - Develop good work relationship & trust between customer or users of the project & the IS development group (project team) before the project
   - Helps customers to understand their problems they might face & propose improvement

Phase-1: project initiation activities

3. Establishing the project initiation plan

- Define the scope (objectives) of the project (even objectives are fuzzy)
- Assign objectives to project team members
- Define roles of each member in the project
- **Might lead to the creation of a System Service Request (SSR)**

Phase 1: Project initiation Activities

4. Establishing management procedure

- Concern procedures to manage the project such as communication and reporting procedures,
- Communication procedure
- Funding & billing procedure
- Conflict management
- Regulatory procedure
- Procedures exist or need to be be created

Phase-1: Project initiation Activities

5. Establishing project management environment & project workbook

- establish an environment that includes data related project, called **workbook**
- **Performing the workbook is one important task of project manager**

Workbook

- Workbook can be on line (a web site as SIMNET) or a hard copy repository that contains
  - All project correspondence: minutes, deliverable, input, output
  - Deliverables and reports
  - Standard to performing audits
  - Management procedures
  - Post project review meeting (future
- **Workbook are mainly on line in order to** allows different partners to access the content through different locations)

Phase-2 : Project planning

- It consists to define clear discrete activities and the work needed to complete the activities within a single project (identify time, input and output)
- Project planning is different than Information System Planning (ISP)
- ISP focuses on assessing the information system needs of the entire organization (chapter 5)

Planning phase activities

1. Describing project scope, alternatives and feasibility
2. Dividing the project into manageable tasks and logical order
3. Estimating resources and creating a resources plan
4. Developing a preliminary schedule
5. Developing a communication plan
6. Determine project standards and procedures
7. Identifying and assessing risks
8. Creating a preliminary budget
9. Developing a statement of work (for customer)
10. Setting a baseline project plan

Describing project scope, alternatives and feasibility

- Identify project scope through answering question such as
  - What problem or opportunity does the project address?
  - What quantifiable results to be achieved
  - How success will be measured
  - What criteria to be used in order to ensure the project is completed?
- Identify alternatives solution for current business problem
- Assess feasibility of solutions
- Make decision about the planed solution

Dividing the project into manageable tasks and logical order

- Is called “work breakdown” structure
- Require to decompose SDLC phases into activities and activities in to tasks
- SDLC include 6 phases. Each phase involves many activities. Each activities involves many tasks. E.g. during phase 3 of SDLC,
  - Activities = develop data and process flow.
  - Tasks = interviewing manager, identifying process and data inflow, outflow, and transformation, etc.

Estimating resources and creating a resources plan

- Estimate resource requirements : how many manpower, money, software tools, are required to complete the project ?
- Resources planning is the estimation of the resource, within each activity, needed to complete the project
- Time allocated to tasks depend on people assignment to tasks
- Remark: a person could be assigned to more than one tasks in his own area of expertise

- **Developing a preliminary schedule**
  - Preliminary schedule = tasks + time + people (see slide 51, SIMNET) within each activity of work breakdown structure
  - This schedule may be drawn using the Grant and the PERT chart (see next)
- **Developing a communication plan**
  - When & how different roles will communicate
  - When and how written and oral presentation will be provided by the team
  - How many deliverables (official reports) and when should be written (set deadlines)
  - Define agenda for meetings and set deadlines (small & big meetings)
- **Determine project standards and procedures**
  - How standard SDLC must be modified?
  - What case tools (see chapter 4, may be after 1st Mid-term) to use?
  - What approaches will be used (JAD, prototyping, etc.)?
  - How different team will report (horizontal or vertical)?

- **Identifying and assessing risks**
  - Identify sources of risks and their expected impact
  - Source: use of new technology, resistance to change, availability of unsufficient resources, team member inexperience
- **Creating a preliminary budget**
  - Estimate project cost of the and some times the revenue of the project (show revenue is great than cost)
- **Developing a statement of work (**for customer**)**
  - Is a short description of all work to be done & expected deliverables
  - Give clear idea to all project team and customer about the project size
- **Setting a baseline project plan**
  - Contains resources, times and manpower (resource requirement)
  - Is used to guide the executing phase or to update it when change happen
- **Milestone with a review meeting**
  - Propose modification and update if needed ➔ back to previous activities

Phase-3 : Executing the project

It consists to put the planned baseline project into action

Activities during executing phase

- **Executing the base line project plan**
  - Keep the project schedule
  - Ensure the quality of product deliverable
  - Motivate people and increase the work team; think as one member
- **Monitoring the project progress against the actual progress work**
  - Enable modifications to current plans when needed
  - Adjust resources, budget, and time to activities
  - Evaluate efficiency of project team member
  - E.g. if one dependence activity is changed, you have to undertake the impact on the other related activities
- **PERT and Gantt will help you to fast undertaking changes**

Activities during executing phase

- **Managing change to the baseline project plan**
  - Manage the change if it has to occur
  - Managing change requires three steps
    - Request a change
    - Accept change
    - Apply change order
- **PERT and Gantt charts can be used to undertaking changes**

Activities during executing phase

- **Maintaining the project workbook**
  - Update the workbook as the project progress
- **Communicating the project status**
  - Keep involved roles informed about the latest development of the project
  - There are three types of communication (communication is useful for)
    - Solving issues through oral presentation
    - Informing others through e-mails
    - Keeping permanent storage of records (of written documents)

Phase-4 : Closing down the project

It is consists to bring the project to an end

Phase-4: Closing down the project

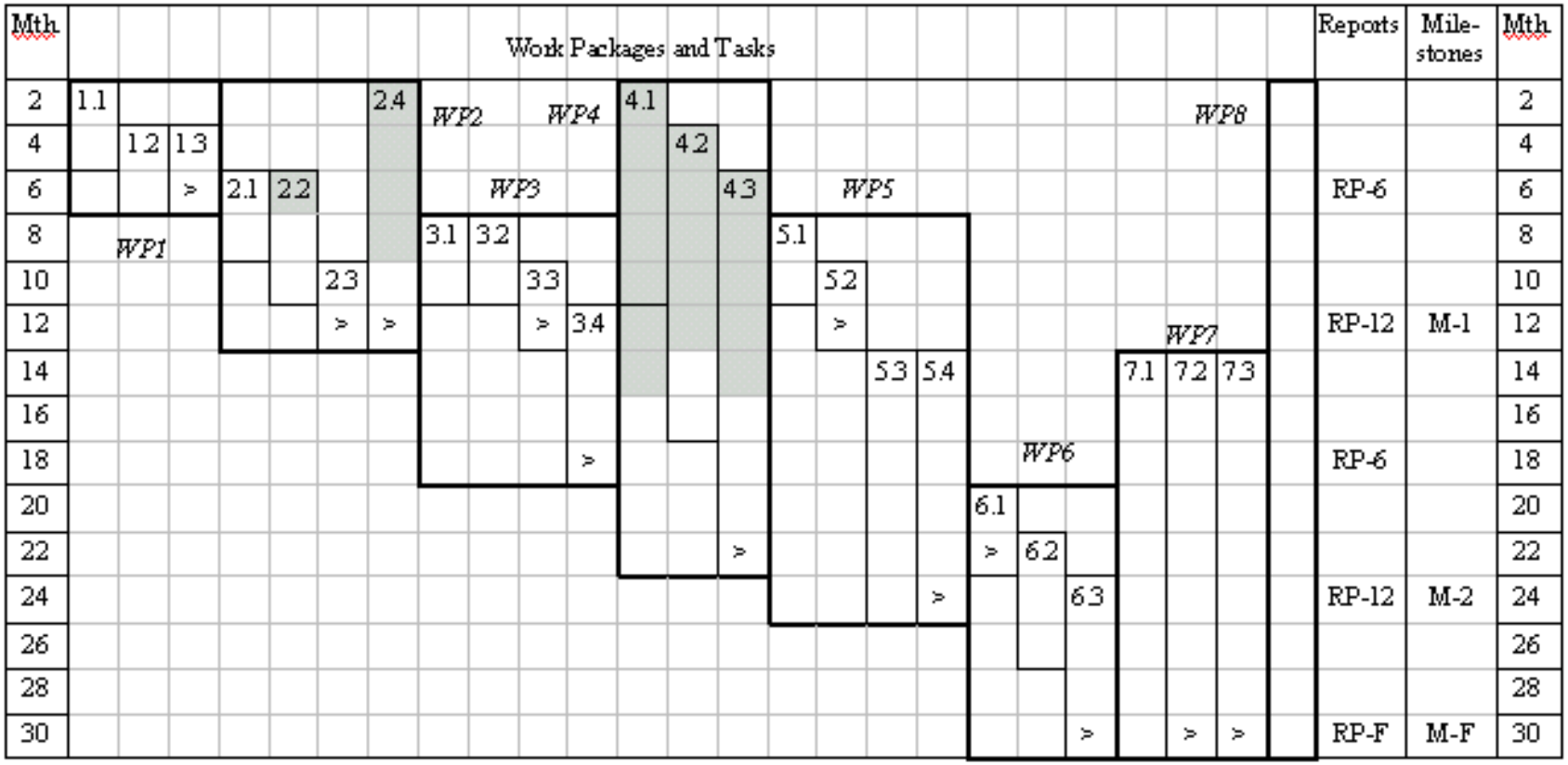
- **When does a project end?**
  - If requirements have been all met (normal end)
  - If all objectives have been successfully achieved
  - Customers' need are not any more valid in the customer business environment; state-of-the-art technology is available on the market)
  - Running out of money
- **Closing-down the project**
  - Inform all members about the project end during a review meeting
- **Conducting post-project review**
  - Set a review meeting with management and customers to assess project' strengths and weakness
  - Develop new idea for new projects
- **Closing the customer contract**
  - Stop funding and further new projects

Techniques for SD for representing & scheduling activities

Gantt and PERT

- **Gantt chart** is a graphical representation of a project that shows each task activity as a horizontal bar who is proportional to its time for completion.
- **PERT chart** is a diagram that represents project activities & their dependencies
  - There are several tools to support Gantt and PERT charts

E.g. of SIMNET Gantt chart



- WPx: Work Package x
- >: A deliverable is due after the completion of the task
- RP-6: brief 6-monthly report
- RP-12: 12-monthly report
- RP-F: final report
- M-x: Milestones 1 and 2 (M-1, M-2), Final (M-F)

Techniques for SD for representing & scheduling activities

- **PERT method** is a critical path scheduling technique used for controlling resources and timing
  - **PERT = Program Evaluation Review Technique**
  - **It allows to determines critical path scheduling and Slack Time**
- **Critical path scheduling** is a scheduling plan where the **order** and **duration** of the **sequence of activities** directly **affect the completion date** of a project
  - Critical path is represented by the sequence of connected activities that produces the longest overall time period
  - It represents the shortest time to complete a project
- **Slack time** refers to the amount of time that an activity can be delayed without delaying the project duration

Steps towards creating the PERT method

- Identify activities to be done within the project:
- Identify the sequence of the activities and precedence relationship
- Clear beginning and end point of each activity
- Determine the critical path of the PERT network (chart)

Example of use of PERT method

- Assume you have a project with 4 activities (1 to 4) see following slide. Determine for each activity the
  - **E**arliest completion **T**ime or **E**arly **T**ime to finish ($\mathbf{T_E}$)
  - **L**atest completion **T**ime or **L**ate **T**ime to finish ($\mathbf{T_F}$)
  - **S**lack **T**ime (**ST**)
- Which tasks are on the critical path?
- Draw a PERT Chart?
- Highlight the critical path

Example of use of PERT method

Tasks	N^O tasks	Preceding events	Expected duration	Early Time (T_E)	Late Time (T_L)	Slack Time	Critical path
Requirement collection	1	0	5				
Screen Design	2	1	3				
Data base construction	3	1	6				
System installation	4	2, 3	7				

Use of project management software

- There are several tools to support the Gantt and Pert charts
  - Allow to facilitate complexity of a project
  - Complexity = number of tasks & relationship
  - Allow to define tasks, order tasks, assign resources to tasks, Differences between system
- There are many software
  - E.g. Microsoft's Project is a great tool for any one who oversees a team, plans a budget, juggles schedules, or has deadlines to meet

CASE and Visual Development Environments

- Computer-aided Software Engineering (CASE)
  - Software tools that provide automated support for some portion of the systems development process
  - Upper CASE
    - CASE tools designed to support systems planning and selection, systems analysis, and systems design phases of the systems development life cycle
  - Lower CASE
    - CASE tools designed to support the systems implementation and operation phase of the systems development life cycle

Some CASE Tools

- Diagramming
  - Microsoft VISIO
- Project Management
  - Microsoft Project
- Development all-in-one solutions
  - Oracle Developer Suite
  - Microsoft Visual Studio
  - Sybase PowerBuilder & PowerDesigner

CASE and Visual Development Environments

- Types of CASE tools
  - Diagramming tools
  - Computer display and report generators
  - Analysis tools used to check for incomplete, inconsistent or incorrect specifications
  - A central repository
  - Documentation generators
  - Code generators
- Form and report generators
  - CASE tools that support the creation of system forms and reports in order to prototype how systems will look and feel to users

Figure B.2 The Relationship between CASE Tools and the Systems Development Life Cycle