BASIC ENGINEERING DESIGN
Project Management

GEN- N1003
Spring 2017
Lecture 8

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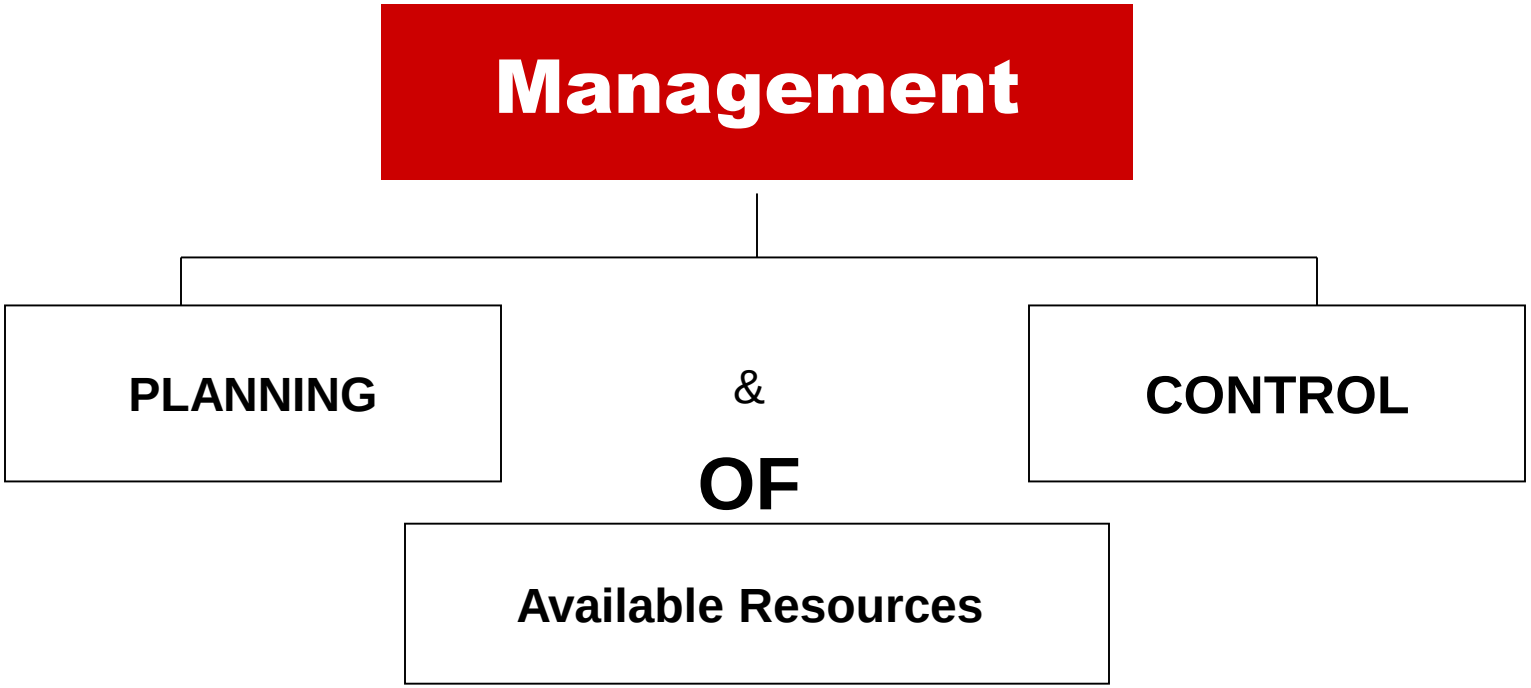
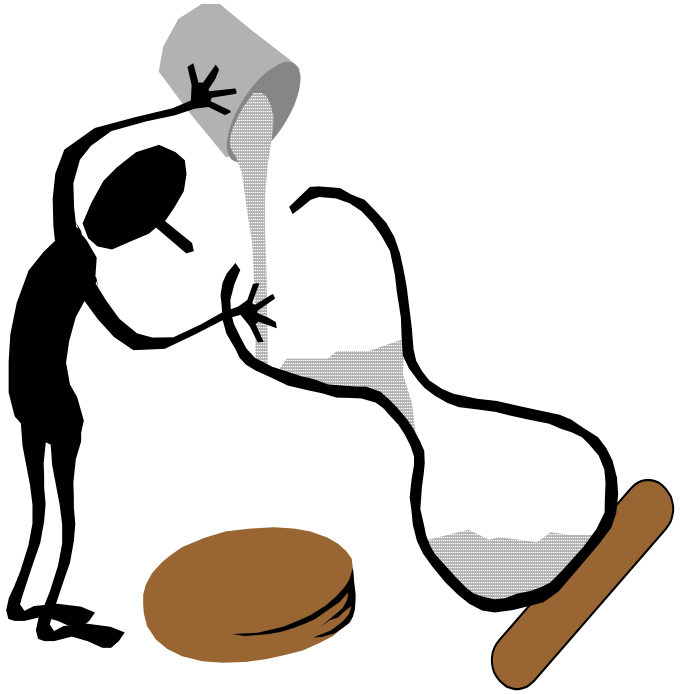


Manpower
Money
Materials
Machines

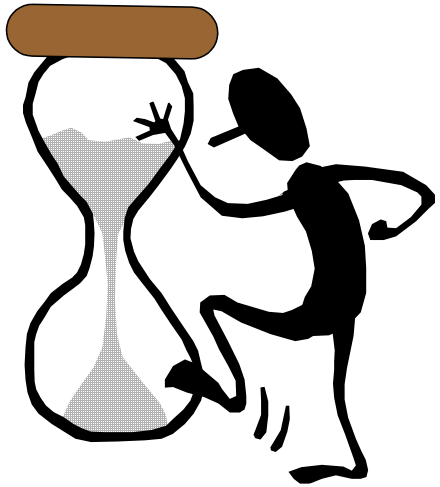
Why Plan?

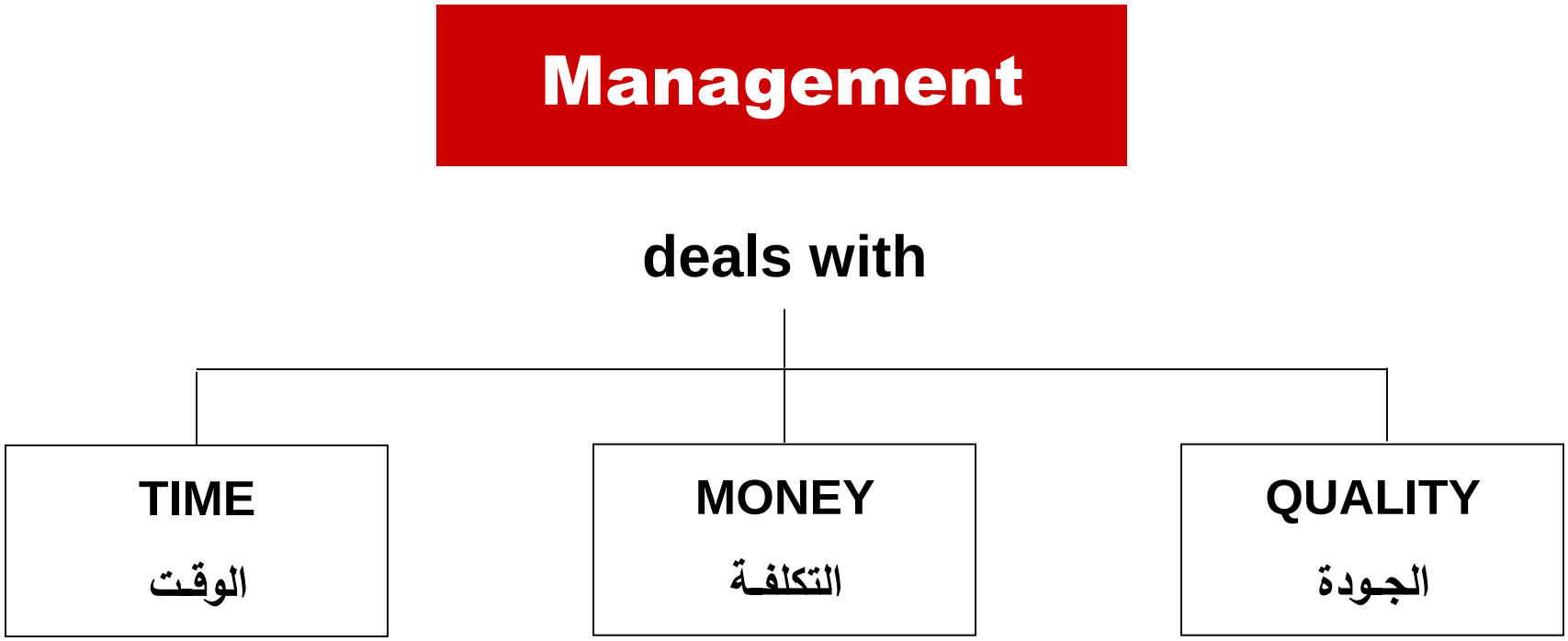
- Determine **viability** of project
- Forecast **requirements** for
  - Cash flow
  - Manpower
  - Facilities
  - Materials
  - Acceptance
- **Market** project
  - Customer
  - Internal management
- Address project at **system level**
- Establish meaningful **schedule**
- Coordinate a **diversity of requirements**



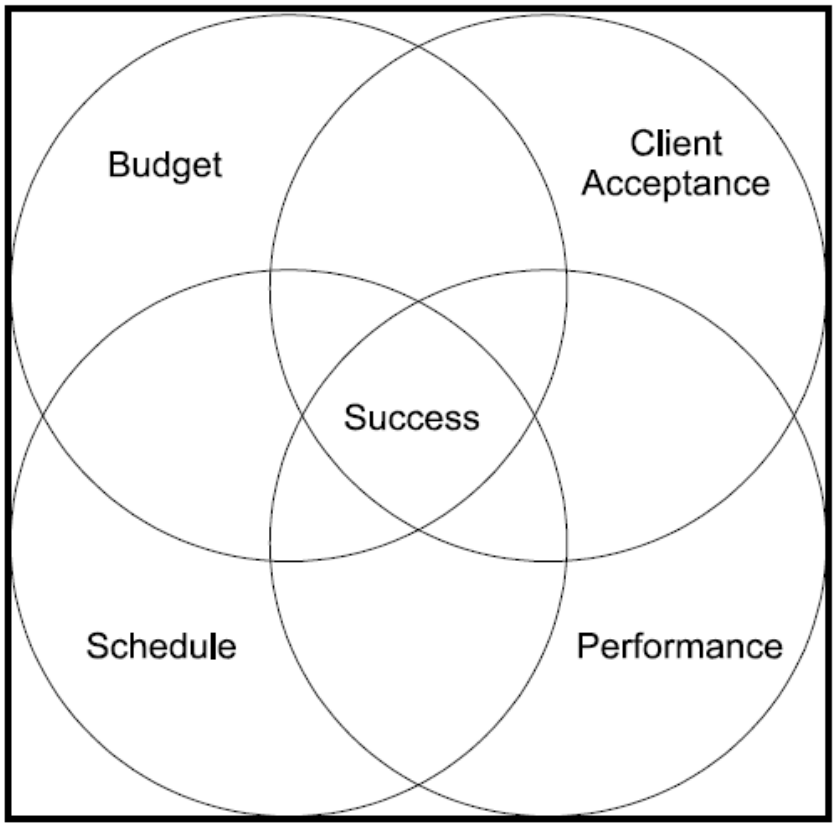
Why Control?

- Ensure **efficient** use of
  - Manpower
  - Facilities
- Ensure **interface** compatibility
- Provide **method** for meaningful **update** of plan
  - Schedule
  - Funding
  - Manpower
  - Facilities
  - Requirements
  - Acceptance
- Assure **end product** meets requirements
  - Unit level
  - System level
  - Support level



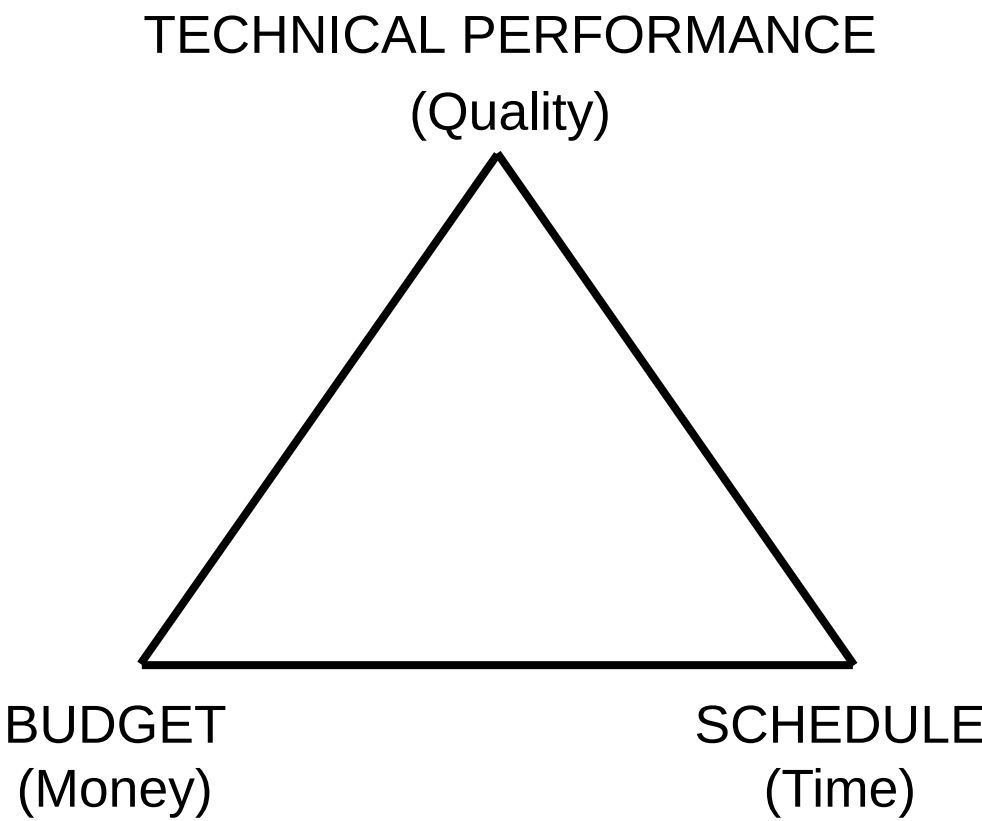

Management
deals with
TIME
الوقت
MONEY
التكلفة
QUALITY
الجودة

The Quadruple Constraint



Pinto and Kharbanda (1995)

The Triple Constraint



Planning

OBJECTIVES PYRAMIDS

Management

By

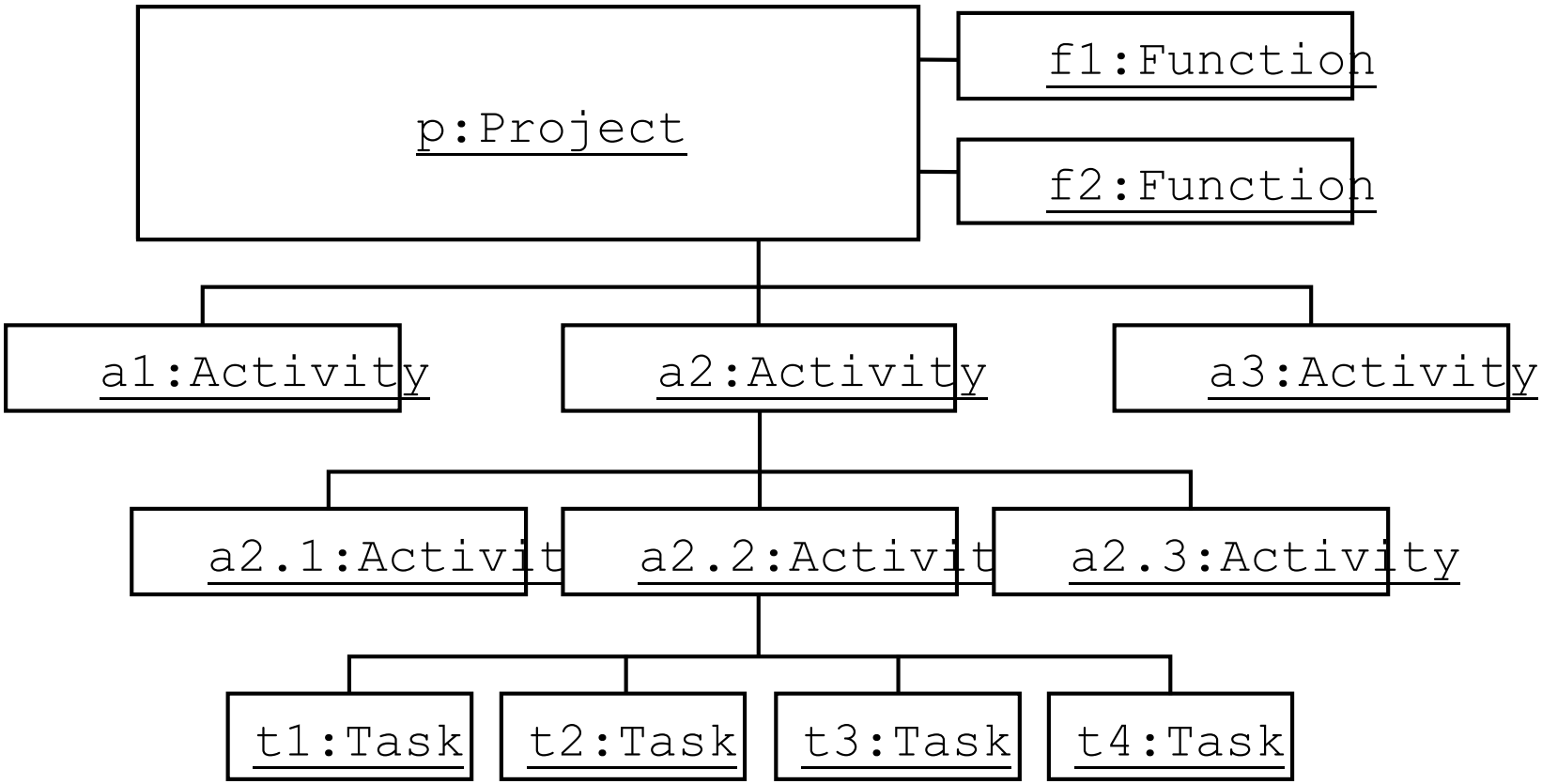
OBJECTIVES

Managers should always have clear

Hierarchy of **OBJECTIVES**

i. e END ⟶ GOAL ⟶ **OBJECTIVES**

Project: Functions, Activities and Tasks

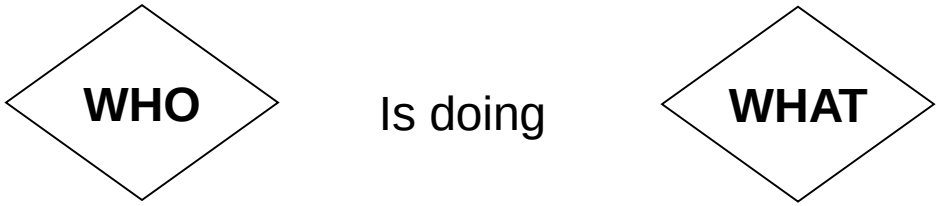


- Work Breakdown Structure (WBS)
  - Break up project into activities (phases, steps) and tasks.
  - The work breakdown structure does not show the interdependence of the tasks

Tasks

- **Specification of a task: Work package**
  - **Name, description** of work to be done
  - **Preconditions** for starting, duration, required resources
  - Work product to be **produced**, **acceptance criteria** for it
  - **Risk** involved
- **Completion criteria**
  - Includes the **acceptance criteria for the work products** (deliverables) produced by the task.

TASKS & RESPONSIBILITIES DISTRIBUTION



RESPONSIBLE / TASK	A	B	C	D	COMMENTS
TASK 1	▲		■	●	
TASK 2	■	▲	●		
TASK 3	●	■	▲		
TASK 4	●		■	▲	
TASK 5	■	▲		●	

▲ Key Responsible ■ Co – responsible ● Team member

ACHIEVING TASKS

Gantt chart

WHAT To do **WHEN**

TASK \ TIME	1	2	3	4	5	6	COMMETS
TASK 1							
TASK 2							
TASK 3							
TASK 4							
TASK 5							

TIME in Days , Weeks , Months , or Years

MANAGMENT

By

Be a cheerful personality ……
Learn the art of listening ……
Avoid Being a snob ……
Adopt “ encouragement “ ……
Show “ appreciation “ ……
Be Optimistic ……

Accept objective criticism
Argue softly
Avoid being a fault- finder
Adopt “ fairness “
Always tell the truth
Be honest

Environment where all team members

are motivated

are self- motivated

Presentation

Team Work

Requirements:

1- Resources Allocation ..

2- Objectives formulation ..

3- Responsibilities Distribution

4- Time Scheduling

1- **Resources Allocation :**

ex. A group of student planning to do :

(A research on autonomous cars)

* required **Manpower** / team members & leader
* required **Budget**
* required **Materials**
* required **Machines / Equipment / Computers** … etc

2- Objectives formulation :

ex. A department Head / Chair together with selected

Professors preparing the department Objectives ..

* **End .. Goal .. Objectives**

* **Sub-Objectives**

3- Responsibilities Distribution :

ex. A family is planning a short vacation on the Red Sea Shores ..

* Tasks **formulation**

* Tasks **distribution**

* **Follow – up**

4- Time Scheduling :

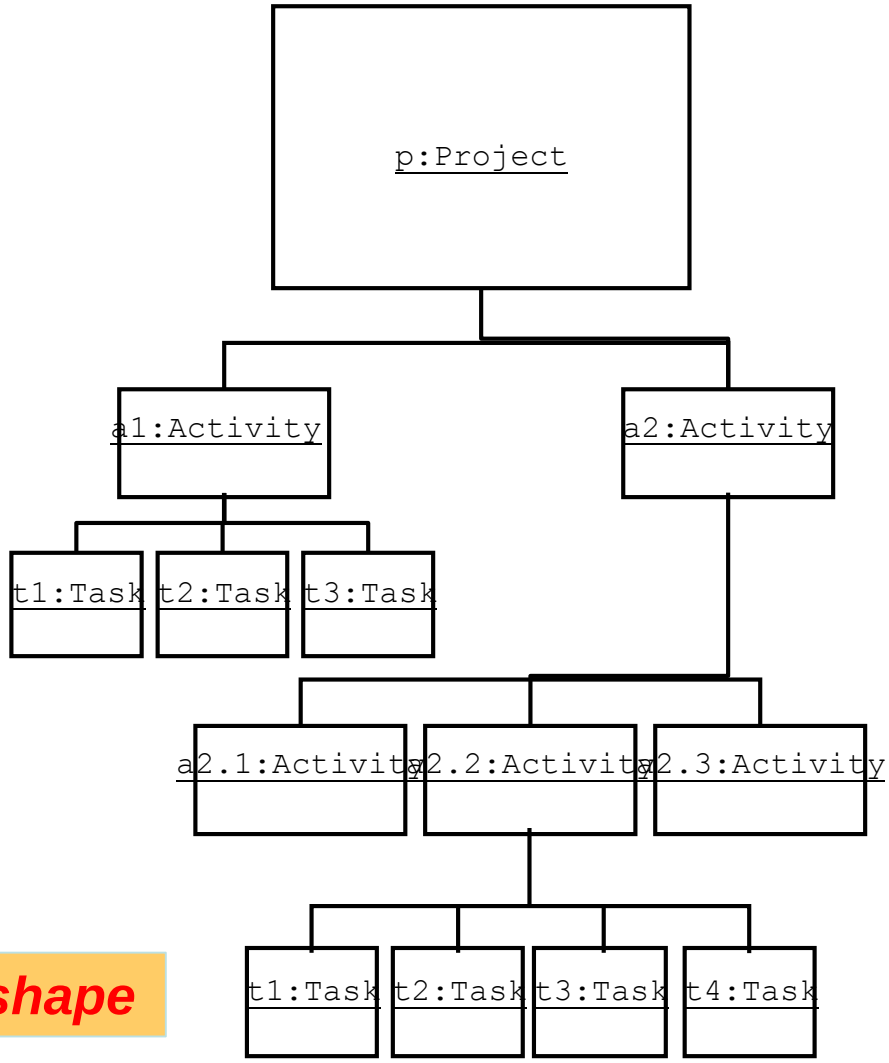
ex. Two brothers need to renovate their room during mid-Term vacation ..

* **Time** allowed
* **Tasks**
* **Follow-up**
* **Final Step**

Project: Building a House

- **Activity 1: Landscaping the lot**
  - **Task 1.1: Clearing and grubbing**
  - **Task 1.2: Seeding the Turf**
  - **Task 1.3: Planting trees**
- **Activity 2: Building the House**
  - **Activity 2.1 : Site preparation**
  - **Activity 2.2: Building the exterior**
  - **Activity 2.3: Finishing the interior**
- **Activity 2.1 : Site preparation**
  - **Task 2.1.1: Surveying**
  - **Task 2.1.2: Obtaining permits**
  - **Task 2.1.3: Excavating**
  - **Task 2.1.4: Obtaining materials**

Normally, we prefer it in the pyramid shape



Activity 2: Building a House

- **Activity 2.2: Building the exterior**
  - **Task 2.2.1: Foundation**
  - **Task 2.2.2: Outside Walls**
  - **Task 2.2.3: Exterior plumbing**
  - **Task 2.2.4: Exterior electrical work**
  - **Task 2.2.5: Exterior siding**
  - **Task 2.2.6: Exterior painting**
  - **Task 2.2.7: Doors and Fixtures**
  - **Task 2.2.8: Roof**
- **Activity 2.3 : Finishing the Interior**
  - **Task 2.3.1: Interior plumbing**
  - **Task 2.3.2: Interior electrical work**
  - **Task 2.3.3: Wallboard**
  - **Task 2.3.4: Interior painting**
  - **Task 2.3.5: Floor covering**
  - **Task 2.3.6: Doors and fixtures**

Project Management Tools

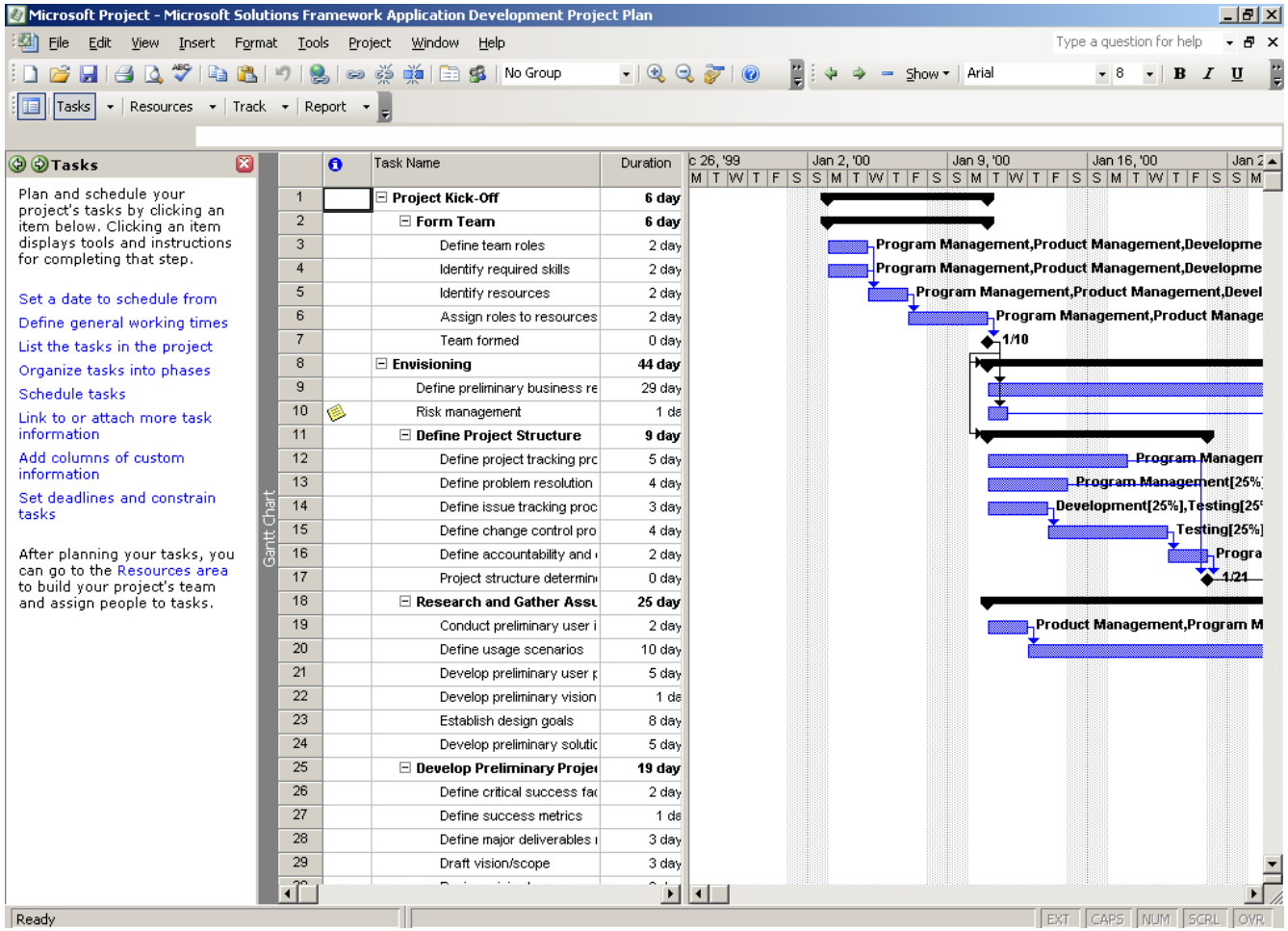
Allow you to store the project plan (phases and tasks particularly estimated durations), available resources, allocation of resources to tasks, and project progress tracking information.

Examples:

- ***Microsoft Project***

Microsoft Project

Project Planning



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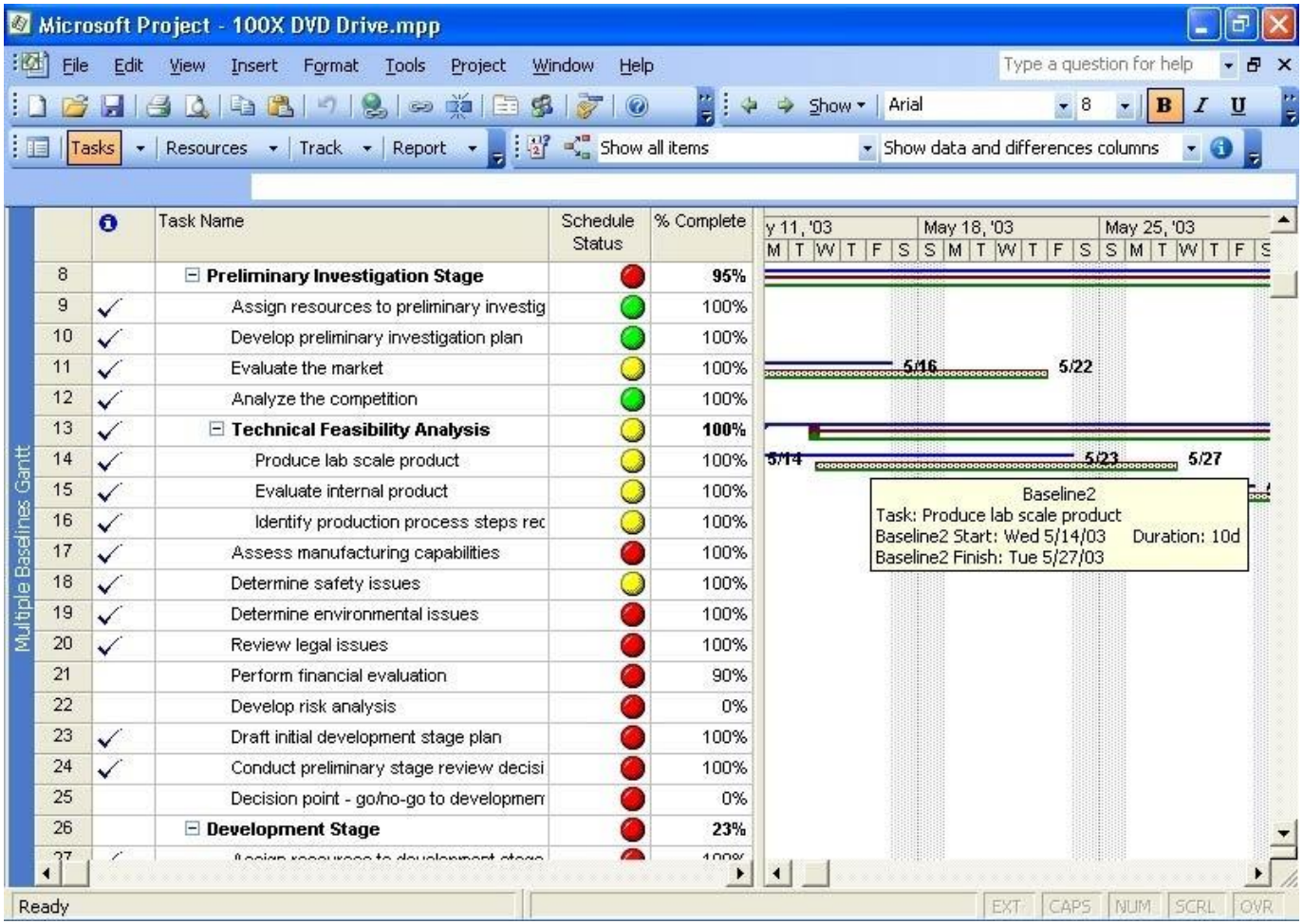
Microsoft Project

Project Tracking



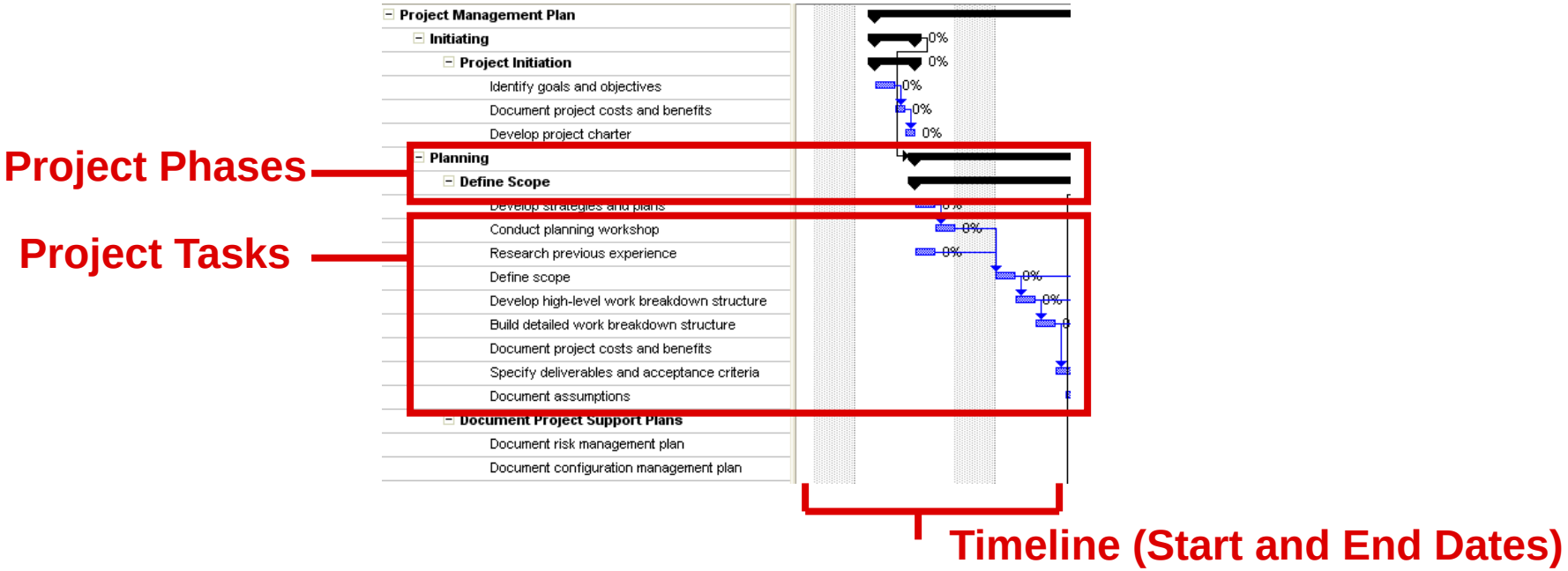
Microsoft Project

You can find some useful Software Engineering Project templates for Microsoft Project by going to:

`http://office.microsoft.com/templates/`

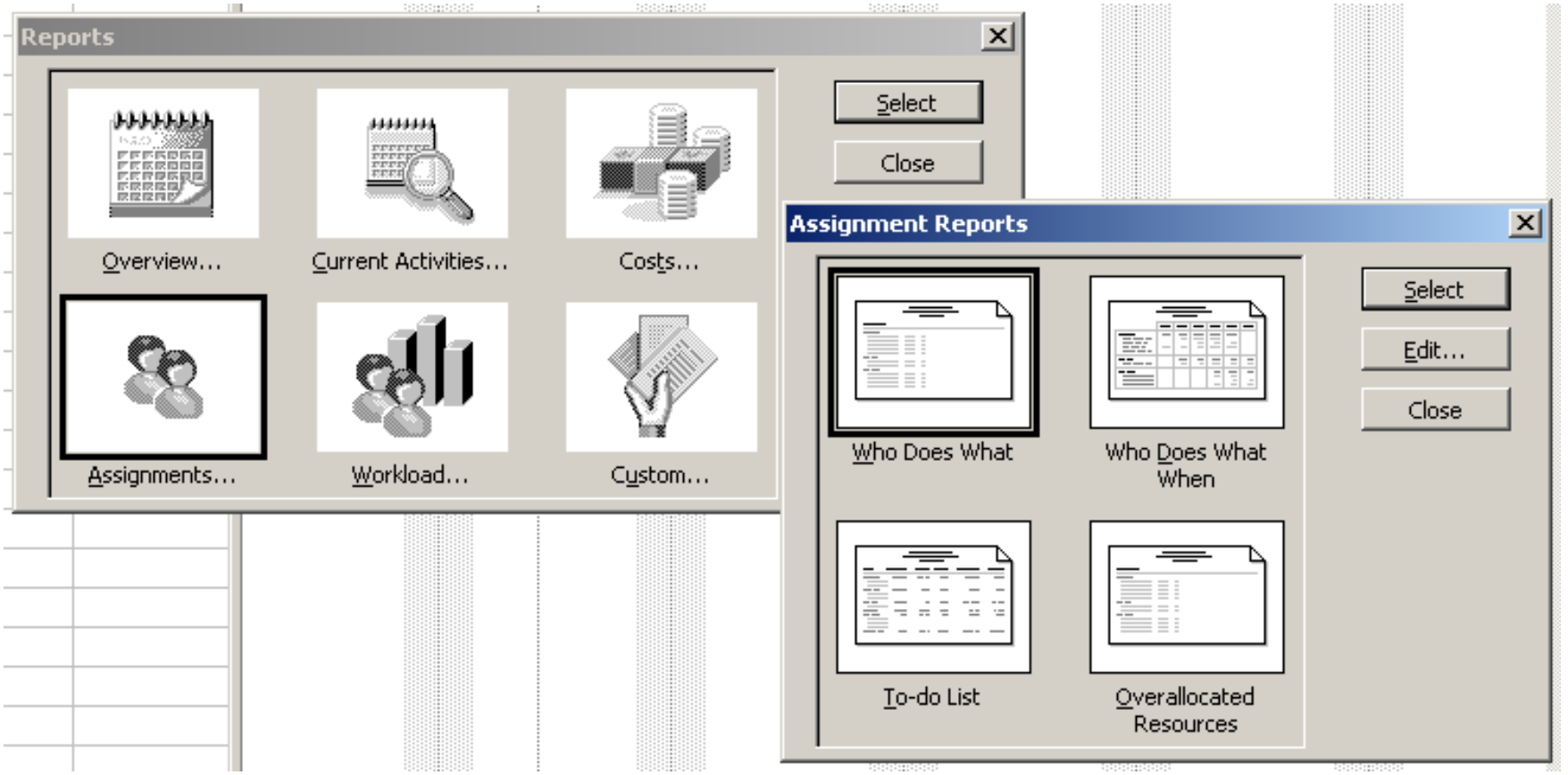
and clicking on: “Project Management” under “Meetings and Projects”

Project Plan



Microsoft Project

Reporting on the Project: Resource Assignment



(In Microsoft Project, choose *View* menu and then click on *Reports…* to see these reports)

Project Planning Exercise

Spring 2016: Final Exam

You are required to propose a one year project plan to help the ministry of Communications and Information Technology (MCIT) in developing an ELECTRONIC DATA BASE SYSTEM for Egyptian citizens. In your solution, creative ideas and practical solutions should be designed and documented briefly.
Use all the information you learned throughout the course to solve this problem.
State any assumptions made and try to generate alternatives.

- **Problem Definition:**
- **Objective, Sub-objectives, and tasks pyramid:**
- **Decision matrix:**
- **Tasks and Responsibilities Table:**
- **Gantt chart (Time plan table):**