



Introduction to IT Project Management

Prof. Dr. Daning Hu
Department of Informatics
University of Zurich

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Adapted from “Managing Information Technology Projects, Chapter 1, Schwalbe”

Outline

- Why IT Project Management?
- History of Project Management (PM)
- Basic Concepts of Project Management
 - Projects
 - Features of A Project
 - Project Management
- Project Lifecycle
- Project Management Tools
- MISC

Poor Track Record

- 1995 Standish Group study (CHAOS)
 - only **16.2%** of IT projects were **successful** in meeting scope, time, and cost goals
 - Over **31%** of IT projects were **canceled** before completion, costing over \$81 billion in the U.S. alone
 - Though report over 10 years old, information still valid
 - Also has project success factors
 - <http://www.projectsmart.co.uk/docs/chaos-report.pdf>

Some Improvements

Measure	1994	2006
Successful Projects	16%	35%
Failed Projects	31%	19%
US Spending on IT Projects	\$250B	\$346B
Money Wasted on Failed Projects	\$140B	\$53B

Really Improved??

■ CHAOS Summary 2009

- **32%** of all projects successful
- **44%** late, over budget, and/or with less required features and functions
- **24%** failed – cancelled or delivered and never used
- Represent the highest failure rate over a decade!
- http://www1.standishgroup.com/newsroom/chaos_2009.php

Career for IT Project Managers

In a 2006 survey by CIO.com, IT executives ranked the skills that would be the **most in demand** in the next two to five years

SKILL	PERCENTAGE OF RESPONDENTS
Project/program management	60%
Business process management	55%
Business analysis	53%
Application development	52%
Database management	49%
Security	42%
Enterprise architect	41%
Strategist/internal consultant	40%

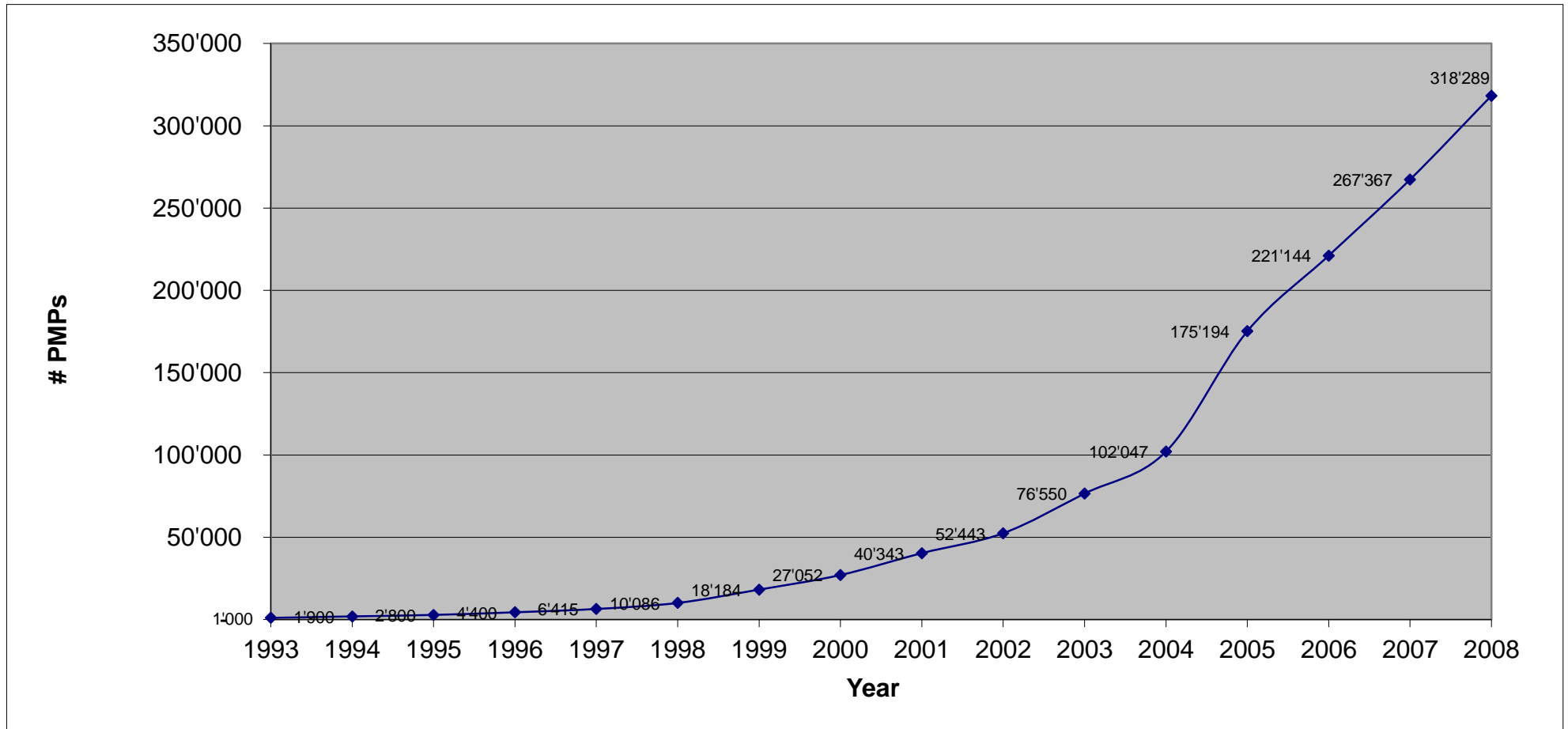
Project Management Statistics

- The U.S. spends \$2.3 trillion (\$2.4 trillion in 2008) on projects every year, or **one-quarter** of its gross domestic product.
- More and more people are getting the **Project Management Professional (PMP)** certification – some statistics later.

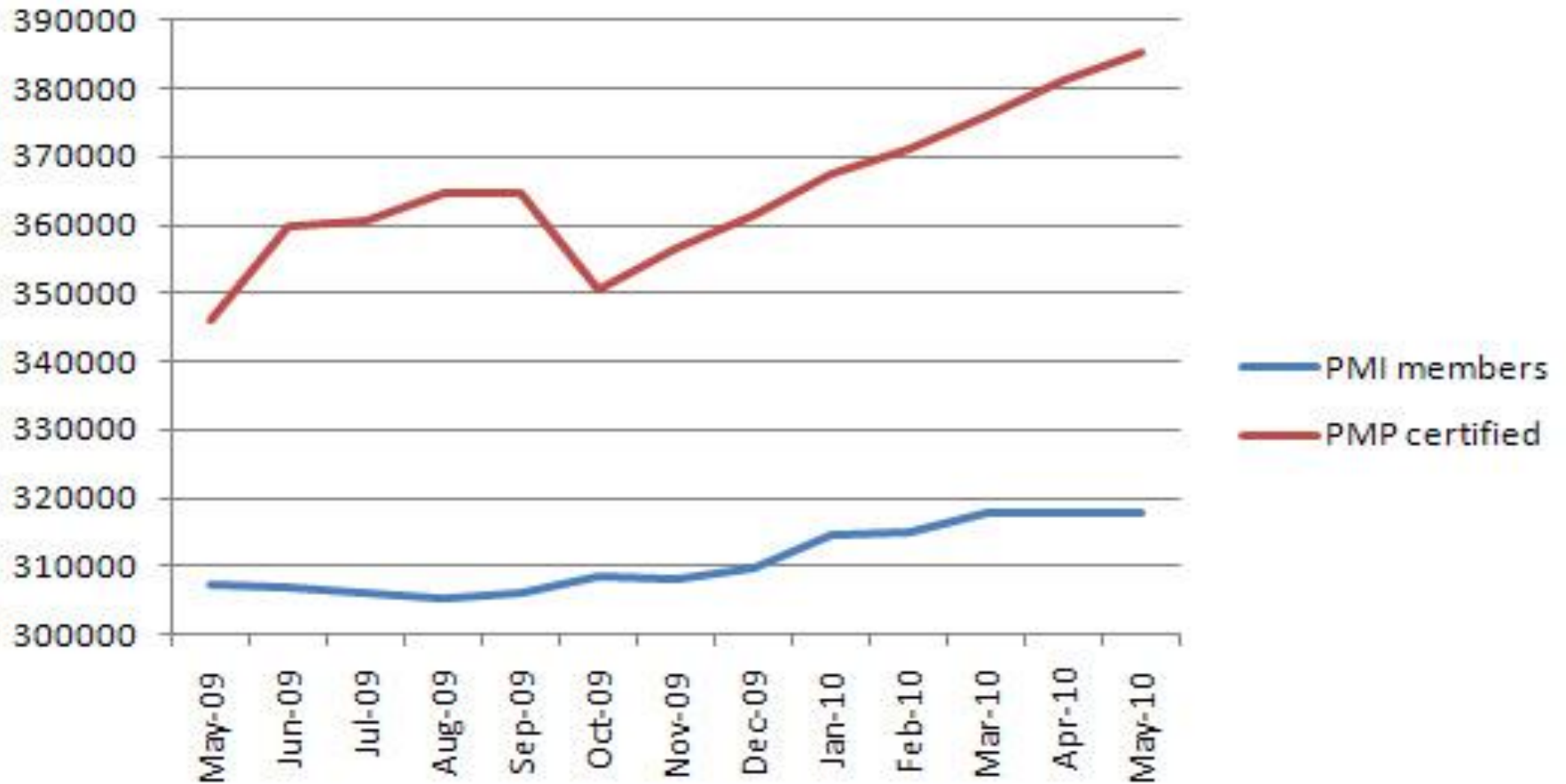
The Project Management Institute

- The ***Project Management Institute (PMI)*** is an international professional society for project managers
- Founded in 1969, **US**
- ***PMP*** is one of the certification for project managers
- Published the ***PMBOK*** – Project Management Body of Knowledge
- www.pmi.org

Growth in PMP Certification, 1993-2008



Total PMI Members & PMP Certifications Worldwide – 2010 Figures



Source: <http://entangled.com/2010/07/13/pmp-certification-growth-rate/>

History of Project Management

■ A long history:

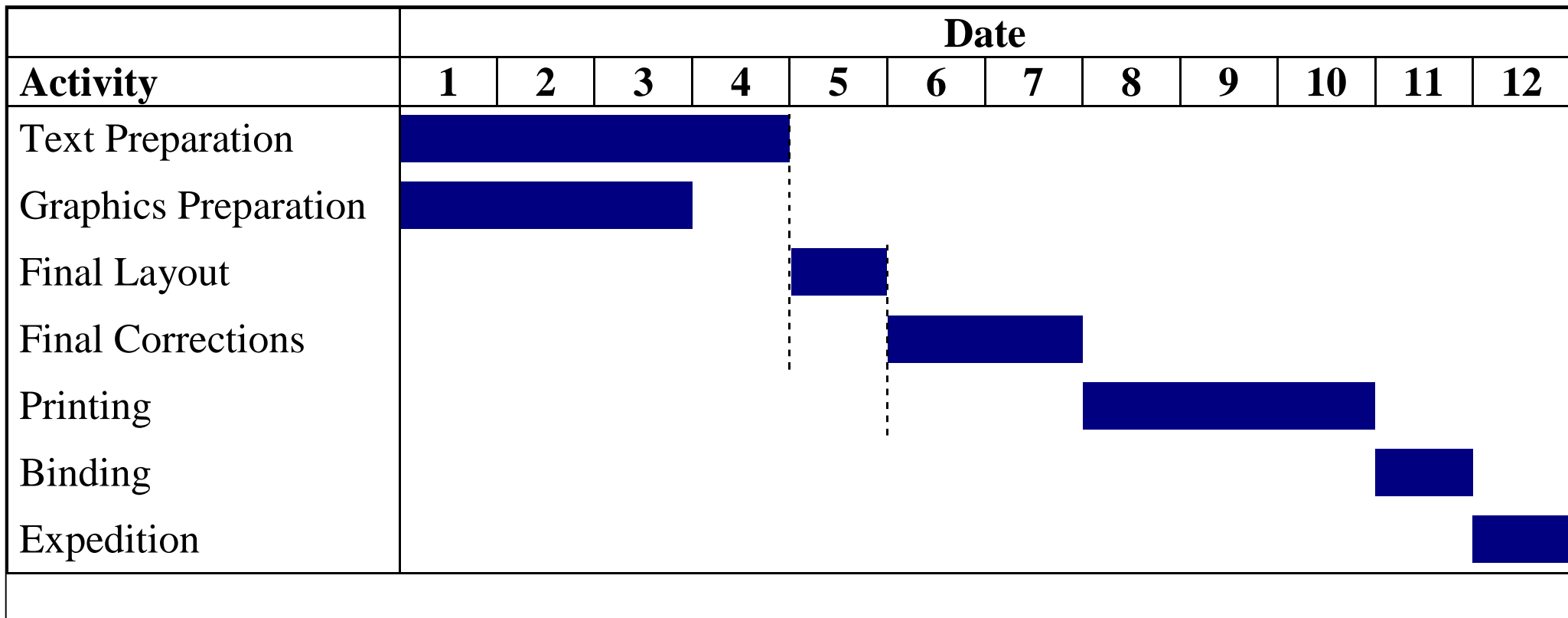
- referred back as far as the construction of the Egyptian Pyramids and Great Wall of China.

- **The famous Gantt Chart:** the history of project planning techniques can be accurately traced back to the end of 19th and the beginning of 20th century when Henry Gantt (1861-1919) designed the barchart as a visual aid for planning and controlling his projects.

- motivated by contemporary approaches to management in general (Frederick Winslow Taylor, Henry Gantt) – every task should be
 - divided into sequence of elementary activities (movements),
 - useless activities must be eliminated,
 - the remaining activities must be accomplished efficiently (stress on every individual's top performance, foundations of modern manufacturing lines)

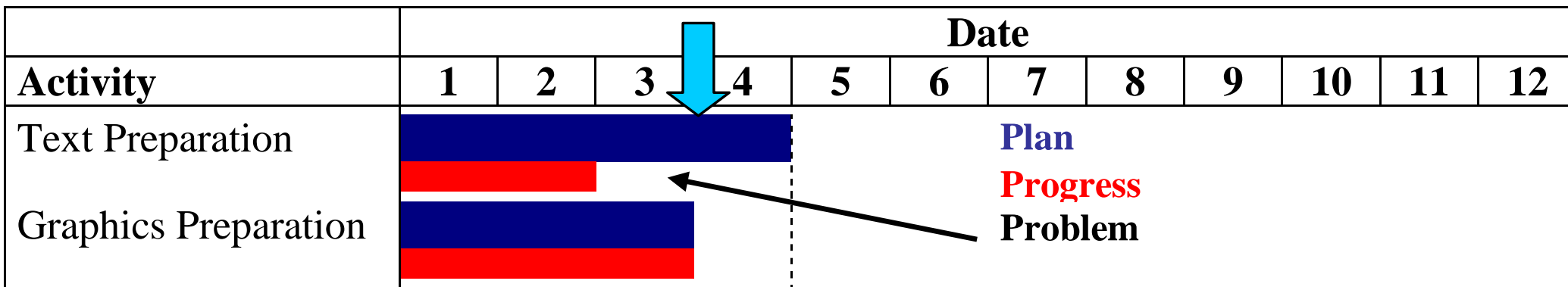
An Example of Gantt Chart

- Gantt chart - How to publish a brochure in twelve days?



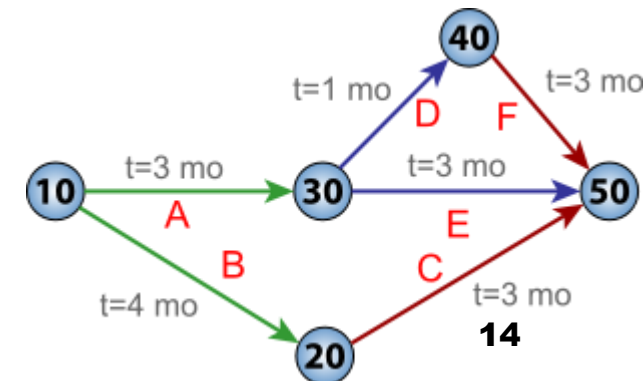
An Example of Gantt Chart

- Gantt chart can be easily used as a tool for project control



History of Project Management

- Remington Rand etc. developed Critical Path Method (CPM) - a management tool to improve the planning and control of a construction project (processing plant for Du Pont Corporation) - it was first used in 1957.
- US Navy together with Lockheed Aircraft Corporation developed Program Evaluation and Review Technique (PERT) - it was used as a planning tool for the Polaris Submarine project (in 1958)
- Both methods are based on project presentation in the form of network diagram, the difference is mainly in the way how activity time durations are addressed (PERT - probabilistic approach, CPM - deterministic approach).
- In the example of the PERT chart for a project with five milestones (10 through 50) and six activities (A through F), this project has two critical paths: activities B and C, or A, D, and F – giving a minimum project time of 7 months with fast tracking. Activity E is sub-critical, and has a float of 1 month.



History of Project Management

- The mid 1960s saw a dramatic rise in the number of projects in the construction industry
- Project Management Institute (PMI) was formed in 1969 - its goal is to bring forward the best practices and to create standard terminology and guidelines for project management.
- The Fourth Edition (2008) of PMI guidelines was recognized by the American National Standards Institute (ANSI) as an American National Standard (ANSI/PMI 99-001-2008) and by the Institute of Electrical and Electronics Engineers — IEEE 1490-2011 (so called **PMBOK** Guide – A Guide to the Project Management Body of Knowledge)
- There is a whole variety of software packages available for personal computers today - it makes our life easier, but still we have to understand the basic foundations and principles of PM to be able to make right decisions:
 - https://en.wikipedia.org/wiki/Comparison_of_project_management_software

What is a Project?

- Definition of a project in the context of project management:
- Project can be defined as a group of activities that have to be performed in a logical sequence to meet preset objectives.

- Examples:
 - Construction project - designing and constructing a house, bridge, supermarket
 - Product development project - designing and testing a new car or refrigerator
 - Advertising and marketing project – launching and promoting some product or service
 - Travel project – planning a study/business trip or holiday/vacations
 - Entertainment or cultural project – fashion show, exhibition, Madonna’s world tour
 - **IT projects** – designing and implementing a new information system

Some Other Examples of IT Projects

- A help desk or technical worker replaces ten laptops for a small department.
- A small software development team adds a new feature to an internal software application for the finance department of a firm.
- A college campus upgrades its technology infrastructure to provide wireless Internet access across the whole campus.

Features of A Project

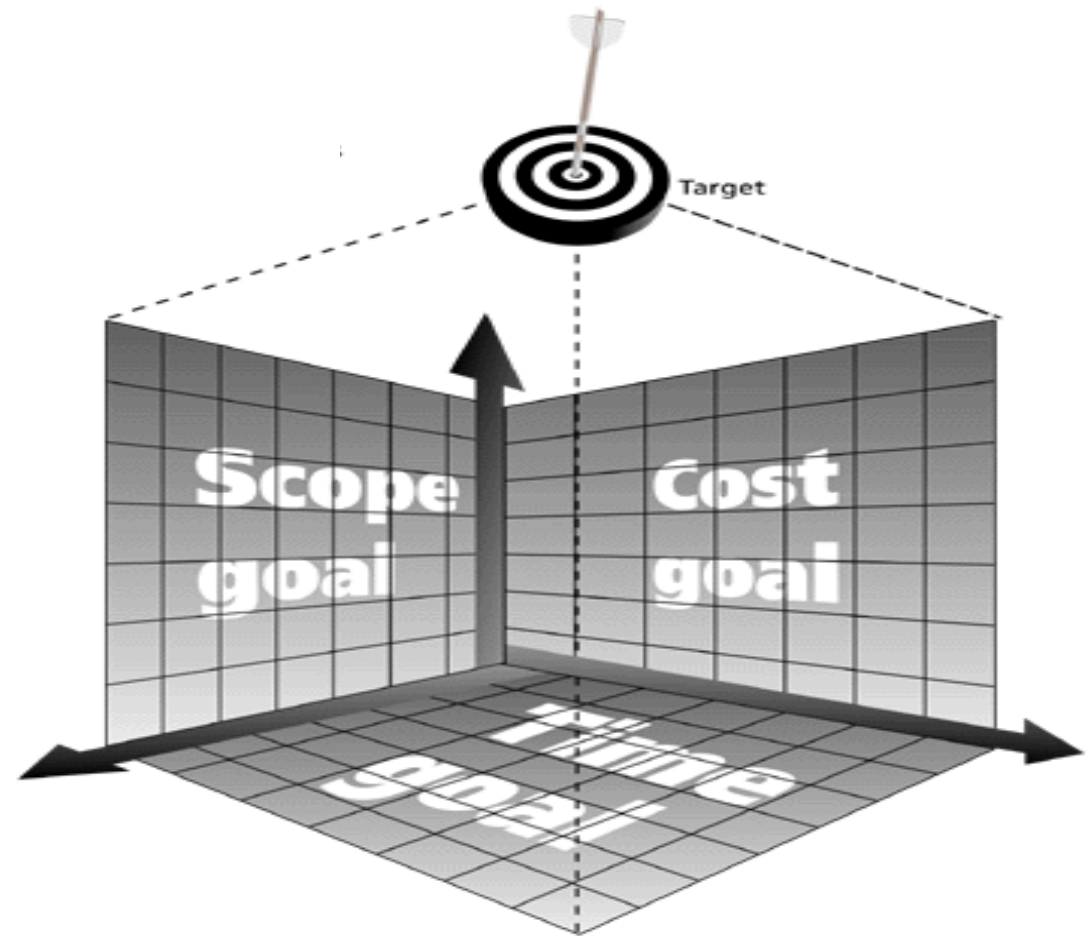
- A project has a clear beginning and end.
- There are several distinct phases between the beginning and the end of a project – we call it the lifecycle of the project.
- Projects are often has time constraint. It means that they must finish by a certain time point.
- Project usually has a clear estimate of cost (i.e., budget) that is often broken down to a budget per work package.
- There is a single point of responsibility – project manager (project leader) who is responsible for the success of the whole project and the project team (i.e., team formed to complete the project).

What do Project Managers Manage? The Triple Constraint of Project Management

- **Scope (& Quality)**

- **Time**

- **Cost**



What is Project Management?

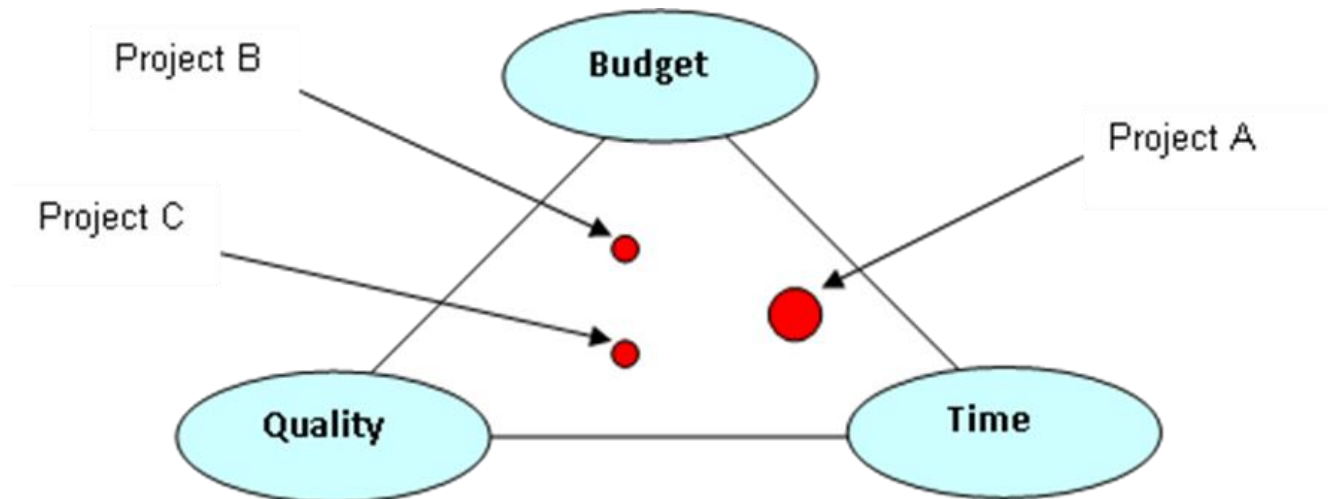
- **Project Management** is the application of knowledge, skills, tools and techniques to project activities in order to meet stakeholders' needs and expectations from a project (definition by the **PMBOK** guide).
- **Project Management**
 - > MAKING THE PROJECT SUCCESSFUL

How?

- Successful project management requires that we
 - know **WHAT** is to be delivered (goals and deliverables)
 - can recognise if it **HAS** been produced (**Evaluation: Quality**)
 - know **WHEN** it must be completed (**Time**)
 - know **WHAT** resources are needed (**Cost: money, personnel, machinery**)

Project Objectives

- Scope & Quality (fitness for purpose)
- Budget (to complete it within the budget)
- Time (to complete it within the given time)
- It is clear that these objectives are not in harmony!



Project Lifecycle

- Every project passes through a number of distinct phases or stages. These phases are known as the “Project Life Cycle”.
- The project life cycle can be conveniently represented by a bar chart which clearly indicates the duration of each phase and its overlap (if any) with the other phases.

Project Lifecycle

■ Example:

- The construction of a house.

Project Phase	1	2	3								4
Feasibility study	■										
House design		■	■								
Building phase				■	■	■	■	■	■	■	
Commissioning phase											■

- **Feasibility study (Requirement Analysis)** – is conducted to consider all the options and alternatives. The output of this phase is an outline of the preferred type of house and estimated budget.

Project Lifecycle

■ Example:

- The construction of a house.

Project Phase	1	2	3								4
Feasibility study	■										
House design		■	■								
Building phase				■	■	■	■	■	■	■	
Commissioning phase											■

- **House design (Project planning)** – on acceptance of the feasibility study, a detailed design of the house is produced together with detailed scope of work and planning documents (ranging from planning schedules, procurement, resources and budget up to the building permission).

Project Lifecycle

■ Example:

- The construction of a house.

Project Phase	1	2	3								4
Feasibility study	■										
House design		■	■								
Building phase				■	■	■	■	■	■	■	
Commissioning phase											■

- **Building phase (Project implementation)** – on acceptance of the design of the house detailed baseline plan, the contracts are negotiated and settled. The house is built to the detailed plans developed in the previous phase.

Project Lifecycle

■ Example:

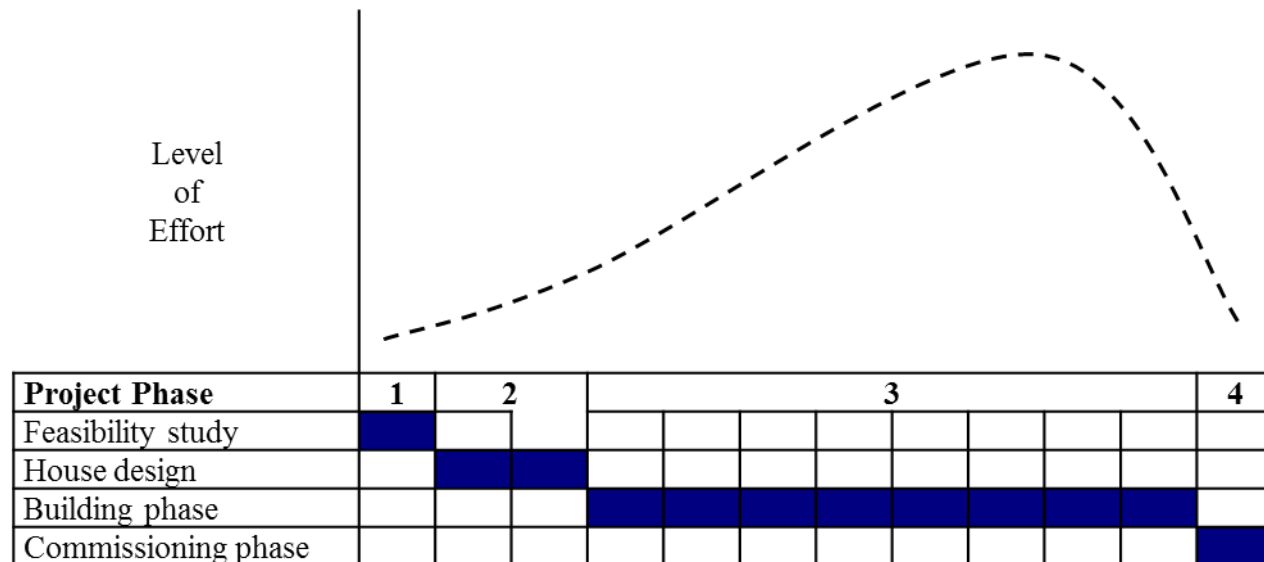
- The construction of a house.

Project Phase	1	2	3								4
Feasibility study	■										
House design		■	■								
Building phase				■	■	■	■	■	■	■	
Commissioning phase											■

- **Commissioning phase (Project termination)** – on completion the building is inspected and approved by the client and responsible authorities. The house is handed over for occupation and the project is terminated.

Project Lifecycle

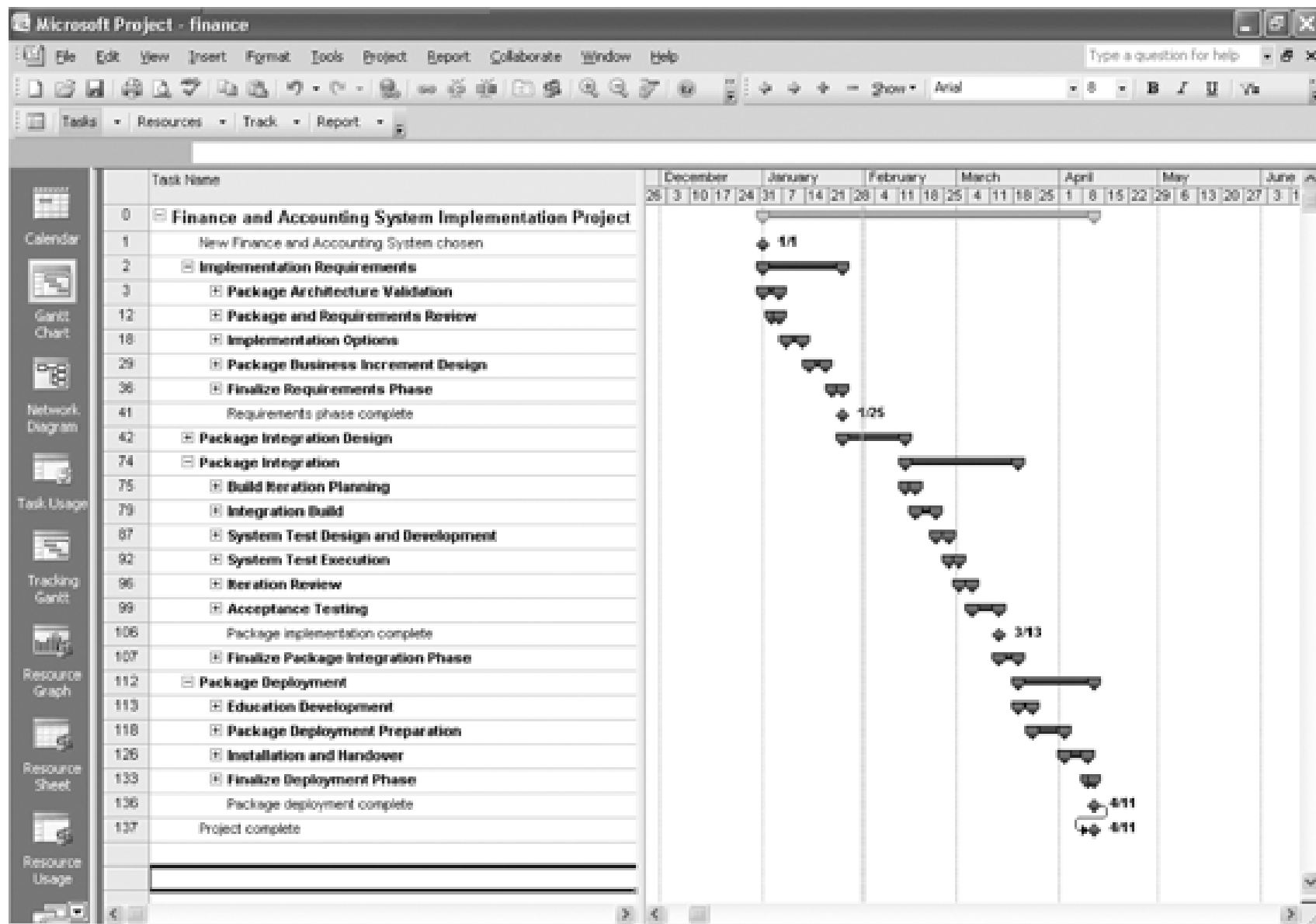
- Different phases of the project are associated with different level of effort. The greatest level of effort usually occurs during the implementation phase (as well as most of the costs are incurred) and that is why many tools and techniques are focused right on this phase.



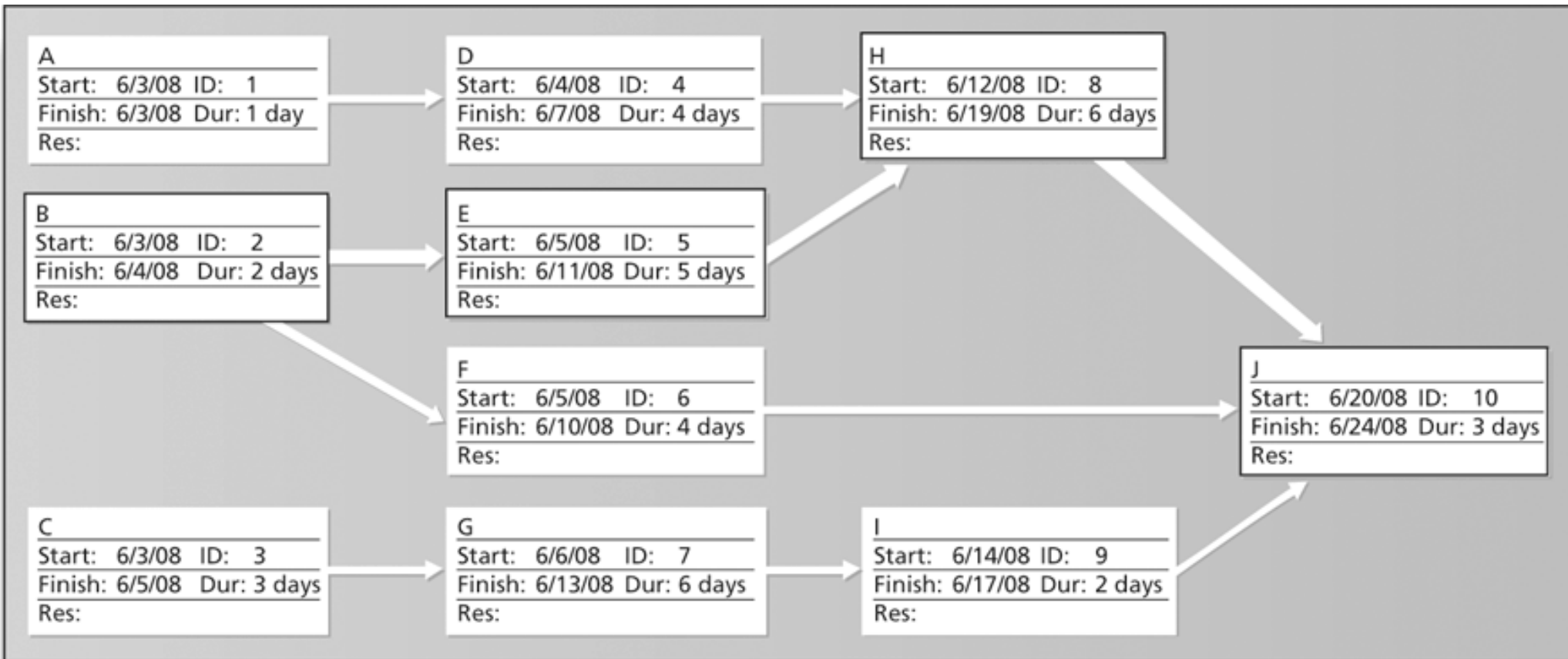
Project Management Tools and Techniques

- ***Project management tools and techniques*** assist project managers and their teams in various aspects of project management
- Some specific ones include:
 - Project charter, requirement analysis statement, and work breakdown structure (quality)
 - Gantt charts, network diagrams, critical path analysis, and critical chain scheduling (time)
 - Cost estimates and earned value management (cost)

Sample Gantt Chart Created with MS Project



Sample Network Diagram in Microsoft Project



Project Success and Evaluation

- There are several ways to define project success
 - The project met its requirement, time, and cost goals
 - The project meets or exceeds stakeholders' expectations
 - The results of the project met its main objectives, e.g.,
 - making or saving a certain amount of money
 - providing a good return on investment, or
 - simply delivering the product/services

Project Stakeholders

- ***Stakeholders*** are the people (or organizations) **involved in or affected** by project activities

- Stakeholders include:
 - The project sponsor
 - The project manager
 - The project team
 - Support staff
 - Customers
 - Users
 - Suppliers
 - Opponents to the project

Success Factors

- Key ones:
 - User involvement
 - Executive support
 - Experienced project manager
 - Well defined requirements

What the Winners Do....

- Use an integrated **project management toolbox** (use standard/advanced PM tools, lots of templates)
- **Grow project leaders**, emphasizing business and soft skills
- Develop a streamlined project delivery **process**
- Measure project health using **metrics**, like customer satisfaction or return on investment



Ten Most Important Skills and Competencies for Project Managers

1. People skills
2. Leadership
3. Listening
4. Integrity, ethical behavior, consistent
5. Strong at building trust
6. Verbal communication
7. Strong at building teams
8. Conflict resolution, conflict management
9. Critical thinking, problem solving
10. Understands, balances priorities