

Software Project Management

Dr. Sherin Moussa

**Associate Professor at Faculty of
Computer and Information Sciences
sherinmoussa@cis.asu.edu.eg**

Course Reference

- Main Textbook:

“Introduction to Software Project Management” by Adolfo Villafiorita, CRC Press (2014)

- The main guidance:

Lectures' slides

Lecture 1: Software Development Projects and Stakeholders

The name of the game, the players, and
(some of) the rules

Goals of this Unit

- Understanding what is a project, what is the life cycle of a project and how it differs from other types of works
- Understanding the players and the relationships among them
- Understanding the influences organizations exert on project and project executions

What is a project

The name of the game

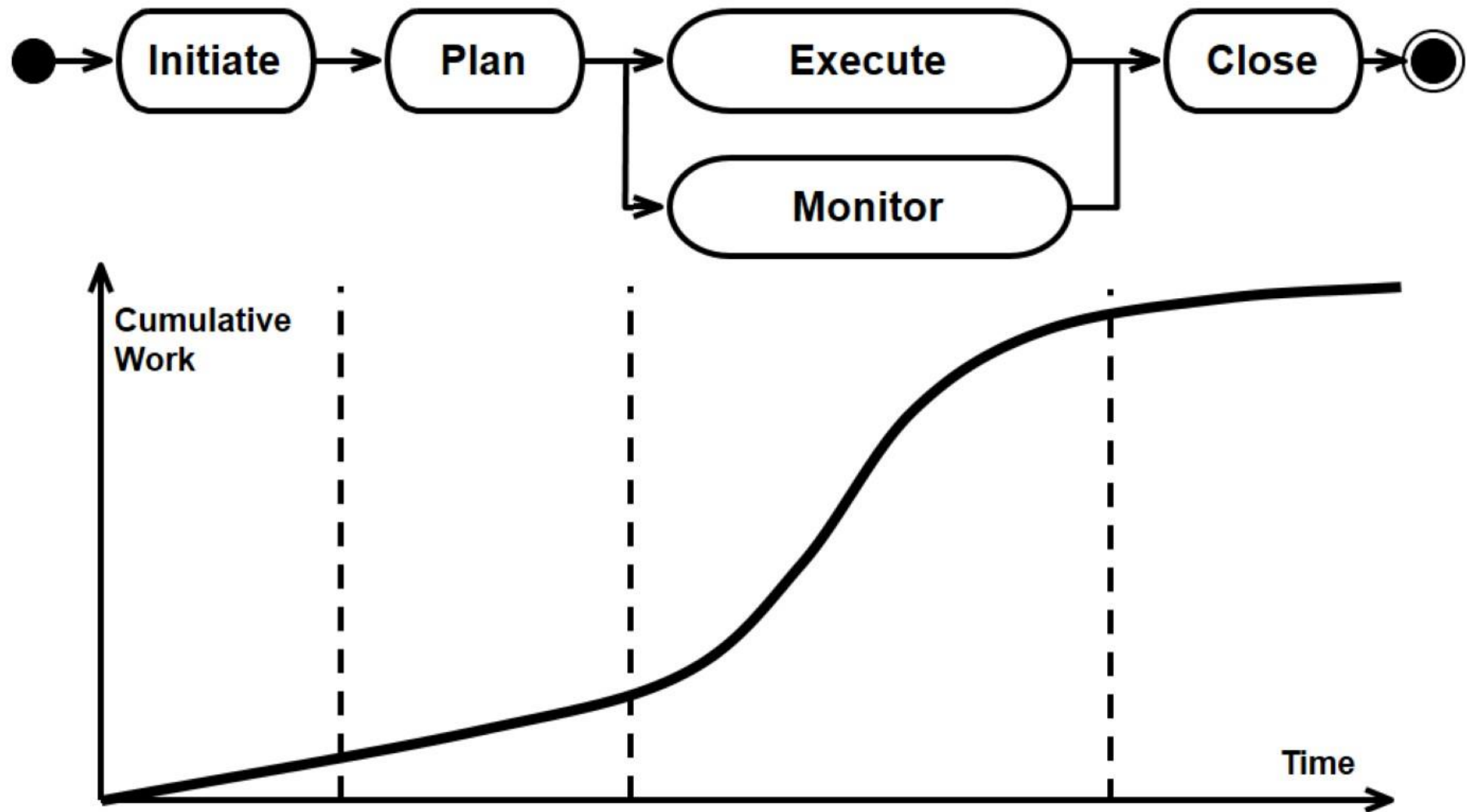
A project is a temporary endeavor undertaken to create a unique product, service, or result

(definition from the PMBOK)

Characteristics of a Project

- Temporary
 - Definitive begin and end (either because the goals are met or the project is closed - goals cannot or will not be met)
 - Projects' results are not necessarily temporary (see project and product lifecycle)
- Unique products, service, or result
 - A product which is quantifiable (e.g. a component, ...)
 - A capability to perform a service, such a business function
 - A result, such as knowledge (collected in documents, presentation, ...)
- Progressive elaboration
 - Development by steps and in increments (necessary to keep a project under scope)
- Resource constrained (like everything else in life)

Progressive Elaboration



Projects and Operational Work

- Work can be categorized either as project or operational
- Common characteristics
 - Performed by people
 - Limited resources
 - Planned, executed, and controlled
- Differences
 - Project: obtain goals and terminate
 - Operational work: sustain the business

Examples (and counterexamples)

- Cooking dinner
- Building a car
- Designing a car
- Developing a software system
- Maintaining a software system
- Managing personnel

Software Development Projects

Some Examples of Software Development
Projects and Operational Work

Type of “Software” Development Projects

- In your life as a project manager you might be involved in different types of “software” development projects, among which:
 - Application Development
 - Process and Systems Re-Engineering
 - System Integration
 - Consulting Services
 - Installation and Training

Application Development

- Goal: developing an application (desktop, web, mobile, embedded)
- The most fun :-)
- Types of application development:
 - **One-offs**: systems specifically created for a client
 - **Off-the-shelf**: to fill the need of a large set of users
 - **Customized off-the-shelf**: standardized systems which require a significant amount of customization to be used in an organization. Example: **Enterprise Resource Planning** (ERP) systems as SAP

Process and Systems Re-Engineering

- Goal: change the way in which the operational work of an organization is carried out to achieve some strategic goal (e.g., improve quality, become more efficient)
- Typically large projects which involve an accurate analysis of the existing situation (“as is”) w.r.t. procedures, systems, infrastructure
- Often the support the introduction of an ERP system and require system and data integration activities

System Integration Services

- Goal: automating the information flow among the systems of an organization
- Types of integration:
 - **Horizontal:** integration of systems performing similar operations
 - **Vertical:** integration of systems automating different steps of a procedure

Other types of Projects

- Consulting Services
 - Typically asked to gain a know-how outside a company's core competence
- Installation and Training Services
 - Services related to the installation or training on specific software systems
 - Remark: also a revenue model in open source development

Projects and their Environment

The players (and you)

A **project stakeholder** is any individual or an organization that is actively involved in a project, or whose interest might be affected (positively or negatively) as a result of project execution or completion.

(PMBOK)

The Players

- Some characteristics:
 - They may have different influence and varying level of responsibility during the project
 - They may play different roles
 - They may have positive or negative influence on the project
 - They may be difficult to identify
 - Their lack of intervention may negatively influence the project (need for identification and involvement)
- Remark: the project manager and the project team **are** project stakeholders, although the term is often used to refer to the “other” stakeholders

Types of Stakeholders

- The project manager
- The project team
- The project sponsor
- The performing organizations
- The partners
- The client
- The “rest”: anyone who might be affected by the project outputs

Key Stakeholders

- Internal:
 - Project team members: the group performing the work
 - Project management team: the members of the team directly involved in project management
- In between:
 - Customer/User: person or organization that will use the results of a project. There may be multiple layers of users
 - Sponsor: person or group providing the financial resources
 - Performing Organization: the organization mostly involved in the project
- External:
 - Influencers: people or groups not directly related to the project who could influence the course of a project

The Project Manager (you)

- **Project Manager**

- Person responsible of managing the project and stakeholders' expectations

- **Some skills**

- Communication and negotiation skills
- A little predisposition to risk
- Goal orientation
- Leadership
- A bit of thinking outside the schemes
- Solid know-how
- Professional correctness
- A lot of common sense
- A bit of style

Organizing the Development of Software Projects

Software Project Management

- **Software project management** is the integration of management techniques to software development.
- The need for such integration has its root in the sixties, in the days of the “**software crisis**”, when practitioners recognized the increasing complexity of delivering software products meeting the specifications

What makes a Software Product?

- An application to keep a list of movies watched
- A double-entry accounting system for home or a small businesses
- A web service to manage the reservations of squash courts in a squash club
- A system to plan the resources of a big corporation
- An automated breaking system for a train
- What components and artifacts is it made of?
- What could be the effects in case of failure?
- What kind of competences are required for its development?
- What is the associated business model?

Software Development Framework

- A general software project management framework is meant to:
 - Form a shared vision about the goals to be achieved, the characteristics of the project outputs, and the characteristics of the development process
 - Structure the work as a progressive refinement, from specification to goals
 - Reduce the impact of uncertainties and unknowns
 - Highlight any deviation from the plan (goals, costs, quality)
 - Ensure the coherency and quality of the project artifacts over time and in spite of unknowns and (request for) changes
 - Motivate your team

Some Concerns

- Feasibility Assessment
- Goals (Scope) Management
- Time Management
- Cost Management
- Change Control and Configuration Management
- Quality Management
- Risk Management
- Human Resource Management

Our Road Map:

