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

Initiate → Plan → Execute → Close

Monitor

Cumulative Work

Time
Project Management Context

• **Subprojects**
  – Projects may be divided in subprojects (although the subprojects may be referred to as “projects” and managed as such)

• **Project and Program Management**
  – Set of related projects managed in a coordinated way in order to achieve some sort of benefit

• **Portfolios and Portfolio Management**
  – Collection of unrelated projects or programs and other work grouped together to facilitate management and meet strategic objectives
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
- Writing a paper
- 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
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
Stakeholder Identification Exercise

• Identify the stakeholders of the following projects:
  – A project to build a bridge connecting an island to the mainland
  – A project to build a landfill (dumping ground)
  – A project to build an open source spreadsheet
  – A project to build a web-application to monitor one’s weight
  – A project to port OpenOffice (a free Office suite) to Android
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