Project Management Overview

ISQA 8210

Project Management Overview

- Software development efforts are **projects**
- Management of software development is **project management**

Let's get to know these terms better!

What is Management?

- "The process of designing and maintaining an environment in which individuals, working together in groups, accomplish selected aims."
  - Managerial functions are performed by all managers, regardless of their level in the organization or the type of organization they are in.
  - Managers need to perform similar functions, regardless of whether they manage accounting or software development.
  - The key is the details! The practices deployed by managers to perform functions vary greatly, depending on the organization, the people, the task, the resources available, and the manager's personality.
  - What varies is the practice or method by which the managers perform their functions.

Weihrich, H. "Management Science, Theory, and Practice," In Software Engineering Project Management, (editor: Thayer, R.), 2000, p. 4.

General Management Functions

- **Planning**: Specifying a course of action to accomplish objectives (these objectives may be set by the manager or a higher-level manager)
- **Organizing**: Arranging the relationships among work units to accomplish objectives and granting responsibility and authority to obtain those objectives
- **Leading**: Creating an atmosphere that will assist and motivate people to achieve desired results
- **Staffing**: Selecting and training people for positions
- **Controlling**: Establishing, measuring, and evaluating the performance of activities toward planned objectives

Thayer, R., Software Engineering Project Management, IEEE Computer Society, 2000.

Managerial Goals

- **Create a surplus**: Establish an environment where people can accomplish group goals with the least amount of time, money, materials, and personal dissatisfaction
- **Productivity**: Output/Input per unit of time, given constant quality.
  - Peter Drucker stated that one can increase productivity by using knowledge, looking within work itself, and in management
- **Effectiveness**: Meeting goals
- **Efficiency**: Achieving goals with minimal resources

Weihrich, H. "Management Science, Theory, and Practice," In Software Engineering Project Management, (editor: Thayer, R.), 2000, p. 4.

What is Project Management?

- "A project is a temporary endeavor undertaken to create a unique product, service, or result"
  - Project Management Body of Knowledge (PMBOK)
- "A project is a combination of human and nonhuman sources pulled together in a temporary organization to achieve a specified purpose."
  - Cleland & Kerzner, 1985
- Based on these definitions, are you a project manager?
- Based on these definitions, is this course a project?

Project Constraints

Three project constraints are key to measuring project success:

- **Scope** (i.e., functionality) – Boundaries of a project based on quality, functionality, and what is necessary to achieve the objectives
- **Time** – Boundaries of a project based on time needed to complete the objectives
- **Cost** – Boundaries of a project based on money available to complete the objectives

I can give you two out of three!

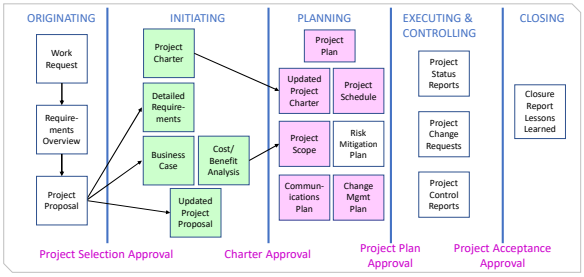
Project Characteristics

- **Unique** – unique in objective, people, technology, definition of success and failure
- **Temporary** – definite start and end
- **Requires resources** (possibly from multiple areas) – constraints include people, time, and money. Without constraints, there's little need to manage
- **Primary Sponsor** – instills performance criteria
- **Uncertainty** – risk is involved regarding work required, method, duration, and costs
- **Cross-functional Teams** – typically have people working across organizational functions
- **Manager has no formal, permanent authority over team members**
- **Potential for miscommunication, conflict, and changing priorities**

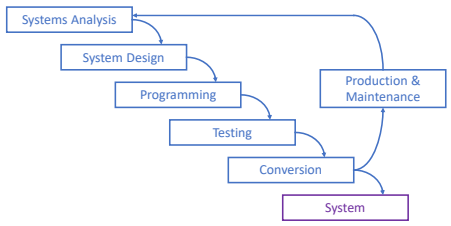
PMI Project Management Core Areas

- **Scope** – defining and managing all the work required to successfully complete the project
- **Time** – estimating how long it will take to complete the work, developing an acceptable project schedule, and ensuring timely completion of the project
- **Cost** – preparing and managing the project budget
- **Quality** – ensuring the project will satisfy the stated or implied needs for which it was undertaken
- **Human Resource** – making effective use of the people involved
- **Communications** – generating, collecting, disseminating, and storing project information
- **Risk** –identifying, analyzing, and responding to project risks
- **Procurement** – acquiring goods and services that are needed from outside the performing organization

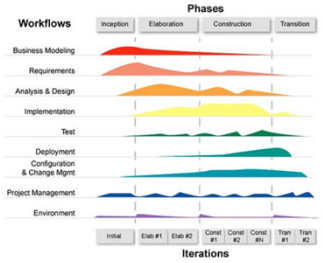
Originating & Initiating a Traditional Project



Software Projects – Waterfall Method



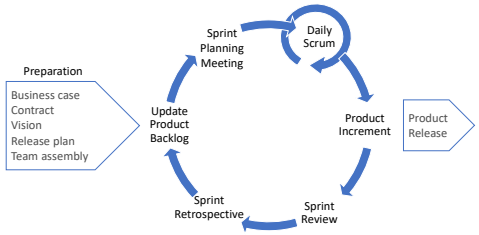
Software Projects – Rational Unified Process



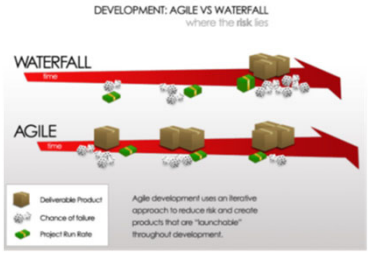
Software Projects – Rational Unified Process

- Defined in 1997 by Grady Booch, Ivar Jacobson and James Rumbaugh
- The RUP was designed to support the Unified Modeling Language and object-oriented development
- The RUP shows the intersection of **phases** and **workflows**:
  - The phases describe how an information system evolves through time.
  - The workflows describe the tasks or activities that a developer performs to evolve an information system over time.
- Recognized to be particularly applicable to large projects with large teams

Software Projects – Agile Development



Software Projects
Waterfall Vs. Agile



Thycotic Software Ltd.

Software Projects:
The Need for Project Management

TRADITIONAL RESOLUTION FOR ALL PROJECTS

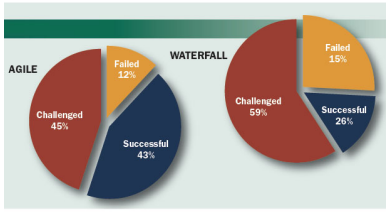
	2011	2012	2013	2014	2015
SUCCESSFUL	39%	37%	41%	36%	36%
CHALLENGED	39%	46%	40%	47%	45%
FAILED	22%	17%	19%	17%	19%

The Traditional resolution of all software projects from FY2011–2015 within the new CHAOS database.

- Successful: on time and within budget
- Challenged: late or over budget or not meeting requirements
- Failed: were not completed or were rejected by customer

The Standish Group, 2015

Software Projects:
The Need for Project Management



The Standish Group, 2020

Software Projects:
The Need for Project Management

- The Waterfall Methodology is not actually a bad approach. It just is not always the best approach for today's systems.

> "Design is not so much about the end product as it is about the process. This is especially true for design in the world of the Web, where you can't even talk about the design of an immutable, static object. Instead, you focus on sequential, ongoing activities -- a series of interactions and experiences.

Clement Mok, Chief Creative Officer, Sapient Corp., San Francisco, CA
Quoted in Muoio & McCauley, 1999

Critical Success & Failure Factors

Successful IT Projects	Challenged IT Projects	Failed IT Projects
User Involvement	Lack of User Input	Incomplete Requirements
Executive Management Support	Incomplete Requirements & Specifications	Lack of User Involvement
Clear Requirements Statement	Changing Requirements & Specifications	Lack of Resources
Proper Planning	Lack of Executive Support	Unrealistic Expectations
Realistic Expectations	Technical Incompetence	Lack of Executive Support

The Standish Group, 2020