Software Process and Management

Lecture 1

Introduction to Software Project Management

Content

- Introduction to software project management
- Software development approaches and models
- Software cost estimation
- Software size and effort estimation
- Software project and activity planning
- Software risk management
- Resource allocation
- Software metrics
- Software quality
- Performance tracking and reporting
- Software project configuration management
- Software project team management

Introduction of Each Student

- What is your name?
- What do you want to be in the future?
- What is your selling point?
- What do you expect from this lecture?

Software Project

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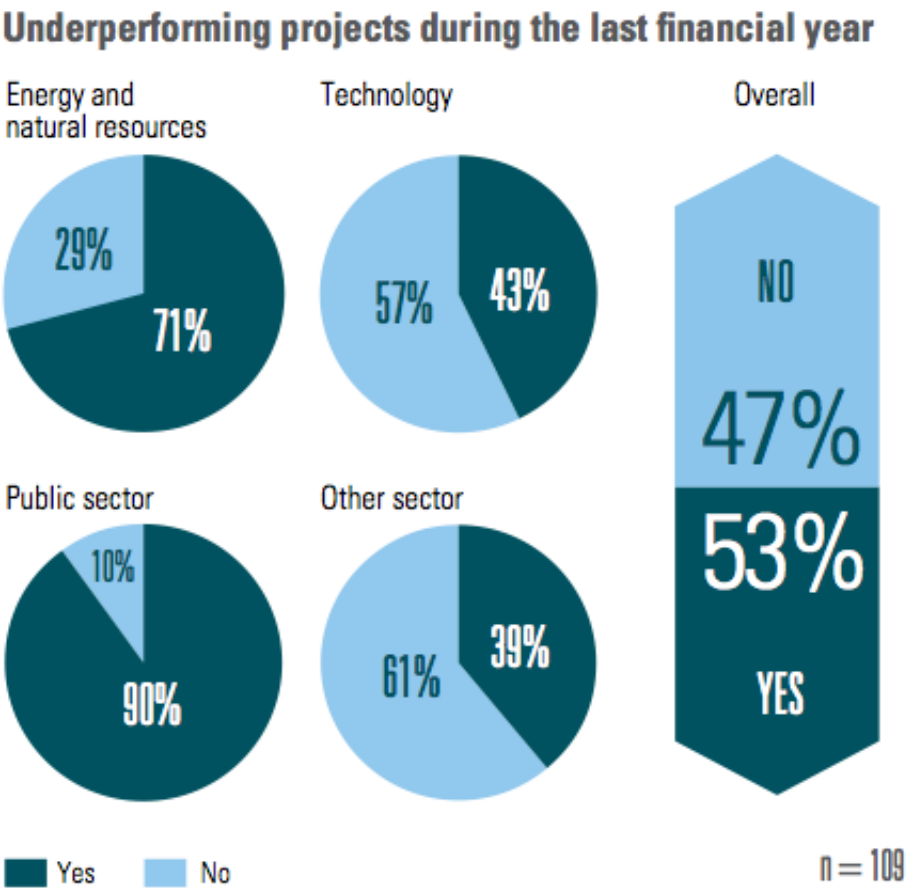
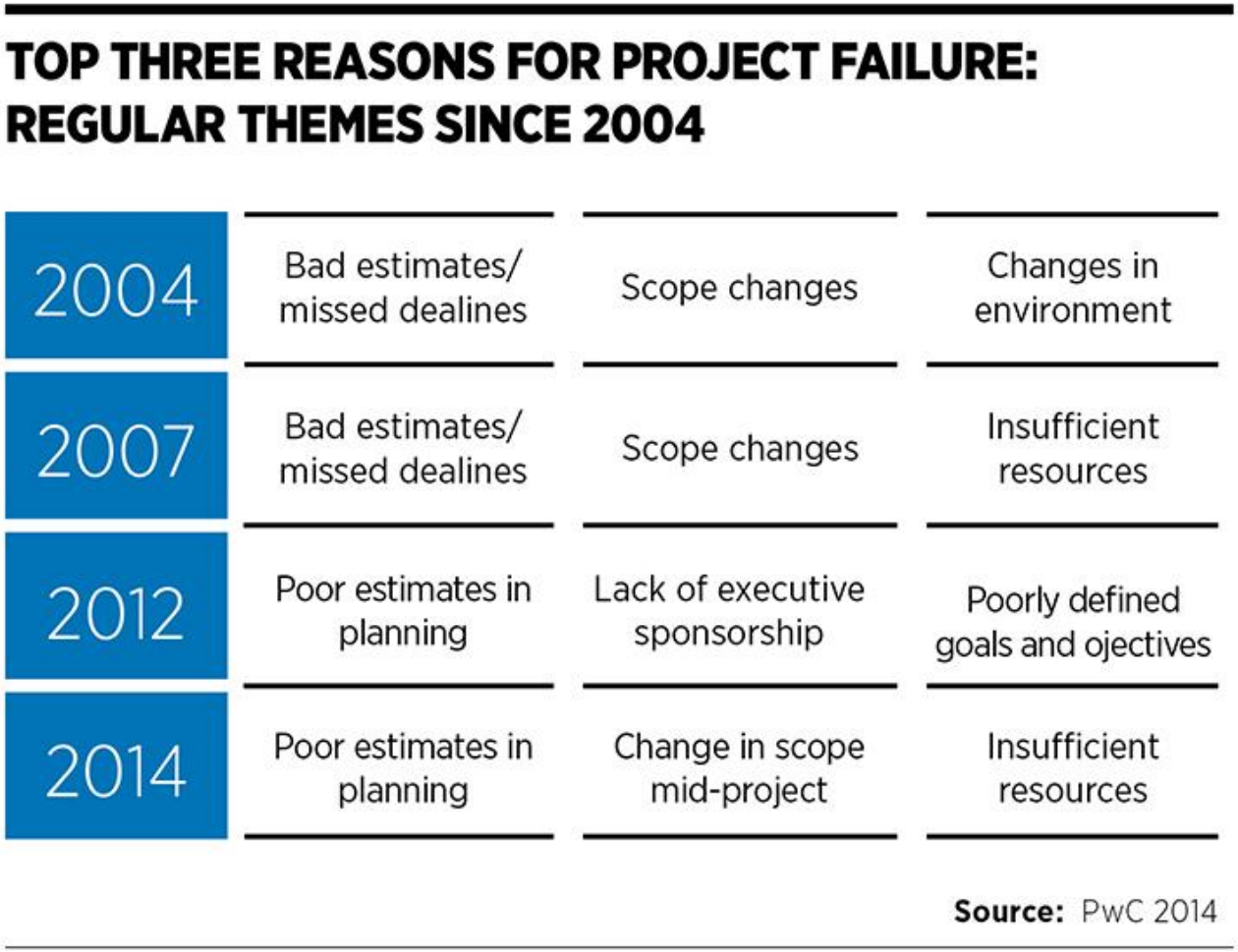
Software Project Management

Why do projects fail?



Source: KPMG International, 2015

Reasons for Project Failure

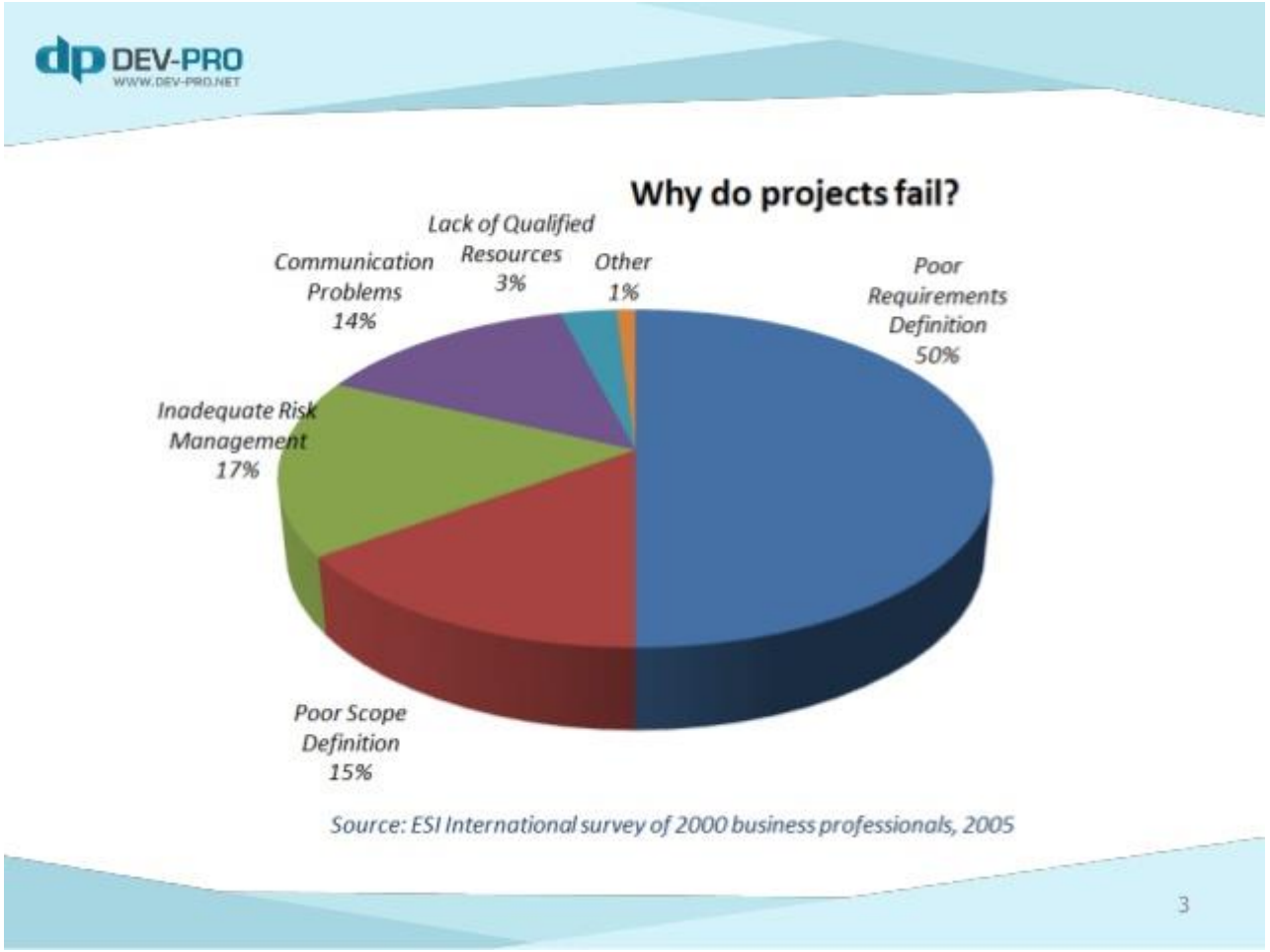


TOP THREE REASONS FOR PROJECT FAILURE: REGULAR THEMES SINCE 2004

2004	Bad estimates/ missed dealines	Scope changes	Changes in environment
2007	Bad estimates/ missed dealines	Scope changes	Insufficient resources
2012	Poor estimates in planning	Lack of executive sponsorship	Poorly defined goals and ojectives
2014	Poor estimates in planning	Change in scope mid-project	Insufficient resources

Source: PwC 2014

Reasons for Project Fail



Software Project Management Importance

- Who could be interested?

This course could be for students of software engineering, computer science and business information systems.

- Why is it important to be familiar with project management?
  - A lot of money is at stake with ICT projects.

    e.g. In UK in 2002-2003 more money was spent on contracts for ICT projects than contracts related to roads(2.3 billion as opposed to 1.4 billion).
  - Mismanagement of ICT projects means less money will be left to spend on important things such as hospitals.

Why is Software project Management Important (continued)

- Projects are not always successful.
  - A repot published in 2003,The Standish Group in US analyzed 13,522 projects and found:
    - Only a third of projects were successful.
    - 82% of the projects were late.
    - 43% exceeded their budget.
    - The reason for these shortcomings is often the management of these projects.

What is a Project?

- A planned Activity.
- Planning is thinking carefully about something before you do it.
- Even in routine jobs that don’t need much planning you should have the documentation that details all the steps involved.

Characteristics of a Project

- The Following Characteristics Distinguish Projects:
  - Non-routine tasks are involved
  - A planned activity
  - Specific objectives to be met or products to be created.
  - Work is carried out for someone other than yourself.
  - Work to be carried out in several phases.
  - Work involves several specialisms.
  - People are formed into a temporary work group to carry out the task.
  - Limited resources.
  - Deadline.
  - Large or complex

From the project management perspective, A project that employs 20 developers is likely to be more difficult than one with 10 developers. Why?

Arguments about a Project

Some Argue that:

- A project's advantage comes from the group of different specialists focusing on a single important task

But could also be viewed as problematic because:

- It is a temporary sub-organization
- It cuts across the authority of the existing units of the organization.
- Expertise built up during the project is dispersed at the end of the project.

Software Project Versus other Projects

- **Invisibility:** progress in software is not immediately visible.
- **Complexity:** per dollar, pound or euro spent, software products contain more complexity than other engineered artifacts.
- **Conformity:** software developers have to conform to the requirements of human clients. Humans can be inconsistent.
- **Flexibility:** the software is easy to change which is considered a strength. Usually, a software that will interface with a physical or organizational system, is expected to change to accommodate the system not the opposite.

Activities Covered by Software Project Management

Three successive processes are involved to bring a new system into being:

1. **Feasibility Study** - is the project worth doing?
   - will benefits exceed the cost of development and operation??

2. **Planning for the Project**– how do we do it?
   - An outline plan for the whole project.
   - A detailed plan for earlier stages.
   - Planning for later stages near their start.

Activities Covered by Software Project Management (continued)

3. **Project Execution** – do it.
   - Design.
   - Implementation.

what is the difference between design and planning?

Categorizing Software Projects

1. Compulsory versus voluntary users.

There are systems where their users have to use, for instance recording a sale (e.g. Sales system).

There are other systems that their use is voluntary (e.g. Computer game).

2. Information system versus embedded system.

Information system: allows staff to carry out office processes.(e.g. Stock control system).

Embedded systems or process control systems: systems which controls machines (e.g. operating system).

Categorizing Software Projects (Continued)

both: some systems could have elements of both e.g. stock control system, it could also be controlling an automated data warehouse.

3. Objectives versus products.

Product-driven project:

- a project will be to create a product.
- The details of the product is provided by the client.

Objective-driven project:

- A project is to meet an objective.
- The Client may have a problem and asks a specialist to recommend solutions.

Stakeholders

Stakeholders: are people who have stake or interest in the project.

They could be:

- Internal to the project team.
- External to the project team but still in the organization.
- External to both the project team and the organization.

Project Objectives

- Objectives should define what the project team must achieve for project success.
- Objectives should identify the shared intentions for the project based on the stakeholders requirements.
- Objectives focus on the desired outcomes rather than the tasks to take it.

Project Objectives (continued)

The mnemonic SMART is used to describe well-defined objectives:

- S: Specific.
- M: Measurable.
- A: Achievable.
- R: Relevant.
- T: Time constrained.

Project Success and Failure

Project Success:

- Delivered on time.
- Within budget.
- With the agreed on functionality.
- With a certain level of quality.

Business Success:

Benefits (value) exceeds the costs (development and operational).

Project success highly affects the business success.

Is it possible to have a project success and then a business failure?? And how about the opposite?

What is Management?

Management involves the following activities:

- Planning – deciding what is to be done.
- Organizing – making arrangements.
- Staffing – selecting the right people for the job.
- Innovating – coming up with new solutions.
- Directing – giving instructions.
- Monitoring – checking on progress.
- Liaising - act between parties with a view to reconciling differences.
- …?

What is Software Project Management?

To perform Software Project Management you have to:

- Understand the characteristics of a Software product.
- Understand the characteristics of a Project.
- Understand what is meant by Management.

Software project management is the art and science of planning and leading software projects. It is a sub-discipline of project management in which software projects are planned, monitored and controlled.

Assignment

- Students are grouped based on the group formed in Final Project/Workshop
- Students will be asked to make a report of their Final Project/Workshop based on Software Project Management
- The report should be submitted before the final exam. The submission of the report is a requirement of the final exam.