Project management

Jana Kostičová, 29.11.2023

What is project management?

Project

“A temporary venture that exists to produce a defined outcome that leads to the achievement of intended benefits (value)” *(Axelos / PRINCE2®)*

Project types

- SW / IT projects - include SW development
- ! But also construction projects, engineering projects, transport projects, research projects, ….
- ! But also personal projects (e.g., writing a master thesis)

Project management

“The discipline of applying specific processes and principles to initiate, plan, execute and manage the way that new initiatives or changes are implemented within an organization.” *(Axelos / PRINCE2®)*

SW / IT projects

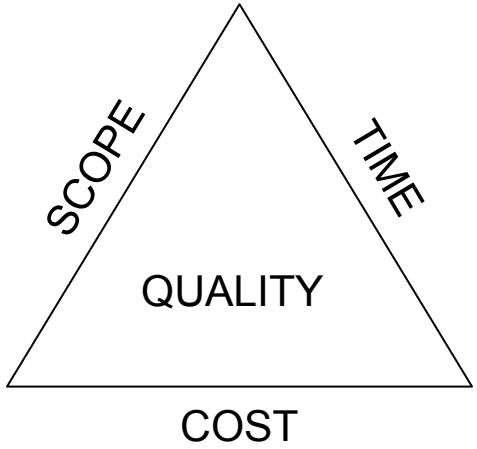
“New” project type (~100 years of IT vs thousands years of e.g., construction)

+ IT projects often take place in a dynamic environment - they must quickly adapt to innovations and rapid technological changes

Common problems

- Unclear project visions and business goals
- Too ambitious scope with respect to the resources and deadlines
- Insufficient requirements traceability
- Inadequate planning and poor risk management
- Poor communication (both internal and external)
- …

Project management triangle



- Three constraints of the quality of work
- The project manager can trade between constraints
- Changes in one constraint necessitate changes in others to compensate or quality will suffer

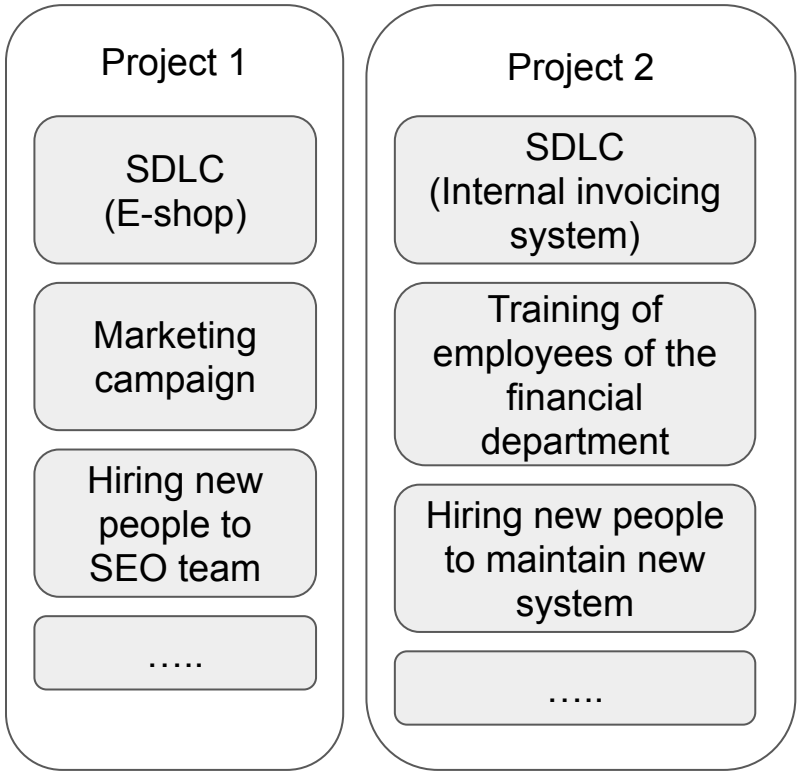
Project vs process

Software development process (also known as SDLC)

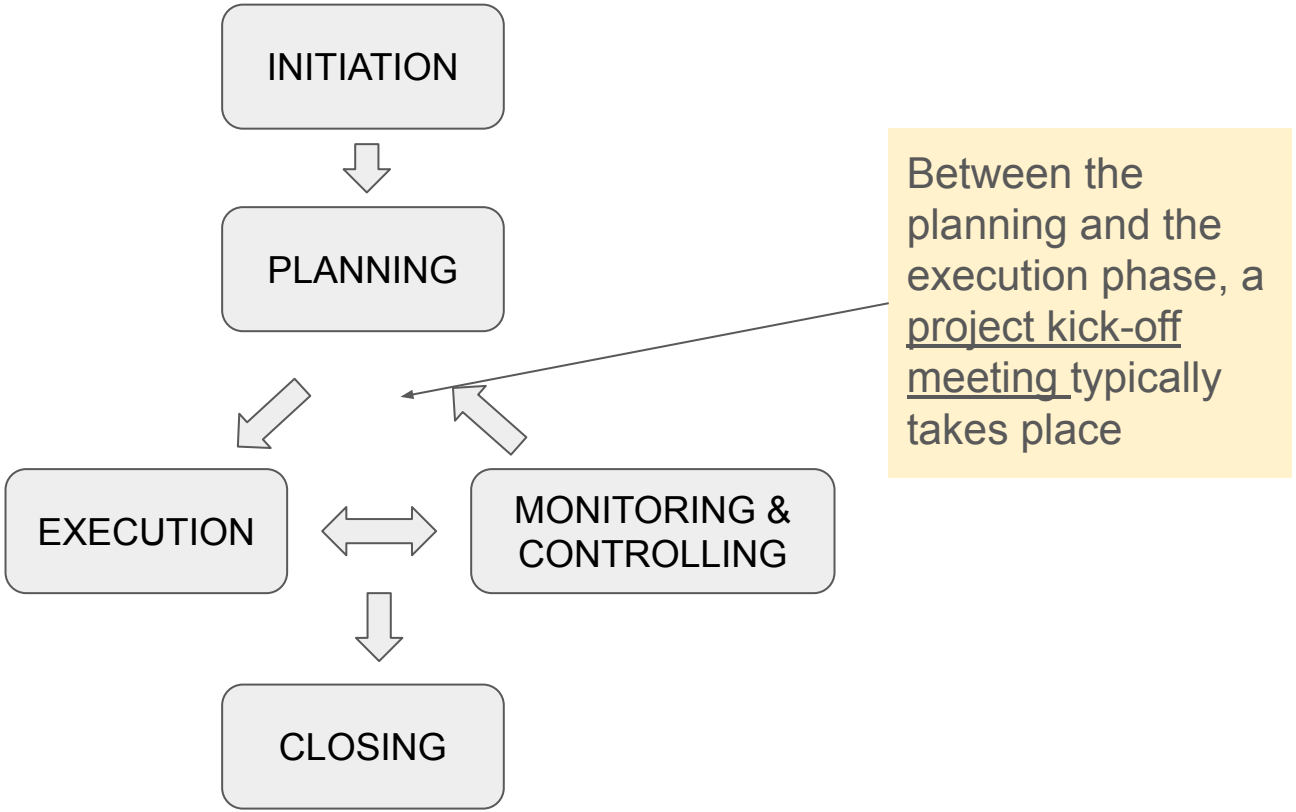
- A structured set of activities that aims to design, create, test, and maintain software and systems
- The process is applied repeatedly during different projects (although various methodologies can be used)

SW / IT project

- One-time, temporary organisational activity
- Typically broader initiative, may have various goals, requirements, and deliverables beyond just creating software
- Includes also (a part of) SDLC in some form - depending on the chosen methodologies



Project lifecycle



Project lifecycle vs SDLC

- Business analysis (BA) overlaps with project initiation
  - BA is rather a continuous activity within the organization and at some moments specific projects are initiated based on the results of BA
- Requirements phase typically starts already during project initiation and continues throughout planning and execution
  - Different people may be responsible for different levels of requirements
- Design & architecture, implementation, verification & validation phases typically fall under project execution
  - Some work can be done earlier, i.e. in feasibility studies
- Maintenance is typically covered by separate project(s)

Project initiation

- An initial document is created that authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities

- Form of the initial document:
  - Project Initiation Document (PID)
  - Project Charter
  - …
- Supporting documents:
  - Business Case
  - Cost and benefits analysis
  - Feasibility studies
  - …

PID is more detailed than Project charter

Project charter - typical content (example)

- Project title and description
- Project manager, project sponsor + other key stakeholders
- Project purpose
- Project scope and business requirements (goals)
- Risks, constraints, assumptions, dependencies
- High-level timeline & budget
- Project success criteria
- Approval and sign-off

Project planning

Project plan

"...a statement of how and when a project's objectives are to be achieved, by showing the major products, milestones, activities and resources required on the project." (PRINCE2)

It typically contains

- Scope statement
- Task identification
- Project schedule
- Budget
- Risk management plan
- Quality plan
- ….

Traditionally, the planning was done only once for the entire project. However, iterative approaches enter the planning phase more than once.

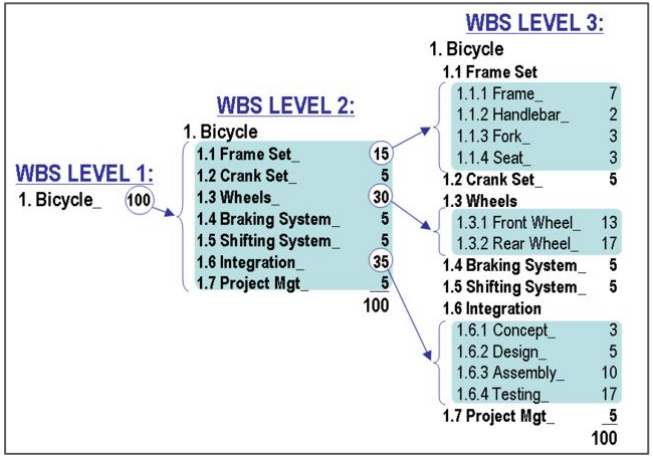
Project planning - methods

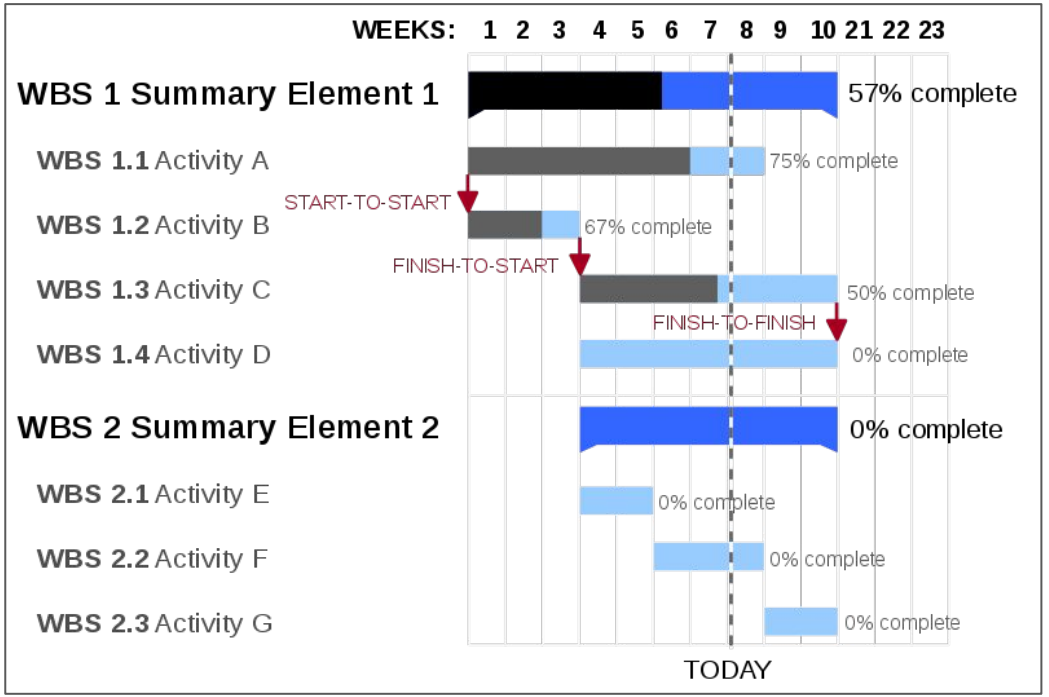
Work Breakdown Structure (WBS)

- Task identification

Gantt charts

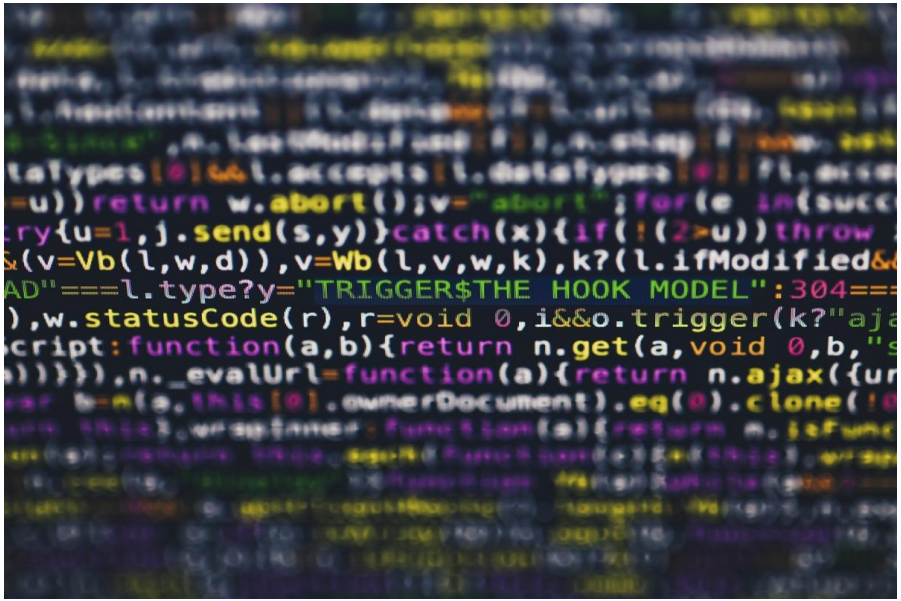
- Project schedule, dependencies, current status





Project execution

- It usually starts with a kick-off project meeting
- **Direct work:**
  - The project team starts actively working on project tasks and activities as defined in the project plan
- **Reporting:**
  - Progress reports, status updates, and other relevant information are shared with stakeholders
- **Quality Assurance:**
  - Quality control measures are implemented



Project monitoring and controlling

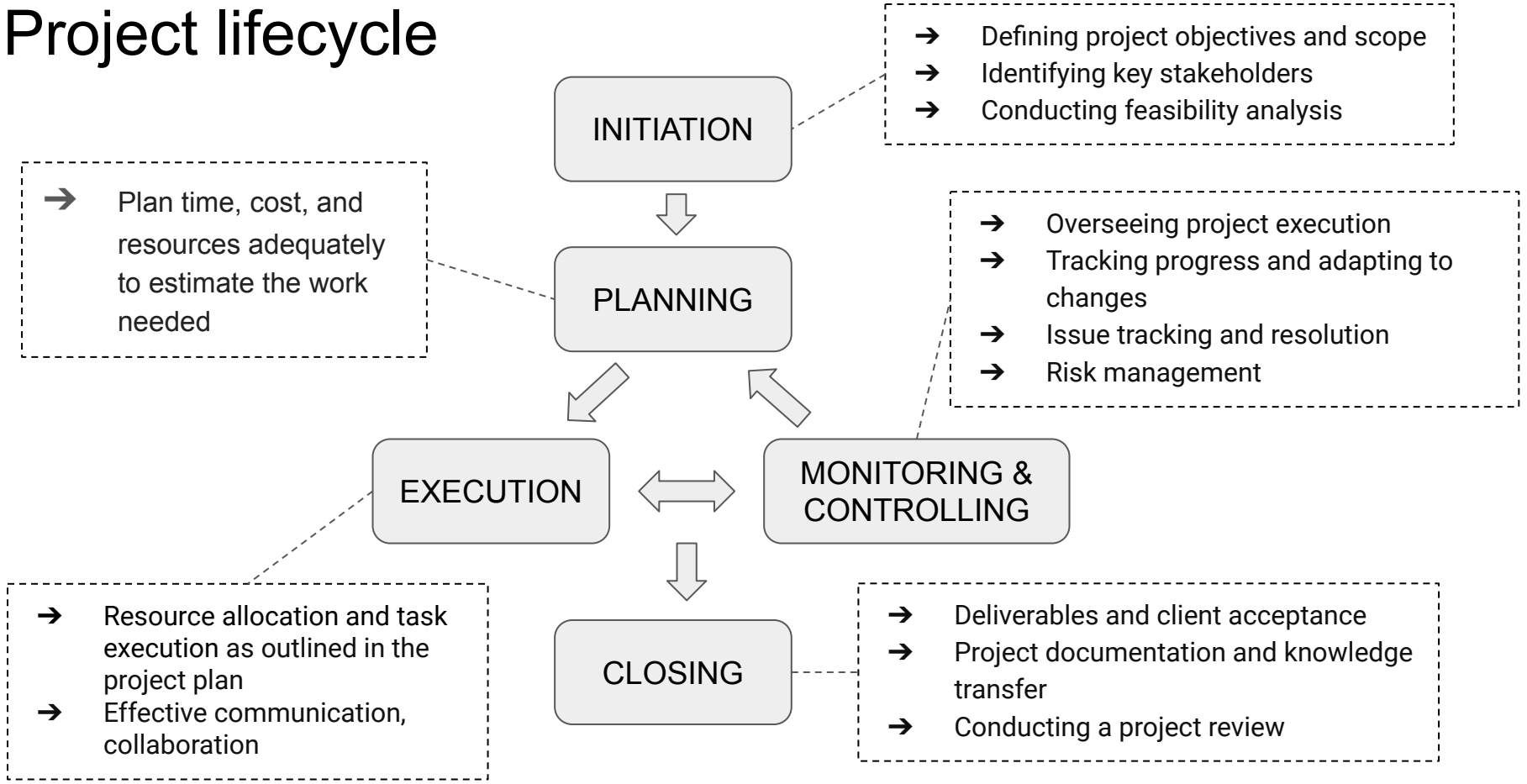
- Occurs concurrently with the Execution phase
- Iterative phase

- Performance monitoring
  - Monitor and measure project performance against the baseline established in the project plan
- Quality / schedule / cost control
- Risk management
  - Monitor identified risks, identify new risks, apply mitigation strategies
- Issue resolution
  - Identify and resolve issues or conflicts that may hinder project progress
  - Escalate issues to higher levels of management if necessary
- Change management
  - Assess and manage changes to the project scope or other aspects

Project closing

- Final Deliverable Acceptance:
  - Ensure that all project deliverables have been completed and meet the acceptance criteria defined in the project plan.
  - Obtain formal acceptance from the project stakeholders.
- Closure of projects contracts
- Knowledge Transfer:
  - Document and transfer knowledge gained during the project to relevant individuals or teams within the organization.
- Post-Implementation Review:
  - Evaluate the project's overall performance against the original goals and objectives.
  - Assess the success criteria and identify areas for improvement.

Project lifecycle



Project manager role

- Project manager is typically assigned to the project at the beginning of the initiation phase
- Responsible for all phases of the project lifecycle
- In some organizations, project manager can serve also as a people manager
  - Project manager serves as the direct line manager of the project team members
  - E.g. in case of projectized organizational structure

Software tools for project management

- MS Project
- Jira
- Trello
- Asana
- Smartsheet
- …

Some of them provide issue tracking directly, other support integration with issue tracking SW

Version control systems help a lot

- Git + web based platforms such as GitHub, Bitbucket

Methodologies

Traditional / sequential methodologies

- Waterfall
- Critical Path Method (CPM)

PMBOK (by Project Management Institute)

- A set of standards

Agile approaches

- Pure Agile
- Scrum
- Kanban
- Extreme Programming (XP)
- Feature-driven development
- SAFe (Scaled Agile Framework)
- …

Process oriented

- Lean management
- Six sigma
- …

Other

- Prince2 (Projects IN Controlled Environments)
- …

Resources and further reading

- Axelos (Certification PRINCE2): What is Project Management?
- Wikipedia - Project Management
- Wikipedia - Project Management Triangle
- Wikipedia - Work Breakdown Structure
- Wikipedia - Gantt chart