Software Engineering Essentials

Project Organization

Bernd Bruegge, Stephan Krusche, Andreas Seitz, Jan Knobloch
Chair for Applied Software Engineering — Faculty of Informatics

Learning goals

1) Explain the terms project, role, task, team
2) Remember the most important activities in software engineering
3) Explain the differences of the main organization forms

Project

A project is an undertaking, limited in time, with a clear goal and a specific budget, requiring a concerted effort

It consists of

- Start date and duration
- Deliverables
- Schedule
- Technical and managerial activities
- Resources

Project management

Project Management is a collection of techniques, methodologies, tools and heuristics that support the development of

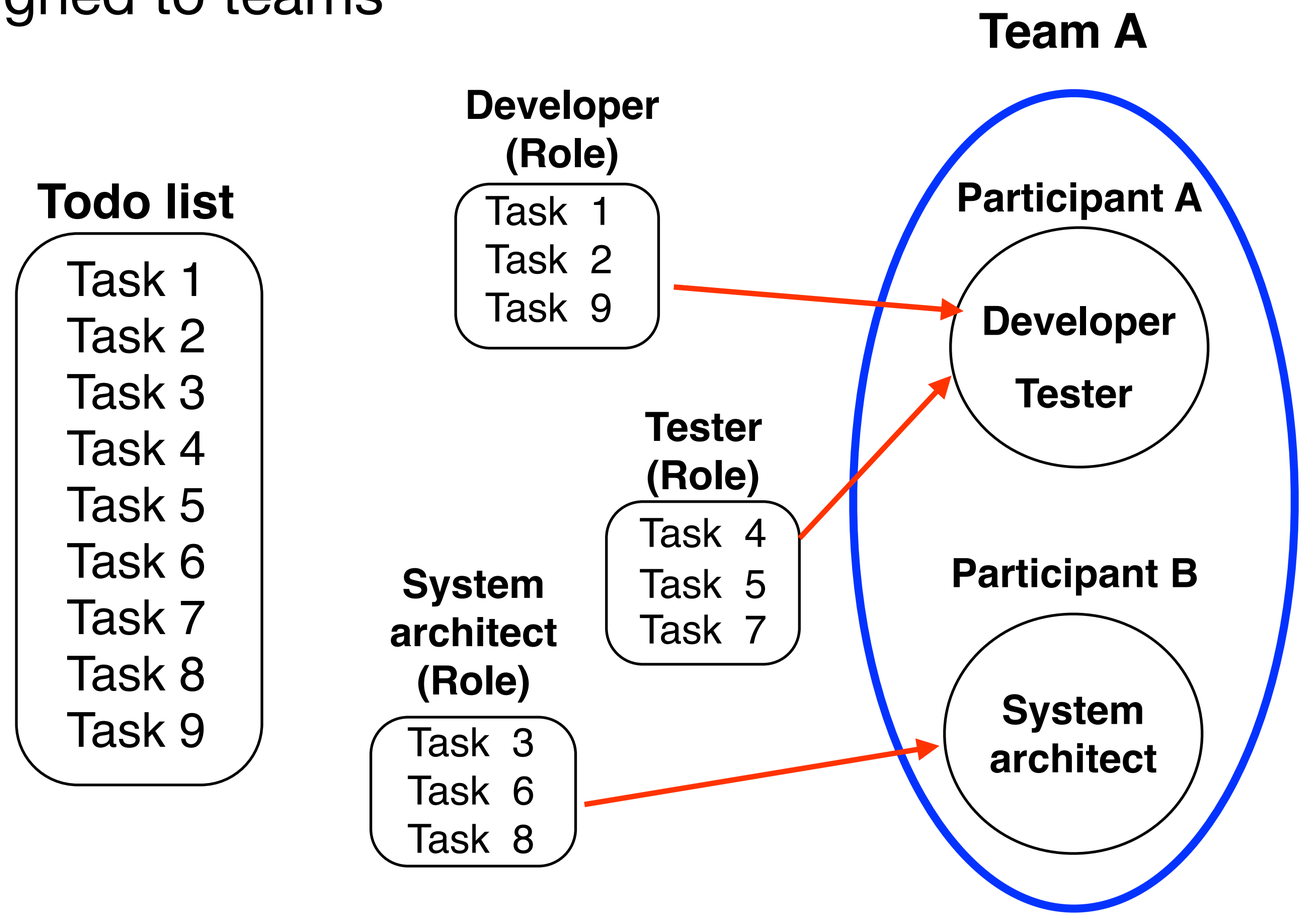
- A **high quality software** system
- With a given **budget**
- Before a given **deadline**
- **While change occurs**

A project is managed by a **project manager**

- Administers the resources and team members
- Makes sure the project goals are met

Roles, responsibilities and teams

- Responsibilities (e.g. specific tasks) are assigned to roles
- Roles are assigned to people
- People are assigned to teams



Tasks and activities

A **task** describes the smallest amount of work tracked by the project manager

- Typically 2-10 working days effort
- Tasks are associated with a role, have a start date, duration and relate to a work product

An **activity** is a major unit of work and culminates in a project milestone:

- Scheduled event used to visualize/measure progress
- Visible to the customer
- Usually produces a deliverable

Examples of activities in software projects

- Planning
- Requirements elicitation
- Analysis
- System design
- Software configuration management
- Detailed design (object design)
- Implementation
- Testing
- Delivery
- Maintenance

Project functions: some of these activities span the duration of a project, e.g. software configuration management

Activities

Activities are shown in rounded rectangles, always formulated in the active form **“verb <object>”**, e.g.

- plan project
- elicit requirements
- analyze problem
- design system
- manage software configuration
- design objects
- implement software
- test software
- deliver software
- maintain software

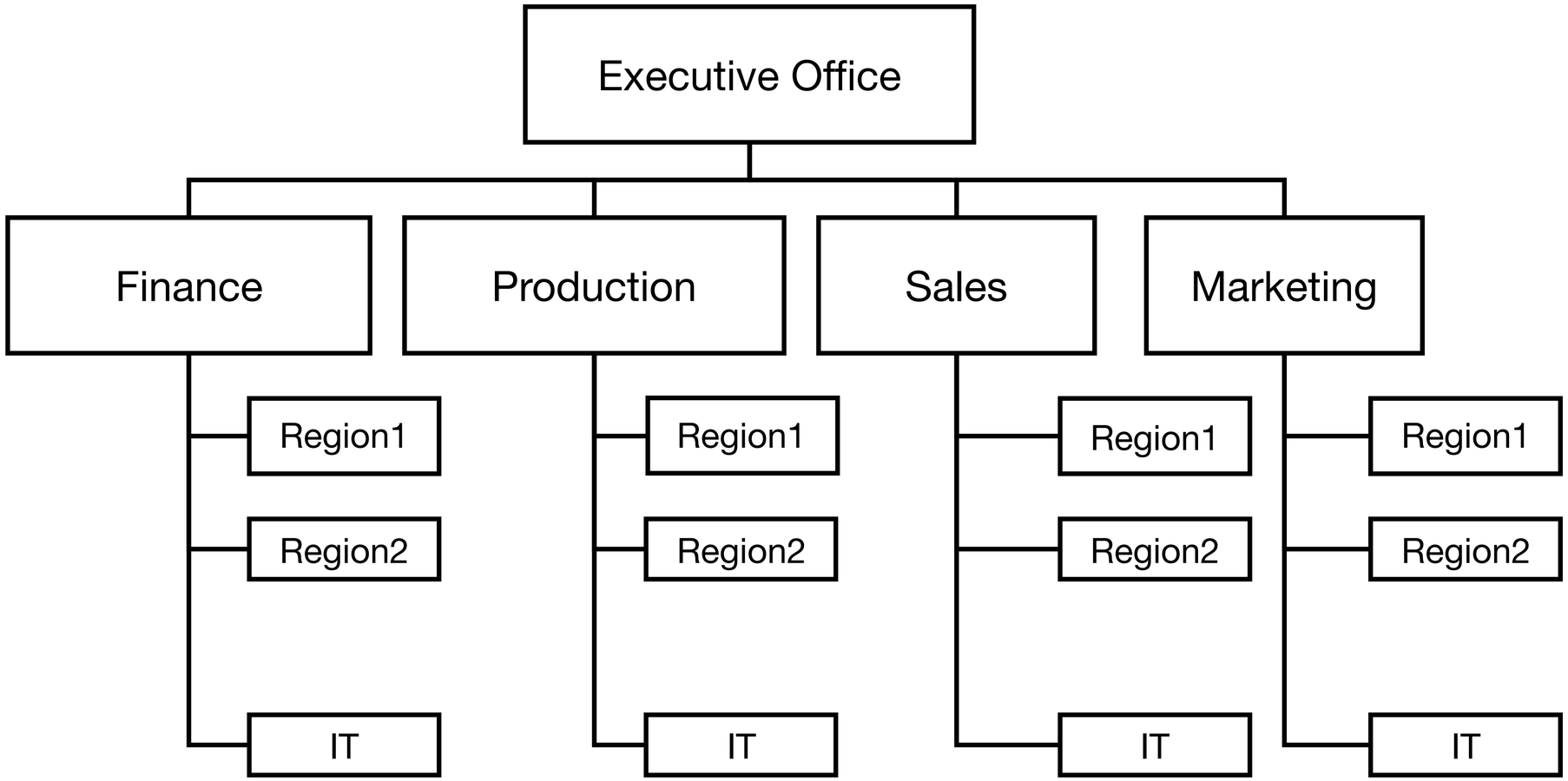
Organization forms

1) Functional organization: people are grouped into departments, each of which addresses an activity (“function”)

2) Project-based organization: people are assigned to a project, each of which has a problem to be solved in a certain time within a given budget

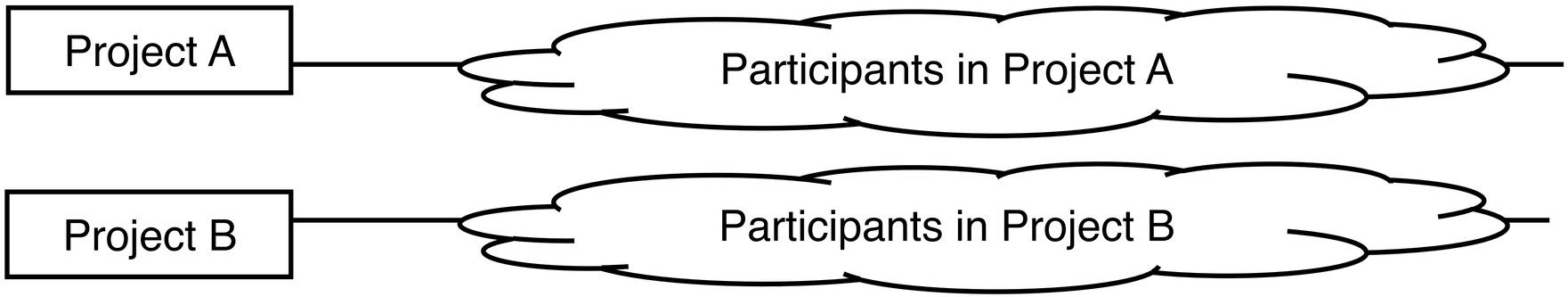
3) Matrix organization: people from different departments of a functional organization are assigned to work on one or more projects

Example of functional organization



➡ Also called line organization

Properties of project-based organizations



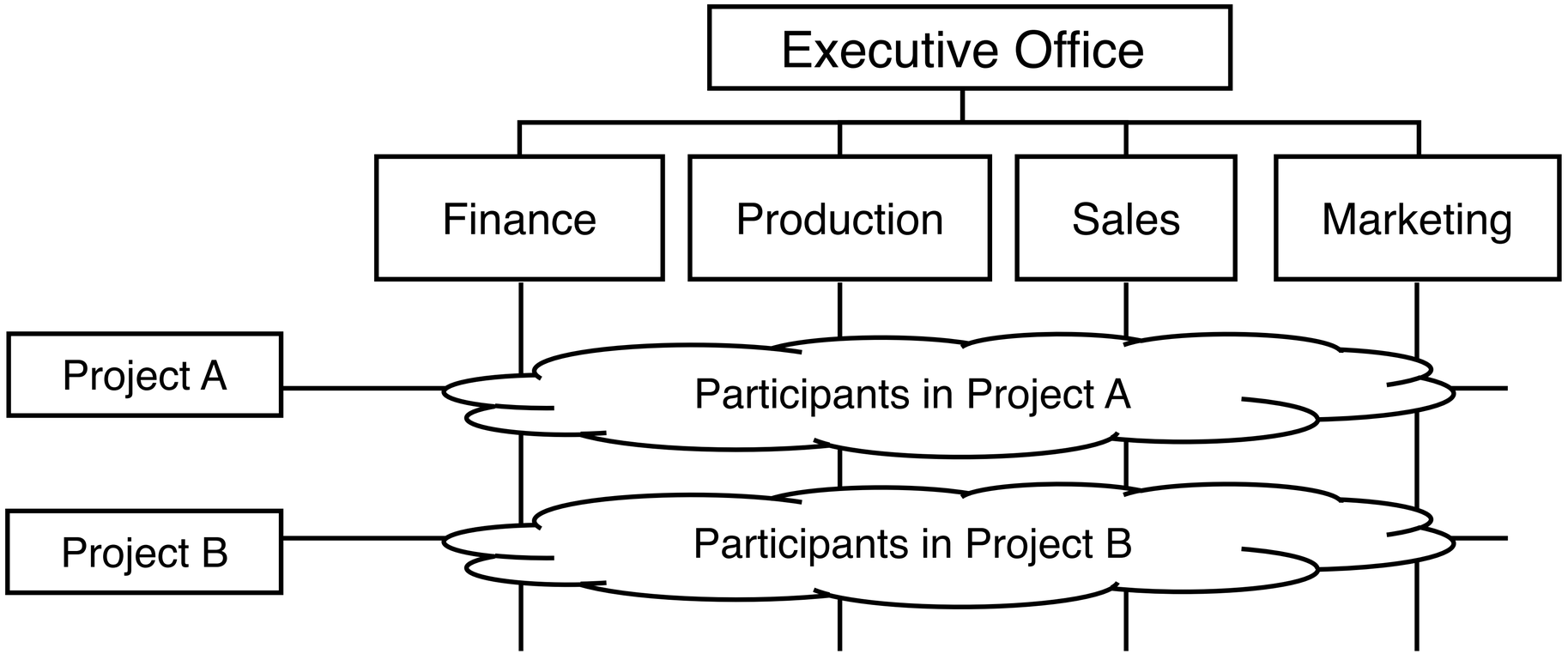
Advantages

- Responsive to new requirements
- New people can be hired
- There is no idle time for the project members

Disadvantages

- Teams cannot be assembled rapidly
- Roles and responsibilities need to be defined at the beginning of each project

Example of a matrix organization



➡ Disadvantages: double boss problem

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