Project planning and management

S-72.124 Product Development of Telecommunication Systems

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Lecture content

- Project – what is it?

- Project life-cycle

- Project planning

- Project management

- Appropriate project management methods for each project type

Project definition

A project is a sequence of unique, complex, and connected activities having one goal or purpose and that must be completed by
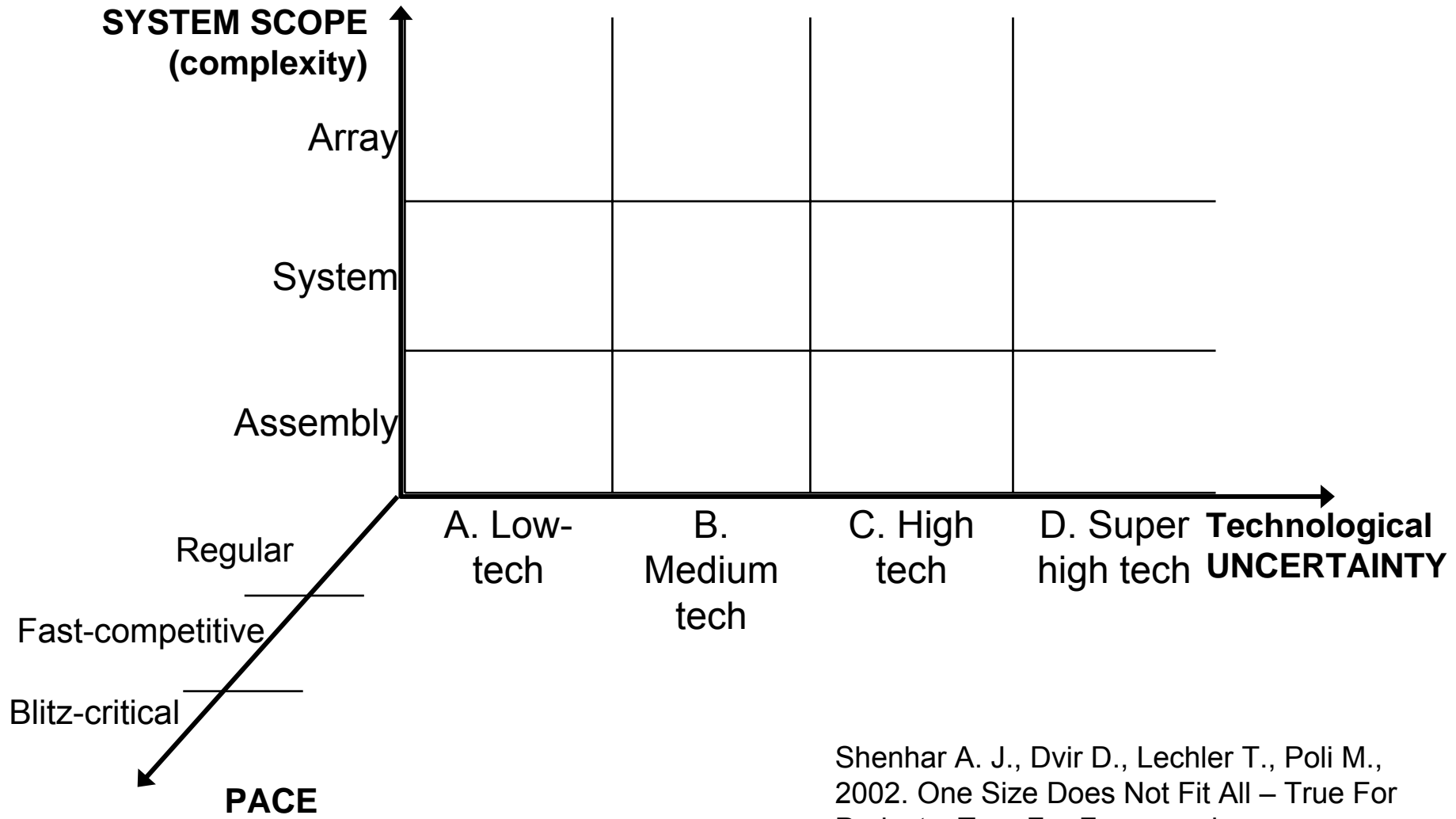
- a specific time,
- within budged, and
- according to specification.

- Usually, projects are established to accomplish a desired change and/or to fulfill a (certain) business purpose.
- Each project has a deliverable, product

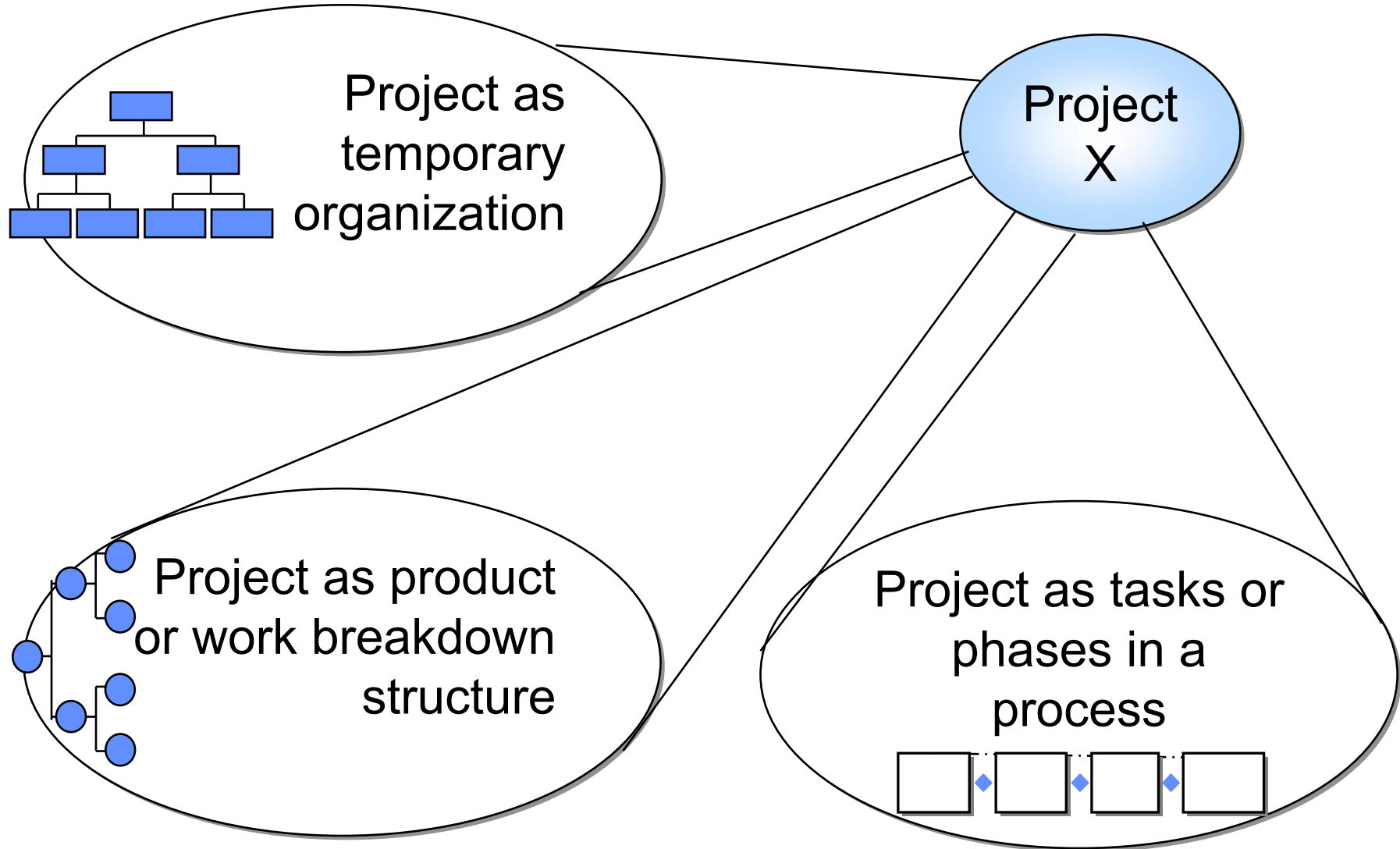# Different types of projects (1): Goals and methods matrix

	Yes	No
No	Type 2: Product development	Type 4: Research and organizational change
Yes	Type 1: Engineering design	Type 3: Systems development

Methods well defined (vertical axis: No / Yes)

Goals well defined (horizontal axis: Yes / No)

Turner 1999

Different types of projects (2): Complexity, uncertainty & pace "cube"

SYSTEM SCOPE (complexity)

Array

System

Assembly

A. Low-tech
B. Medium tech
C. High tech
D. Super high tech

Technological UNCERTAINTY

Regular
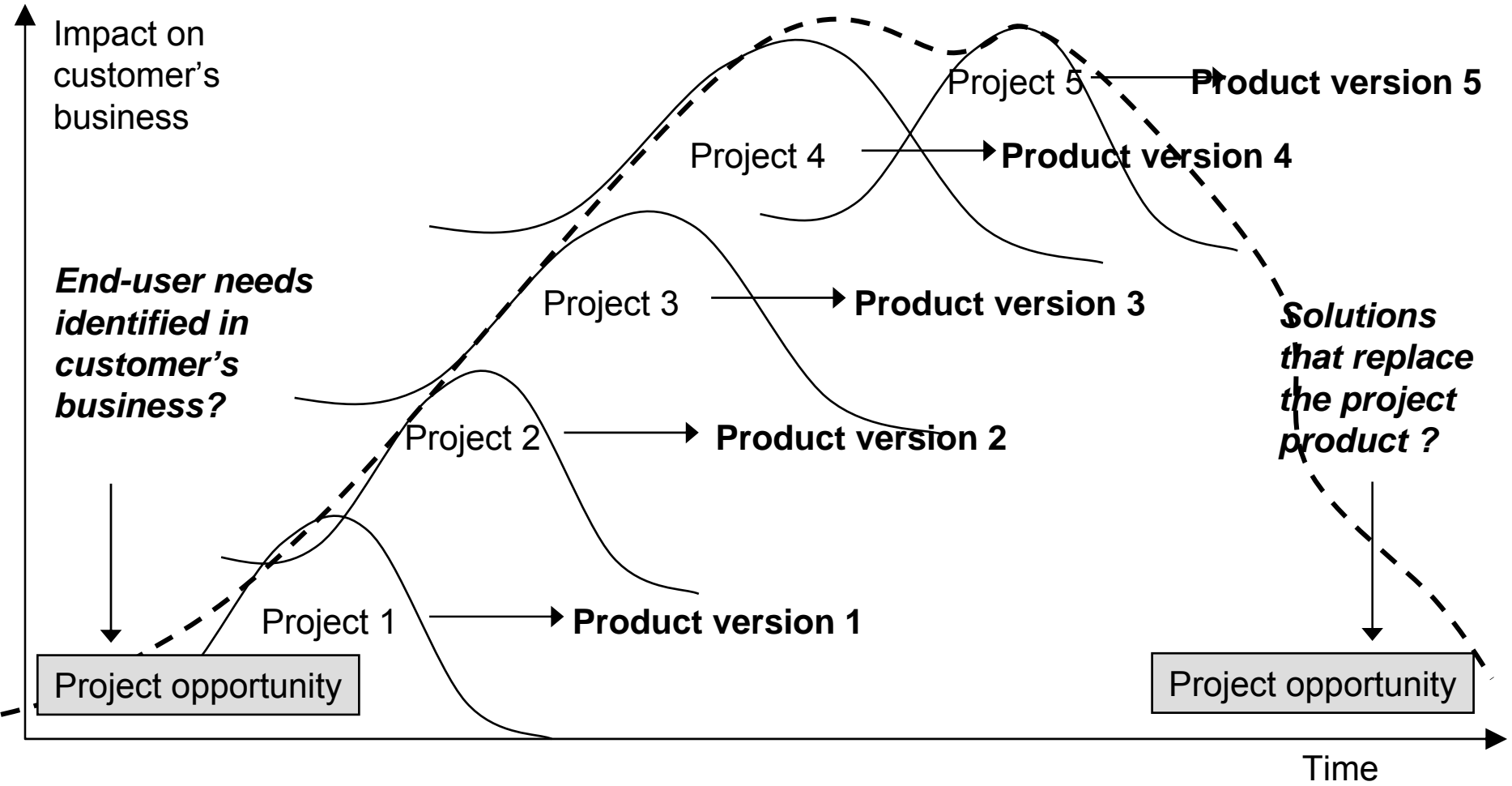
Fast-competitive

Blitz-critical

PACE

Shenhar A. J., Dvir D., Lechler T., Poli M., 2002. One Size Does Not Fit All – True For Projects, True For Frameworks

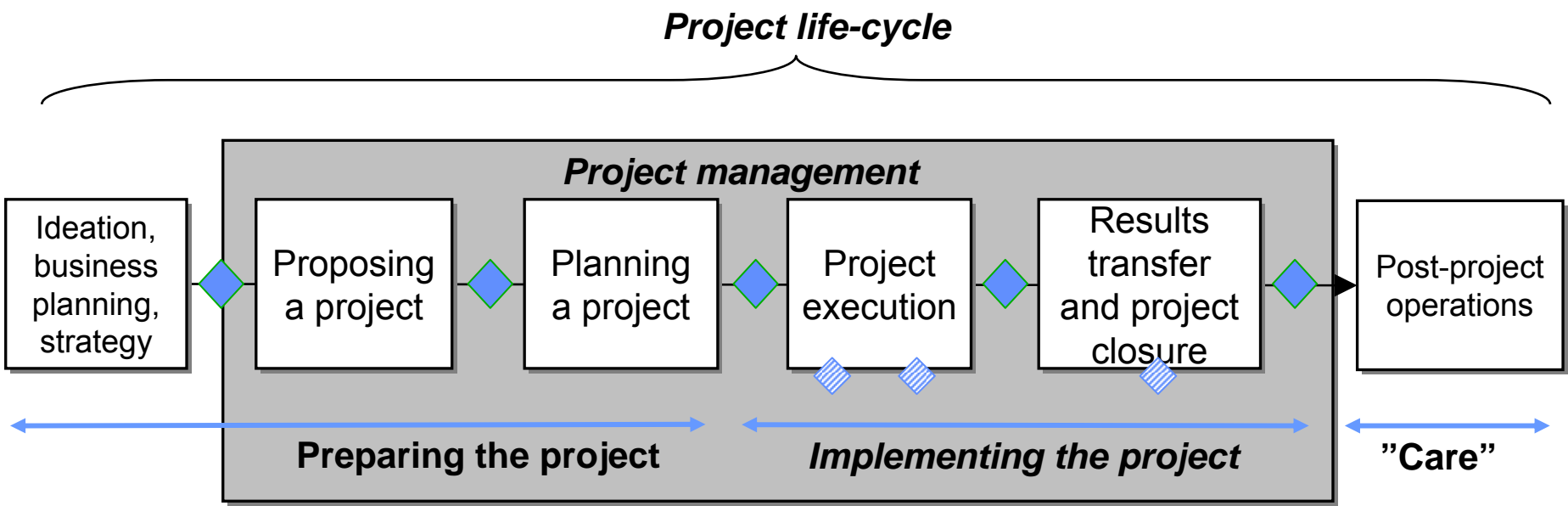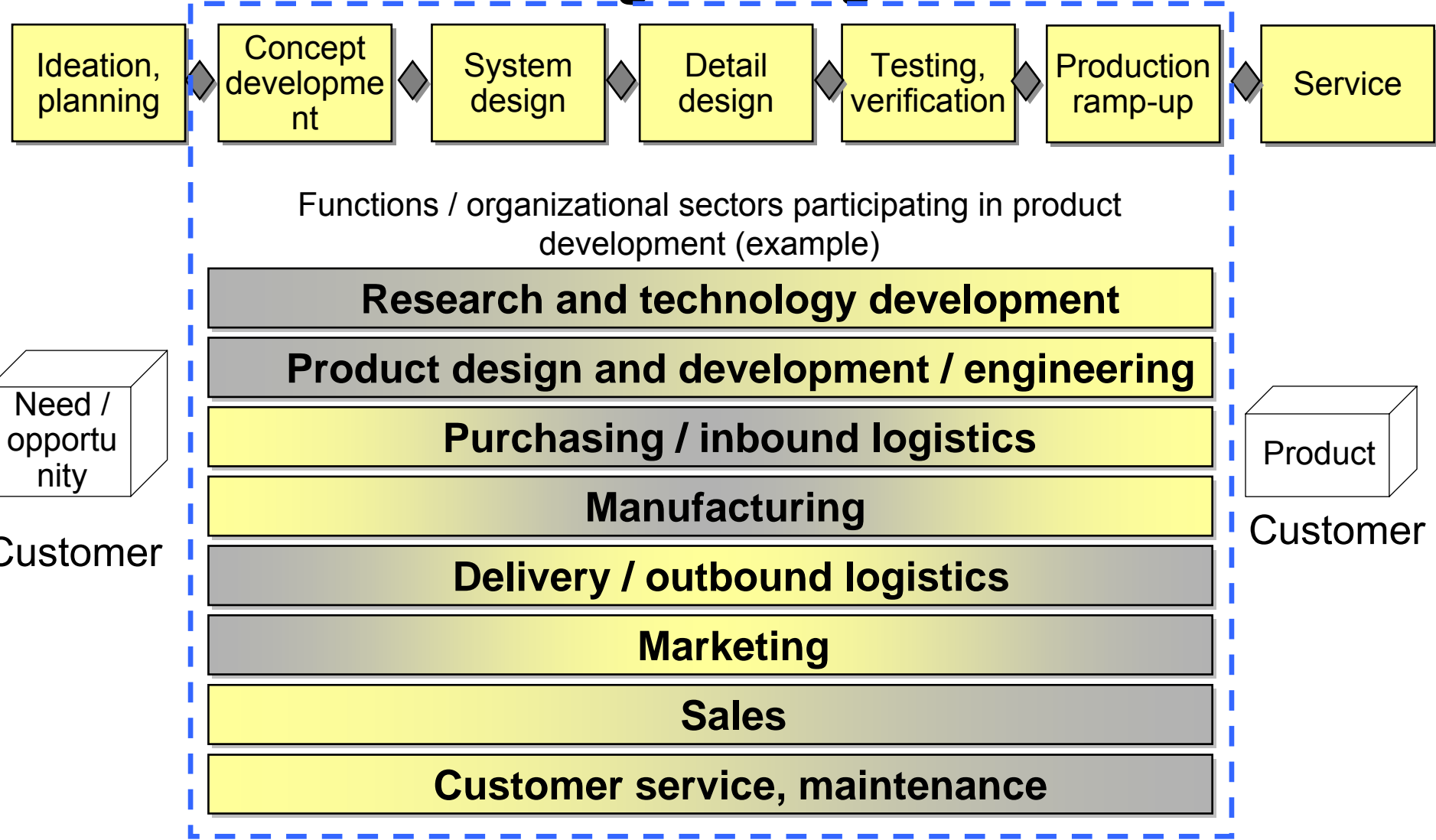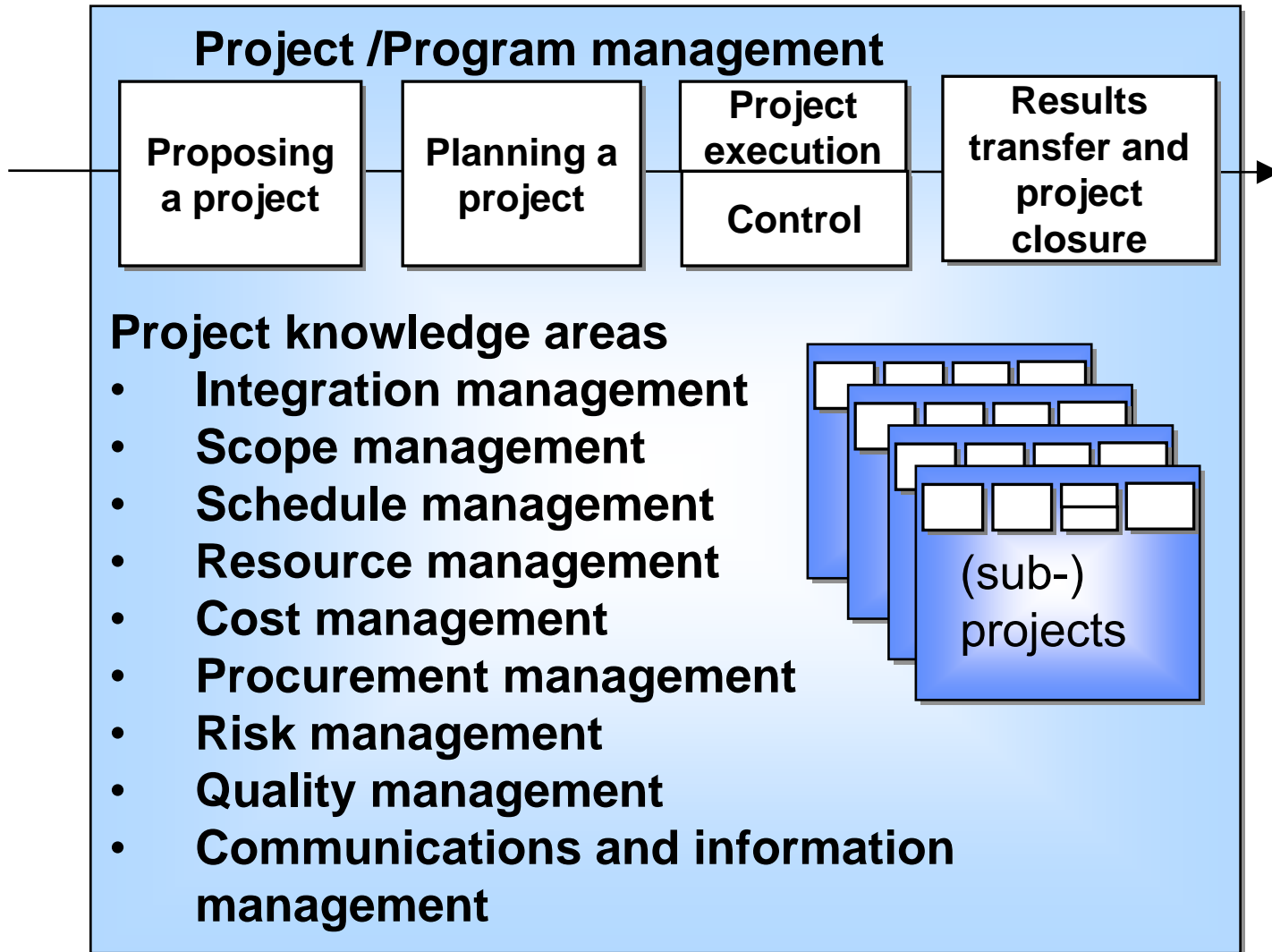# Three viewpoints to "what is a project"

Project as temporary organization

Project X

Project as product or work breakdown structure

Project as tasks or phases in a process

Artto, Martinsuo and Kujala 2005

Product lifecycle vs. product lifecycle

Impact on customer's business

End-user needs identified in customer's business?

Solutions that replace the project product ?

Project 5 ← **Product version 5**

Project 4 → **Product version 4**

Project 3 → **Product version 3**

Project 2 → **Product version 2**

Project 1 → **Product version 1**

Project opportunity

Project opportunity

Time

Project life-cycle

Project life-cycle

Project management

| Ideation, business planning, strategy | ◆ | Proposing a project | ◆ | Planning a project | ◆ | Project execution | ◆ | Results transfer and project closure | ◆ | Post-project operations |

Preparing the project　　*Implementing the project*　　**"Care"**

Product development as concurrent engineering

| Ideation, planning | ◆ | Concept development | ◆ | System design | ◆ | Detail design | ◆ | Testing, verification | ◆ | Production ramp-up | ◆ | Service |

Functions / organizational sectors participating in product development (example)

Research and technology development

Product design and development / engineering

Purchasing / inbound logistics

Manufacturing

Delivery / outbound logistics

Marketing

Sales

Customer service, maintenance

Need / opportunity

Customer

Product

Customer

Project management - managerial perspective

Project /Program management

Proposing a project	Planning a project	Project execution / Control	Results transfer and project closure

Project knowledge areas
- **Integration management**
- **Scope management**
- **Schedule management**
- **Resource management**
- **Cost management**
- **Procurement management**
- **Risk management**
- **Quality management**
- **Communications and information management**

(sub-) projects

Project stakeholders

Project objectives

Scope

Time   **Cost**

Scope must be split to identifiable work units: Work breakdown structure (WBS) example
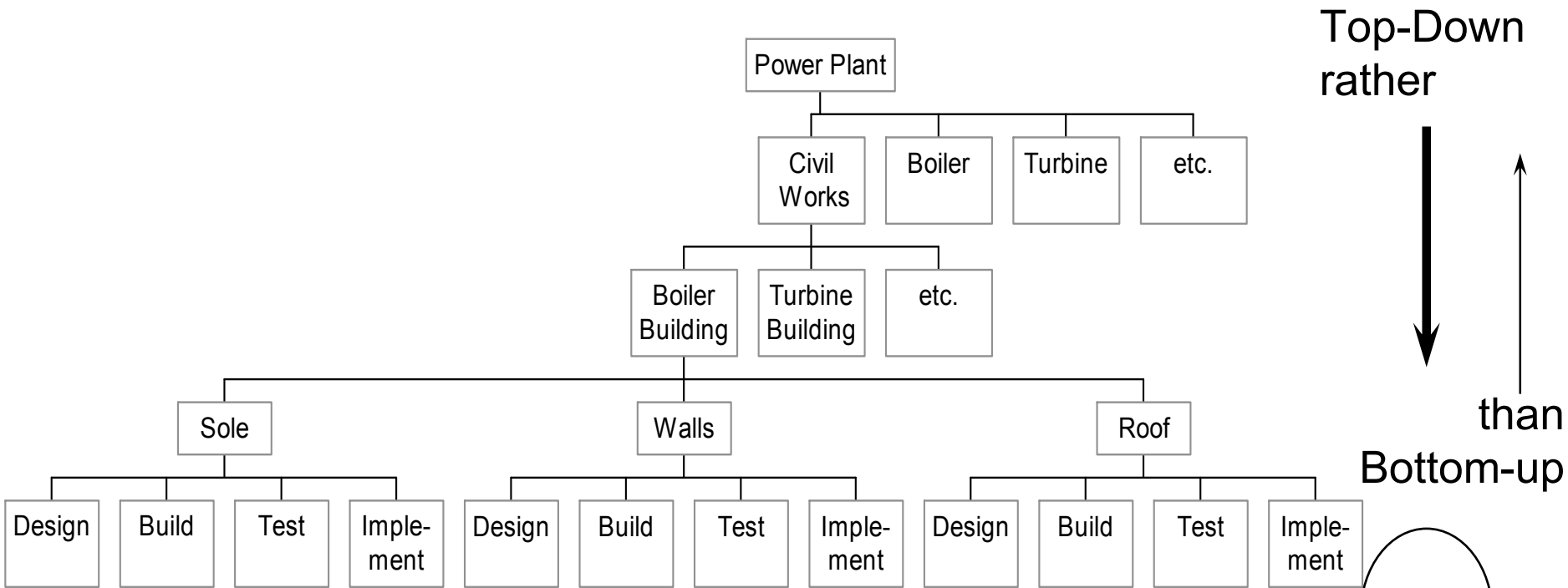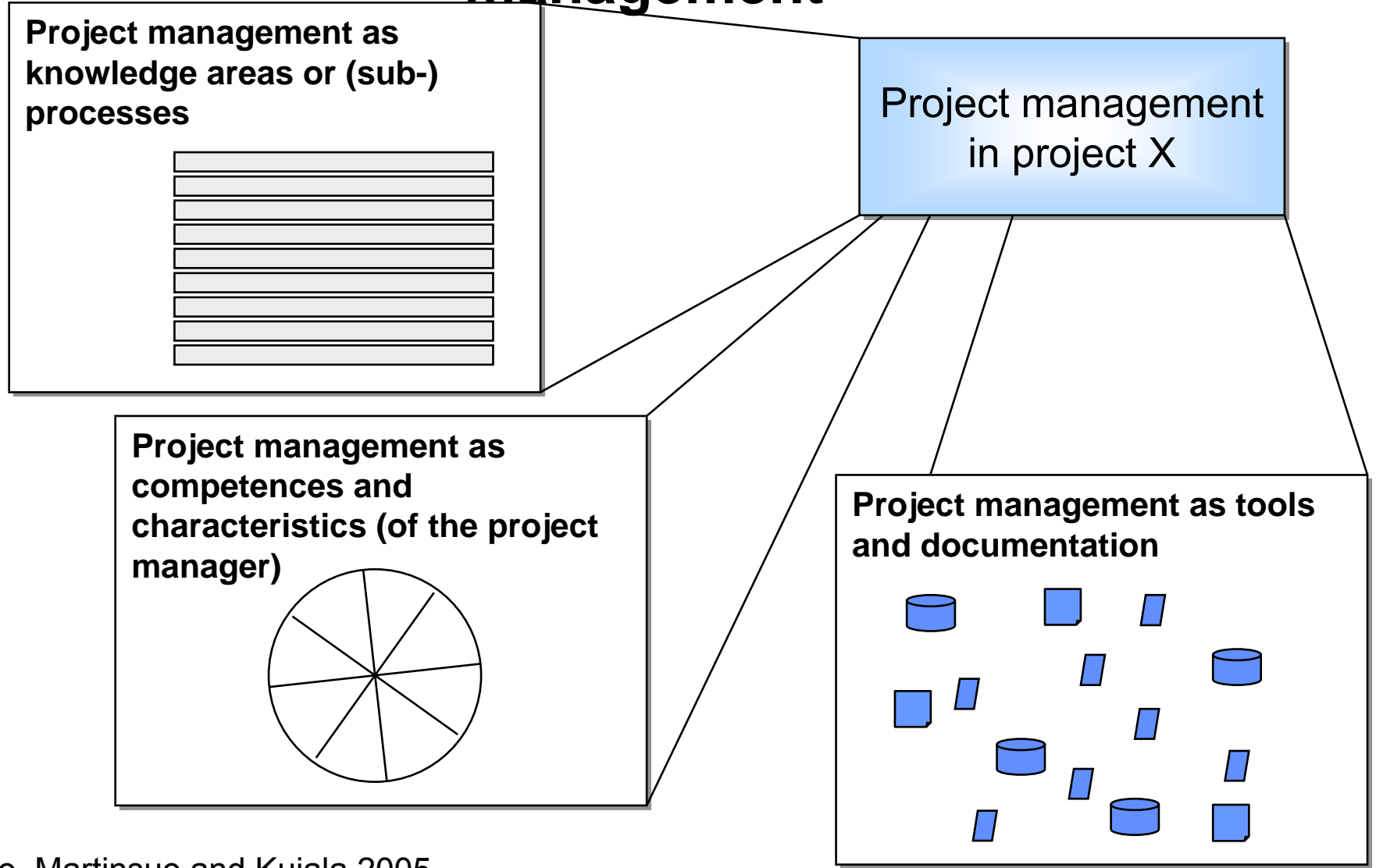

Top-Down rather

than Bottom-up
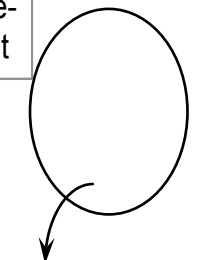
ESTIMATES:
- TIME
- RESOURCES
- COST

Project plan structure (example)

1. **Background and benefits** (Purpose)

   - Stakeholders and their needs

2. **Project objectives** (Scope, time, cost)

   - Requirements, technical plans, specifications etc. are usually in a separate appendix

3. **Work breakdown** (What is the work content? How the work one? By whom?)

4. **Schedule** (and project time management, also milestones/gates)

5. **Resource plan (**and resource management, and project procurement management)

   - Organization (incl. suppliers)

6. **Budget** (and project cost management)

7. **Risks** (and opportunities, project risk management)

8. **Project quality management** (and project scope management, configuration management & change Management)

9. **Documents and document management** (standards, instructions, project archives and databases)

10. **Reporting and communication** (incl. internal and external reporting, meetings, communicating in the team, public relations activities)

11. (may be separately) **Project norms and mode of operation**

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Three viewpoints to "what is project management"

Project management as knowledge areas or (sub-) processes

Project management in project X

Project management as competences and characteristics (of the project manager)

Project management as tools and documentation

Artto, Martinsuo and Kujala 2005

5.4.2005   15

Competence requirements in project management (of complex systems)

Performance, quality and usability of the project product

Accomplishing desired change

Technical competence

Organizational and social competence

Project management competence

Business competence
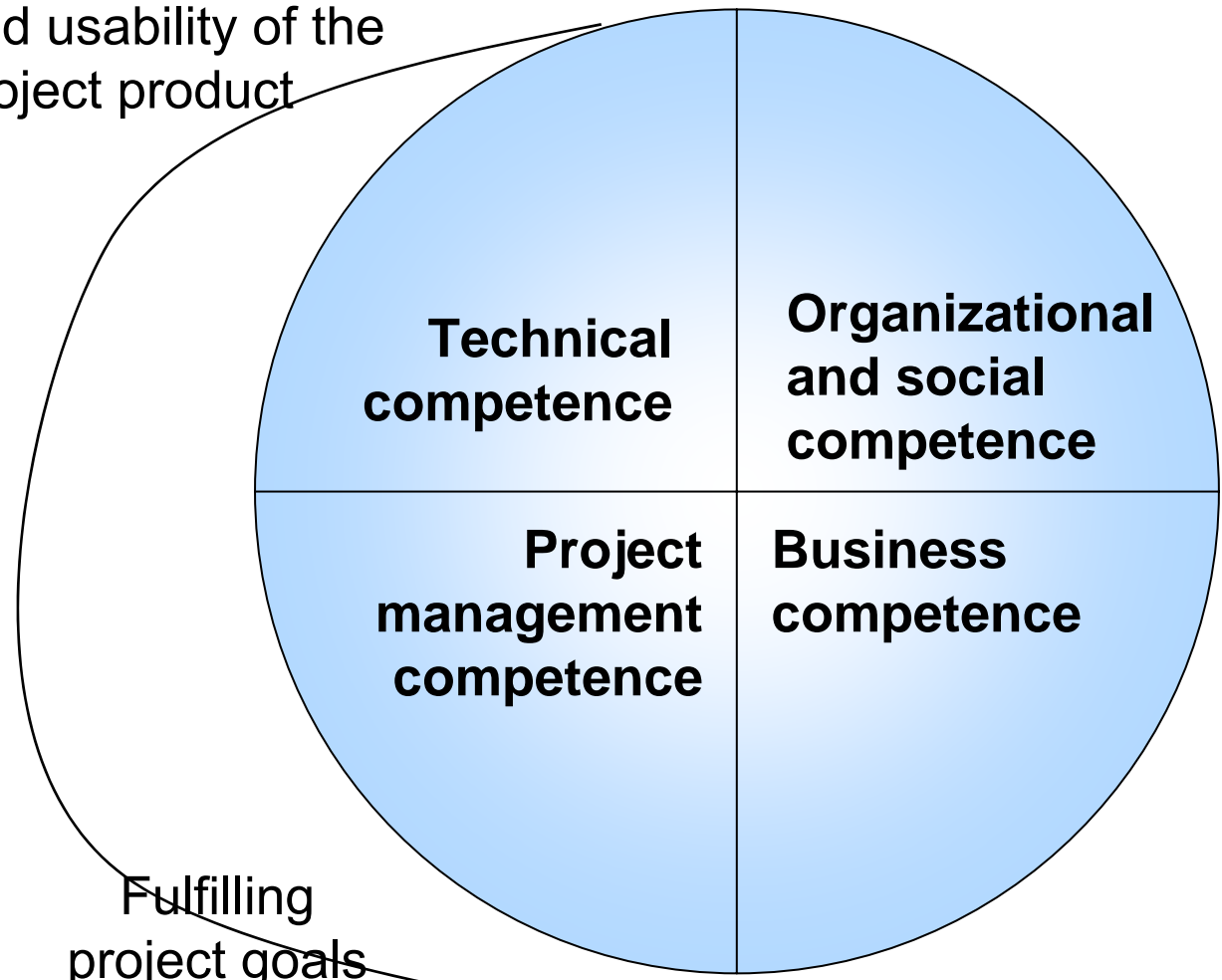
Stakeholders' satisfaction

Business benefits to stakeholders

Fulfilling project goals

Martinsuo and Kujala (2005)

After planning, project management is executing the plan, control… and managing changes

- Change management = **managing the changes that may have an impact on project objectives (time, scope, cost)**

- Requirements / specification / design

- (Design) reviews
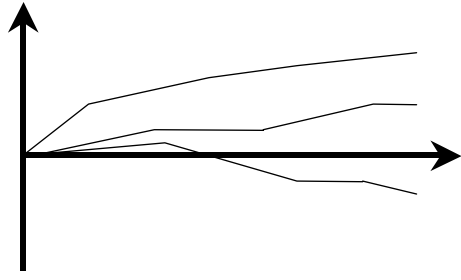- (Design) freezes
- Change proposals / change orders

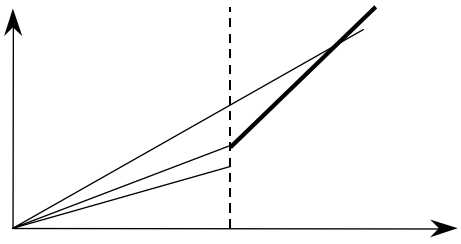# Different ways to report deviations from plan
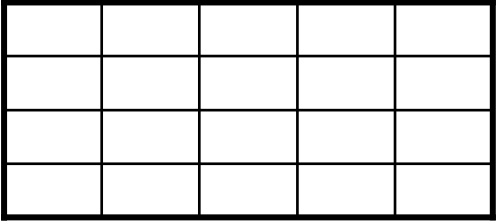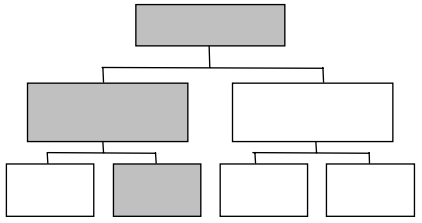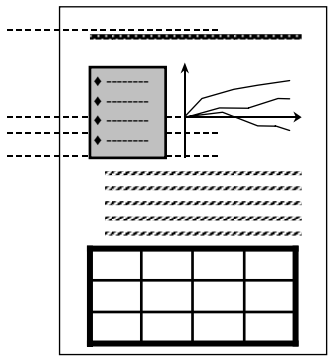
Tables, matrices
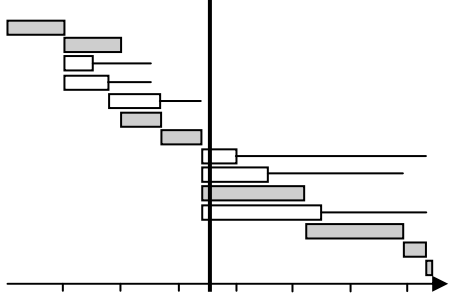
Gantt chart

Milestone trend diagram

S curve, e.g. earned value

Traffic lights

Management summaries

Project steering

Client organization

Managers
Meetings

Steering committee

Project (supplier)

Managers
Meetings
Ref.group

End-user organization

Project team meetings
Work meetings
Delegation
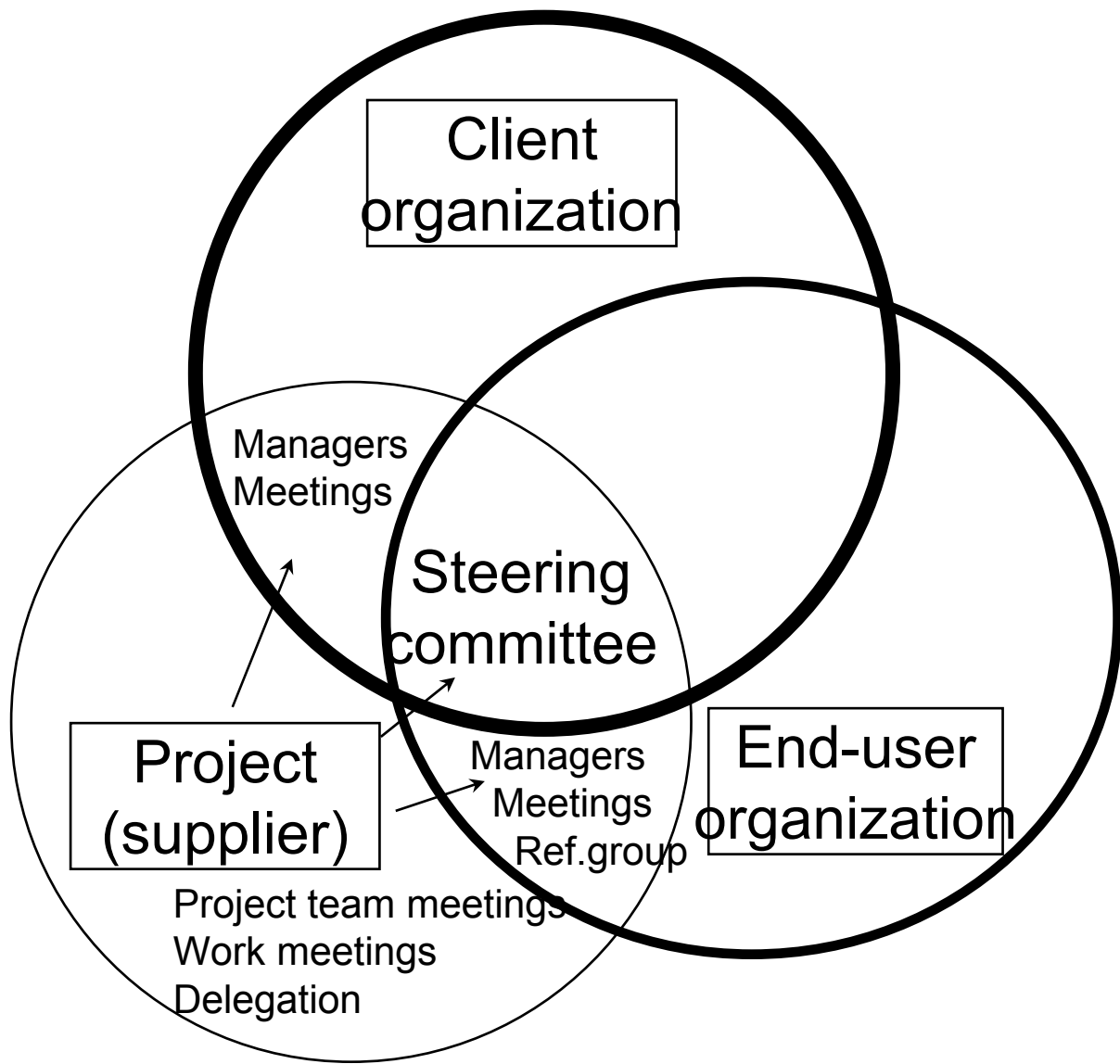
Fitting project management style to the nature of the project (propositions)

When *complexity* increases, more
- Formalization
- Simple, general goal setting
- Simple, coherent procedures
- Big picture
- Integration
- Stakeholder involvement

When *tech. uncertainty* increases, more
- Development and testing
- Design cycles
- Later design freeze
- Flexibility
- Communication

When *pace* increases, more
- Autonomy
- Semi-structures (→ projects)
- Simpler procedures
- Go/no-go decisions
- Top mgmt support

Modified from Shenhar A. J., Dvir D., Lechler T., Poli M., 2002. One Size Does Not Fit All – True For Projects, True For Frameworks

From single projects towards project business

WIDE BUSINESS PERSPECTIVE, EFFECTIVENESS IN BUSINESS

WIDE BUSINESS PERSPECTIVE, EFFECTIVENESS IN BUSINESS

Ideation, business planning, strategy
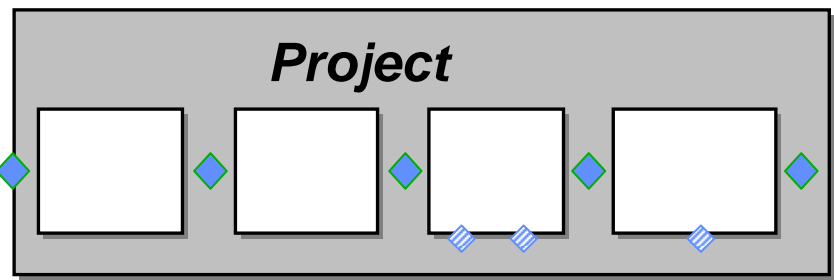
Project

Post-project operations

NARROW BUSINESS PERSPECTIVE, EFFECTIVENESS IN PROJECT