

System Development and Project Organization (BSUP)

*Paolo Tell*

# Initiation and Planning

# Outline

- Company organization models
- Roles and role models
- Project initiation and planning
- Activity network diagrams and Gantt charts

# Introduction to SPM

# Basic principles ...

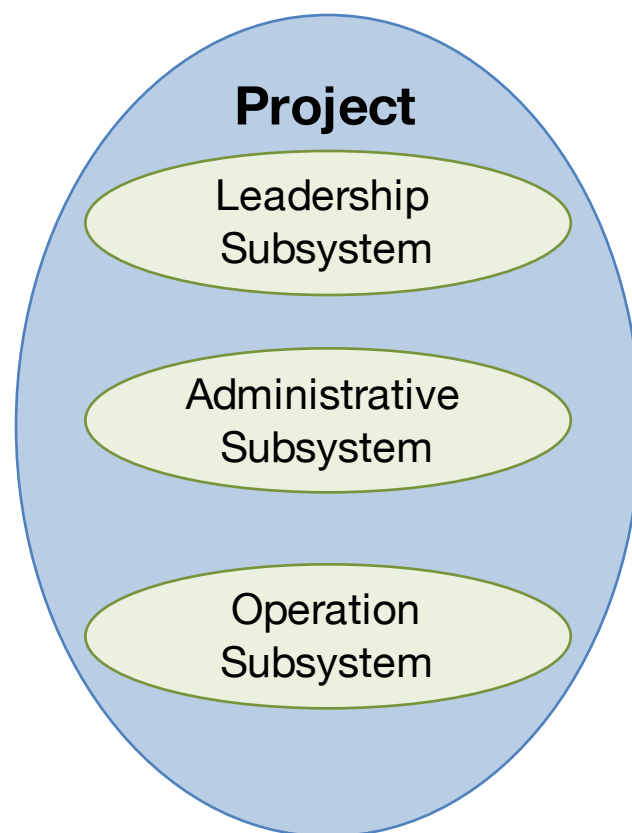
- Clearly defined goals
- Transparent and realistic project plans
- Involvement of all relevant stakeholder groups
- Defined and transparent responsibilities
- Team organization (e.g., hierarchies, flat)
- Decision making competencies (“power”)
- Decision making processes
- Independent controlling instances (quality-, project control)
- Defined escalation paths
- Culture of communication and defined communication pattern
- Appropriate work environment
- High skills of the personnel
- High motivation of the personnel

# Organization:

## Company Organization Models

# Levels of project organization

- Considering projects as “systems”, we find the following levels:



Client, decision-making boards

➡ What?

Project Management

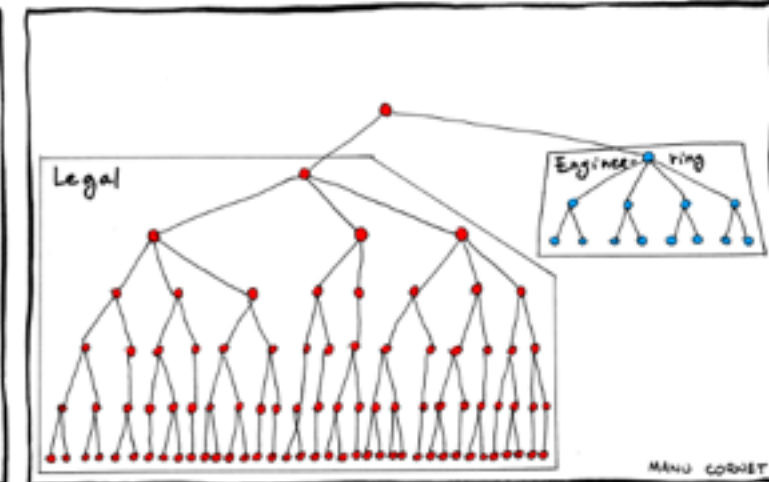
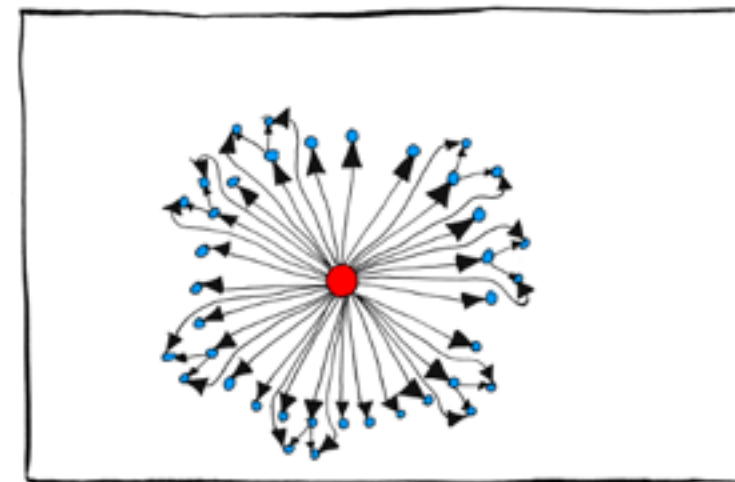
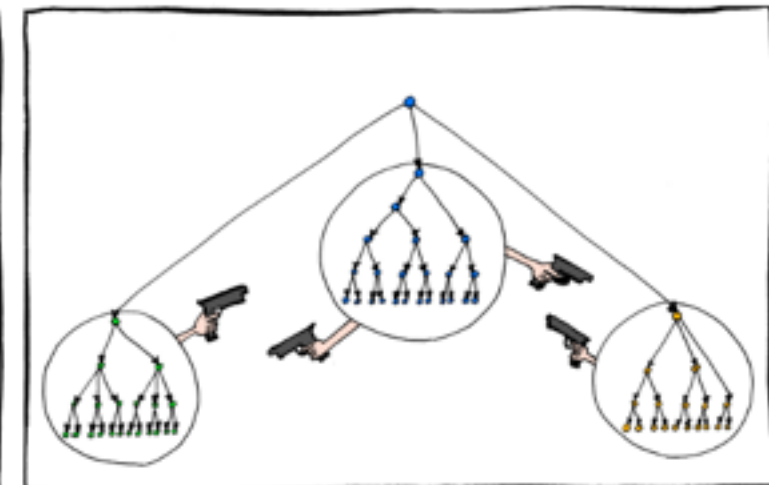
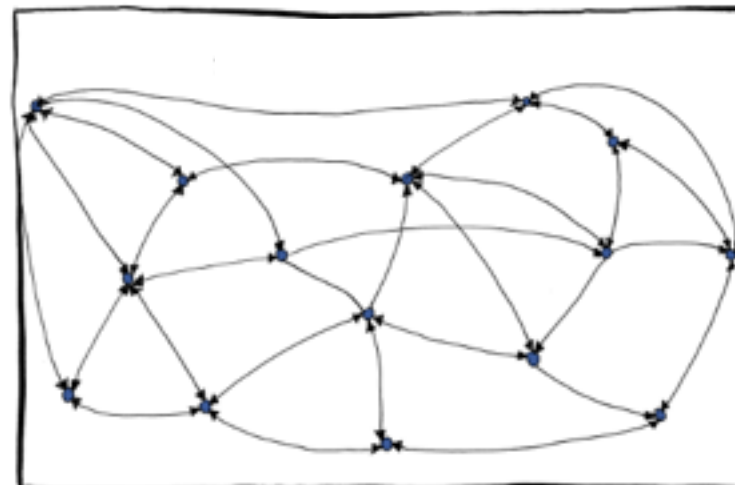
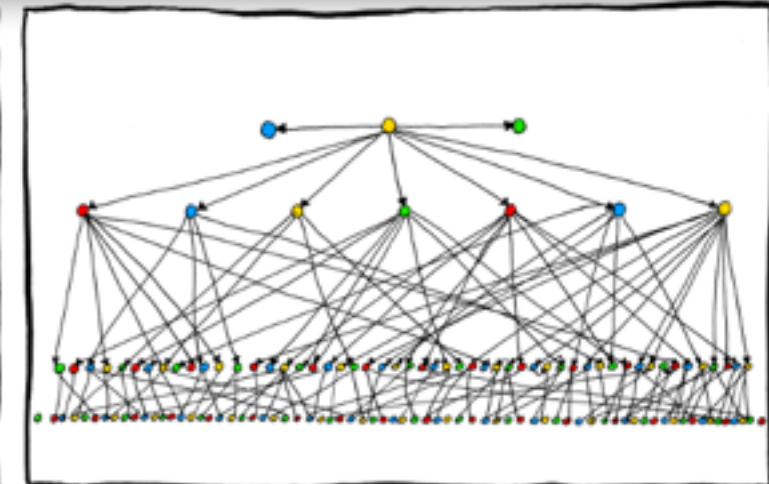
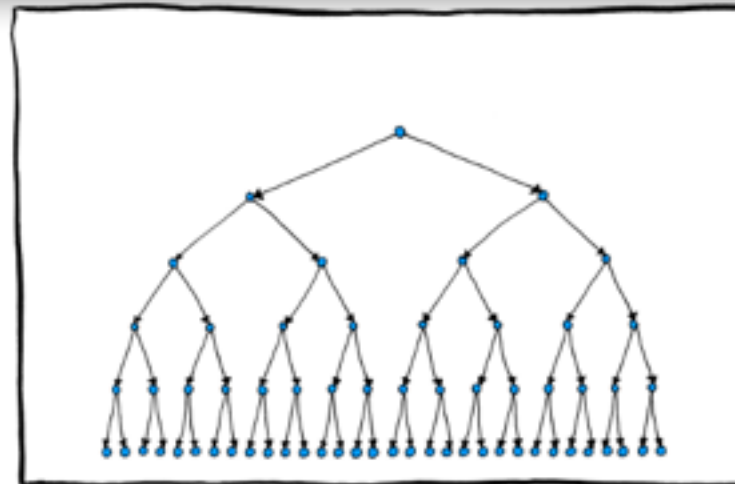
➡ When? Where?

Project Operation/Execution

➡ How?

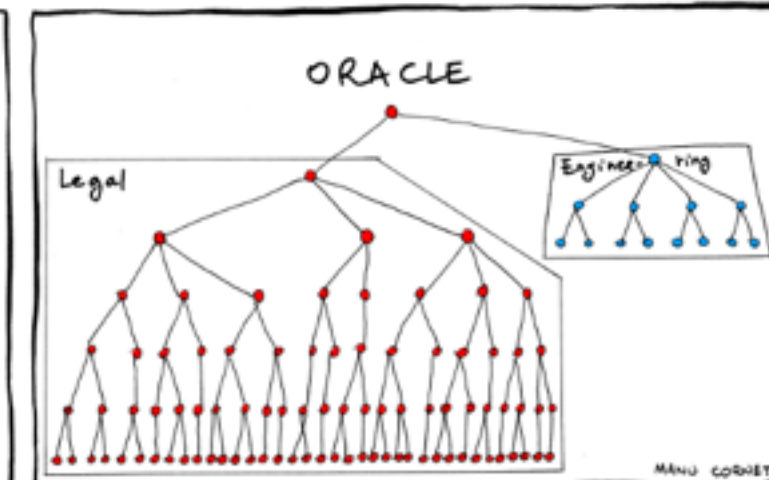
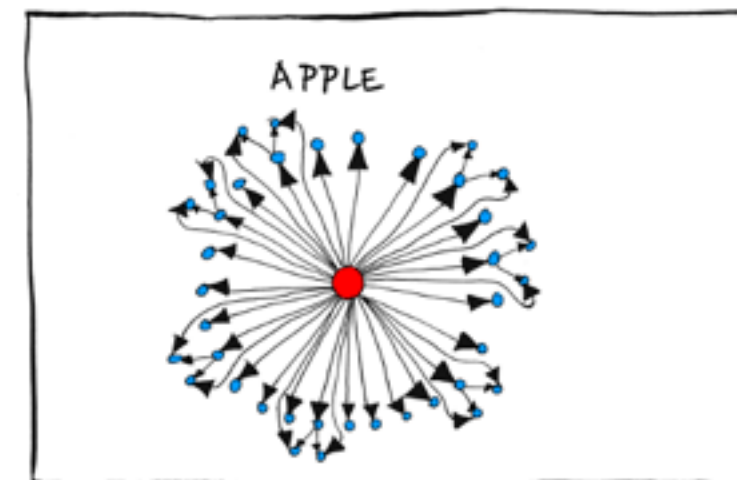
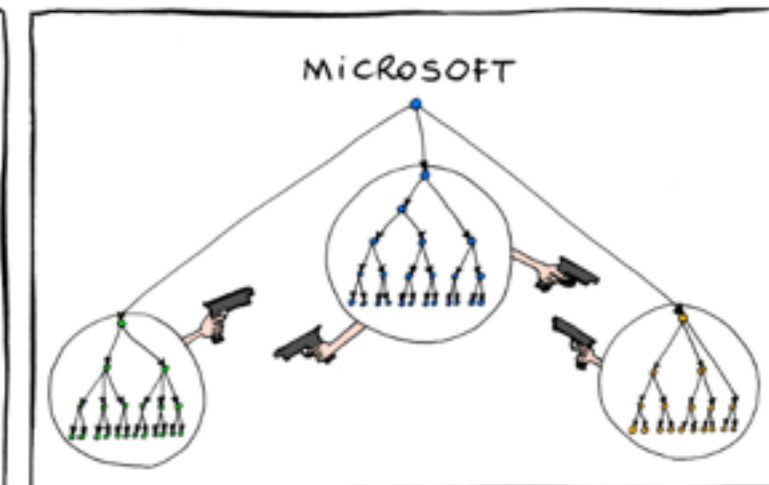
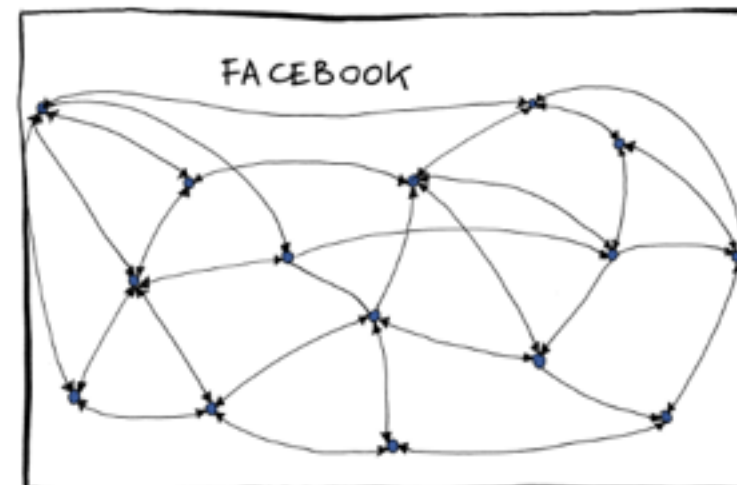
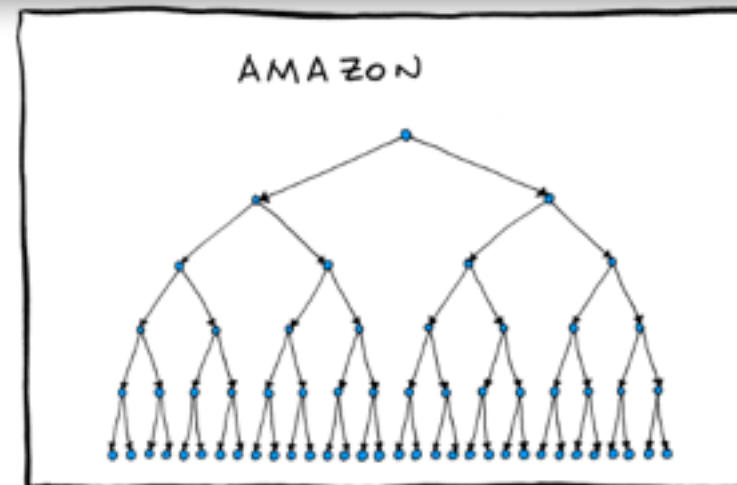
# Different organizational structures

- Line
- Staff or Functional Authority
- Line and Staff
- Divisional
- Project
- Matrix
- ...



# Different organizational structures

- Oracle
- Google
- Amazon
- Microsoft
- Apple
- Facebook





# How to choose the right organization form?

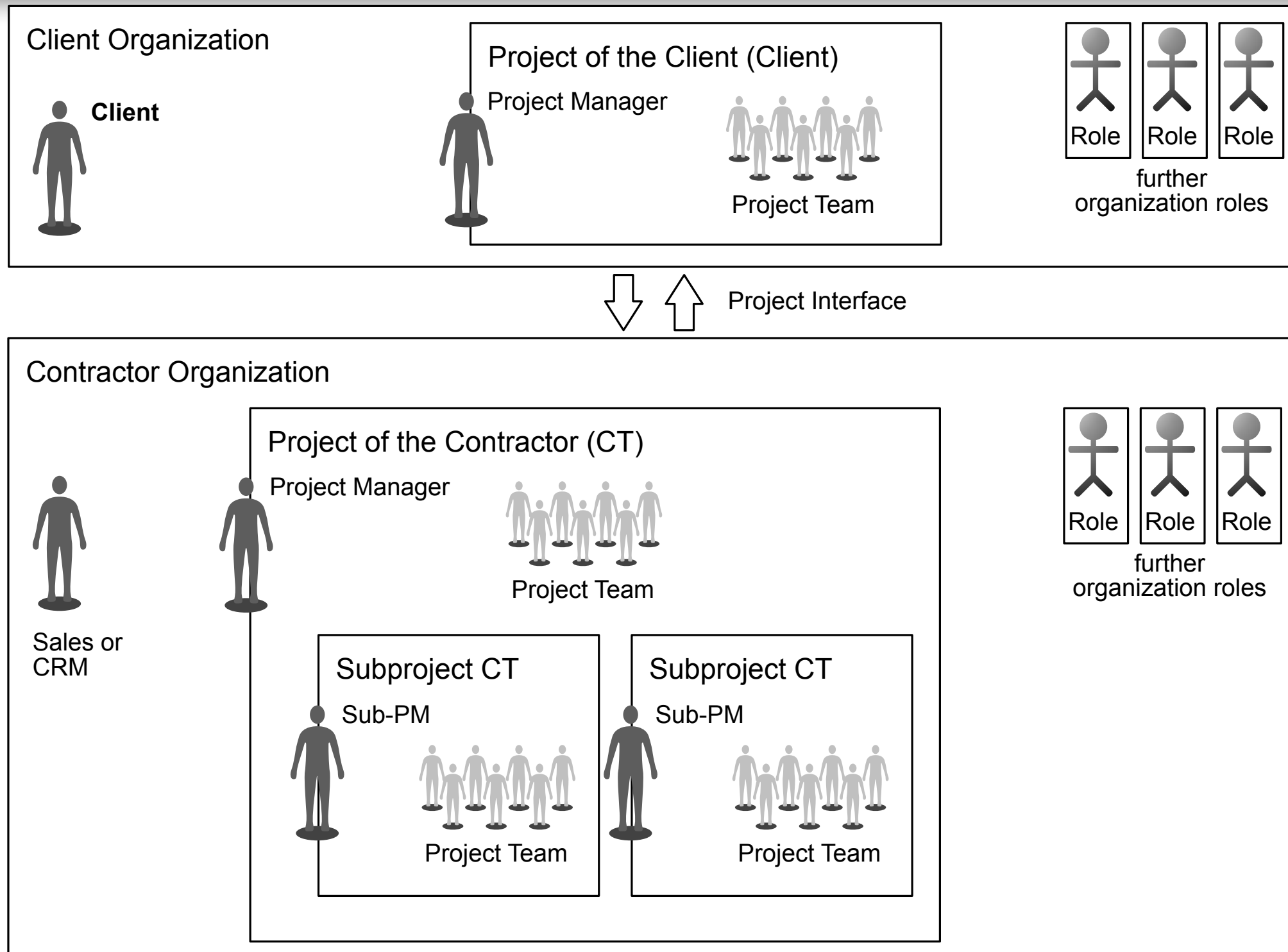
- Note:
  - Companies evolve over years
    - ➔ “free” selection is thus not always possible
  - Organization must meet the current project context
  - Be aware of the clash of cultures: strong hierarchy vs. self-organizing teams (we will talk more about this later in the course)
- Major questions:
  - Who decides? - e.g., budget, staffing
  - Who issues orders? - e.g., problem escalation
  - How is transparency ensured? - e.g., decision making

# Exercise

- Conduct a web- and/or literature search and work out the characteristics, advantages, and disadvantages of the following organization models (3-5 items each):
  - Staff-line organization
  - Matrix organization
  - Multi-project organization (pool organization)

# Roles and Role Models: Basics

# General roles in a project

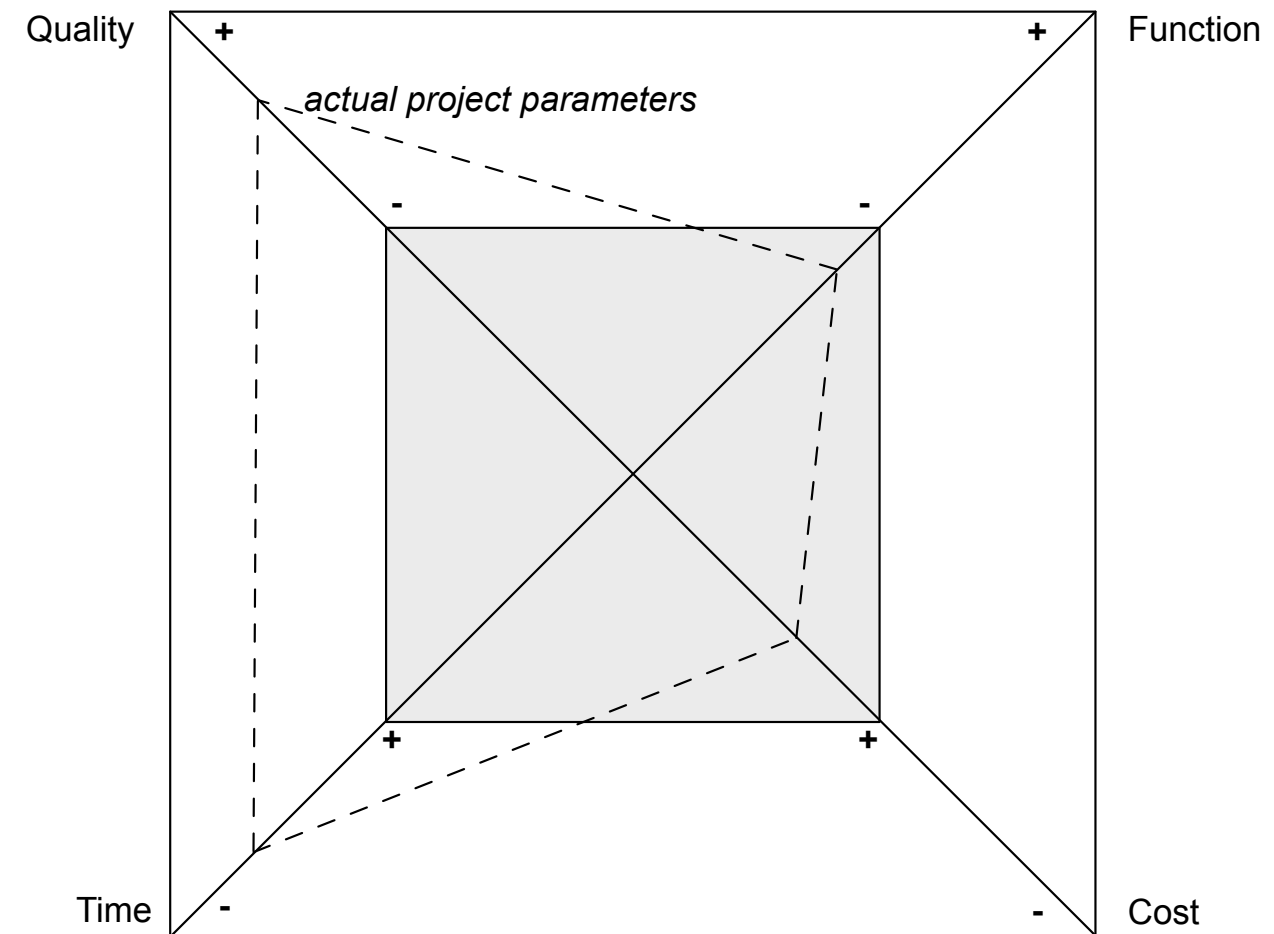


# General roles in a project

- Basic question: Who's in charge?
  - Client:
    - Responsible for basic decisions and requirements
    - Controlling and acceptance
    - Participation in QA
    - Has the money 😊
  - Contractor:
    - Responsible for conducting the project
    - Performs the development
    - Wants the money 😊
- On the contractor's side—roles from “classic” software engineering
  - Requirements Engineers
  - Architects
  - Developers/Coders
  - Testers and Integrators
  - (Technical) Writers
  - ...
- From the agile realm
  - Product owner
  - Scrum master
  - ...

# The Project Manager

- Responsible for
  - Achieving project- and contract goals within the set parameters
- Detailed responsibilities (selection):
  - Define the project “volume”
  - Organize and motivate the team
  - Create “small successes” on the road
  - Balance the “Devil’s Square”
  - Manage sub-contractors and vendors
  - Organize delivery and acceptance
  - Manage the “trouble shooting”
  - ...
- In big organizations, there might be an administrative “Project Management Office” (PMO) to support the project managers



# Other important roles

- Quality Manager
  - Quality culture, processes, and standards
  - Tools and other means for measurement and improvement
- Project/Company Steering Boards
  - Comprise, inter alia, project managers, quality managers, stakeholders...
  - General tasks: control, analyses, and decision making outside the project context
  - Project managers usually report to the boards
- Further “Boards”
  - Working groups for, e.g., planning, discussion
  - Steering boards for, e.g., projects, products, changes
  - “Assessment” boards for, e.g., quality/process improvement
- C-level officers
  - CFO, CTO, CEO, ...

# Problems with roles

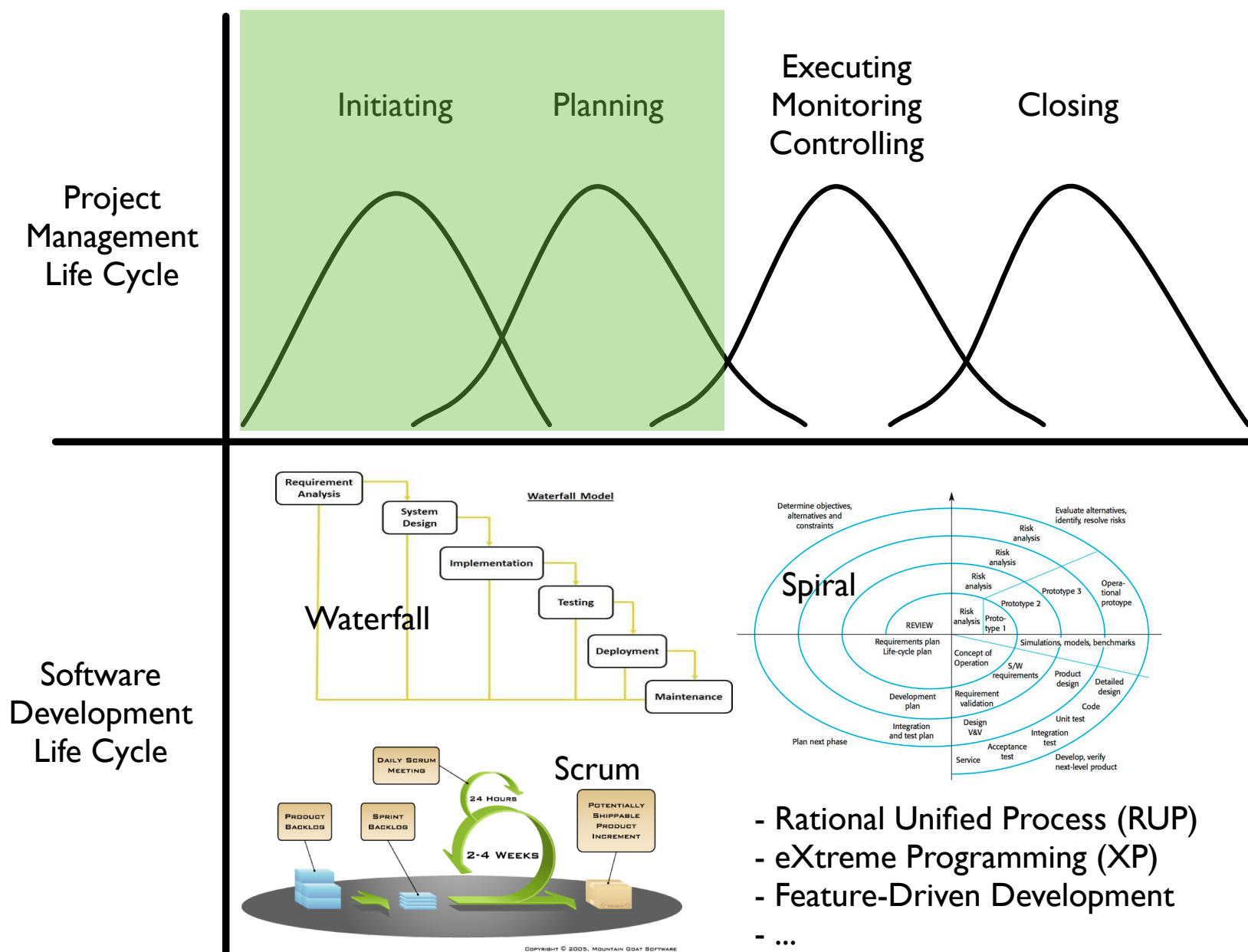
- Watch out! Roles are problematic!
  - Terminology
  - Specific to the software process
  - Assignments
    - Responsibilities vs. Power
  - Company structure
- This is one of the most demanding problems, when designing company-specific software processes!





# Exercise

- Write a small reflection on the relation between roles and agile methodology. You can focus on the Scrum method for the sake of describing a concrete case.

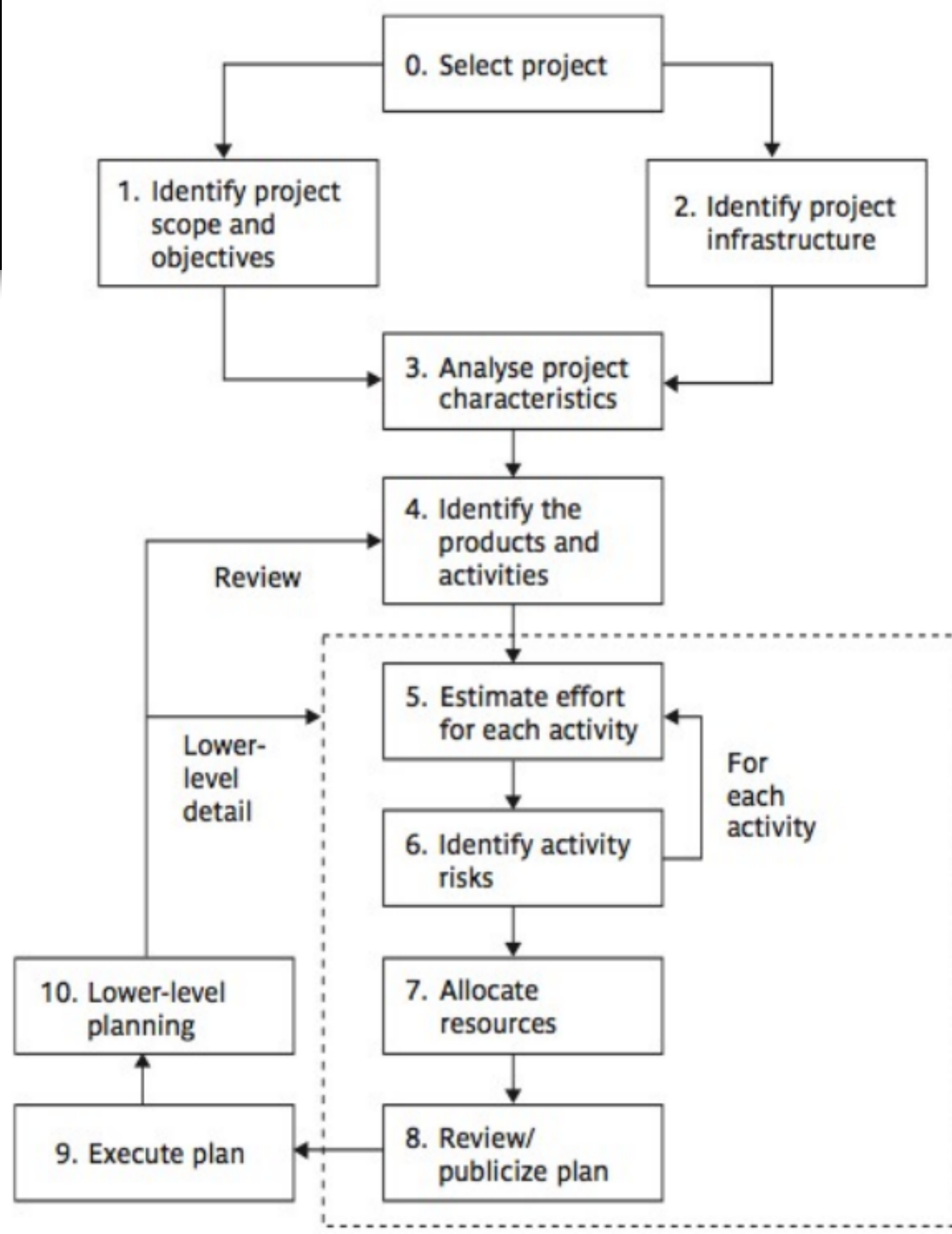


# Project Initiation and Planning

# The business case (or feasibility study)

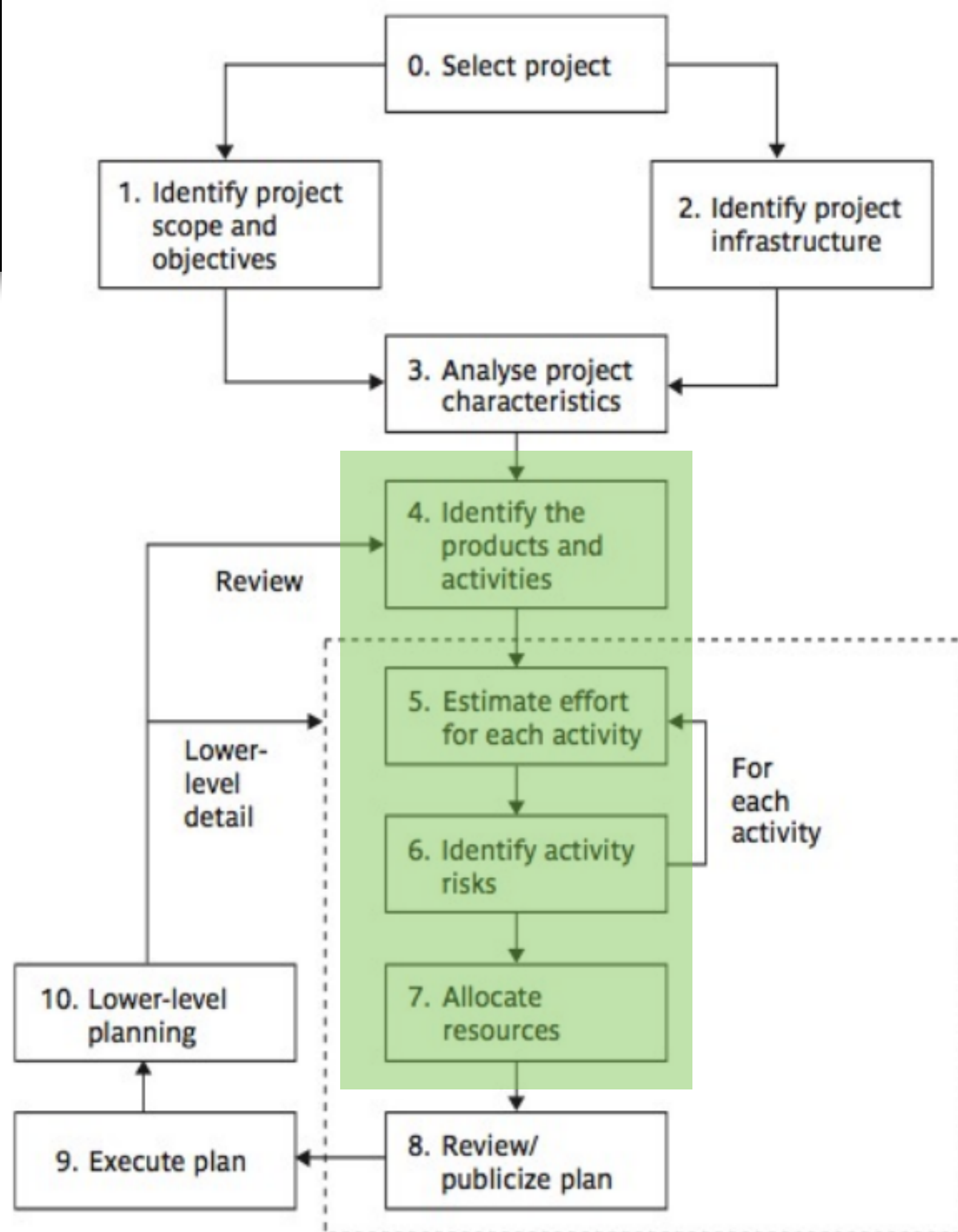
1. Introduction and background of the proposal
2. The proposed project
3. The market
4. Organizational and operational infrastructure
5. The benefits
6. Outline implementation plan
7. Costs
8. The financial case
9. Risks
10. Management plan

# Step-Wise project planning



# Example

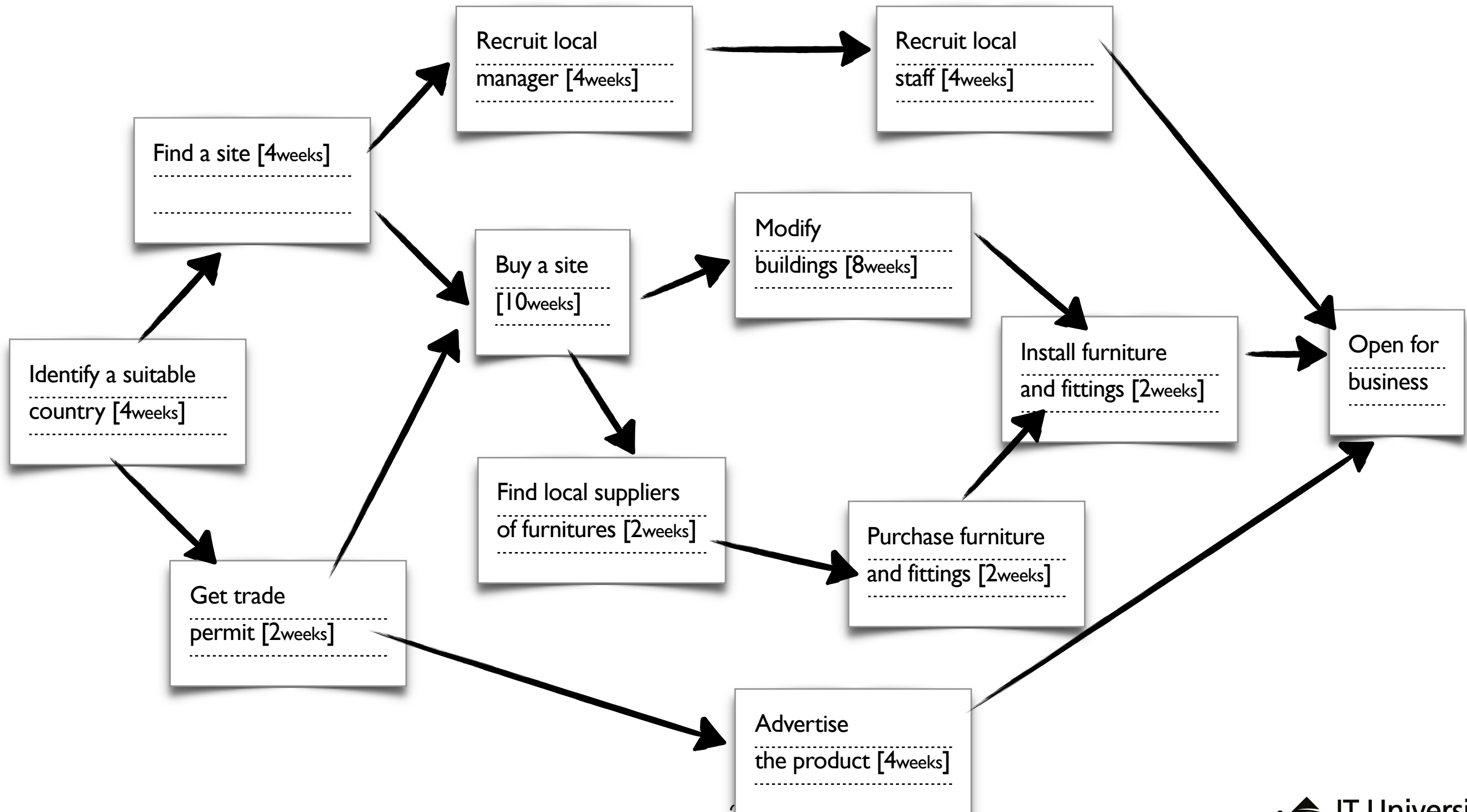
We have been assigned a new project, we have to prepare a plan for “Setting-up a european distribution centre”.



# Let's start by looking at the activities required

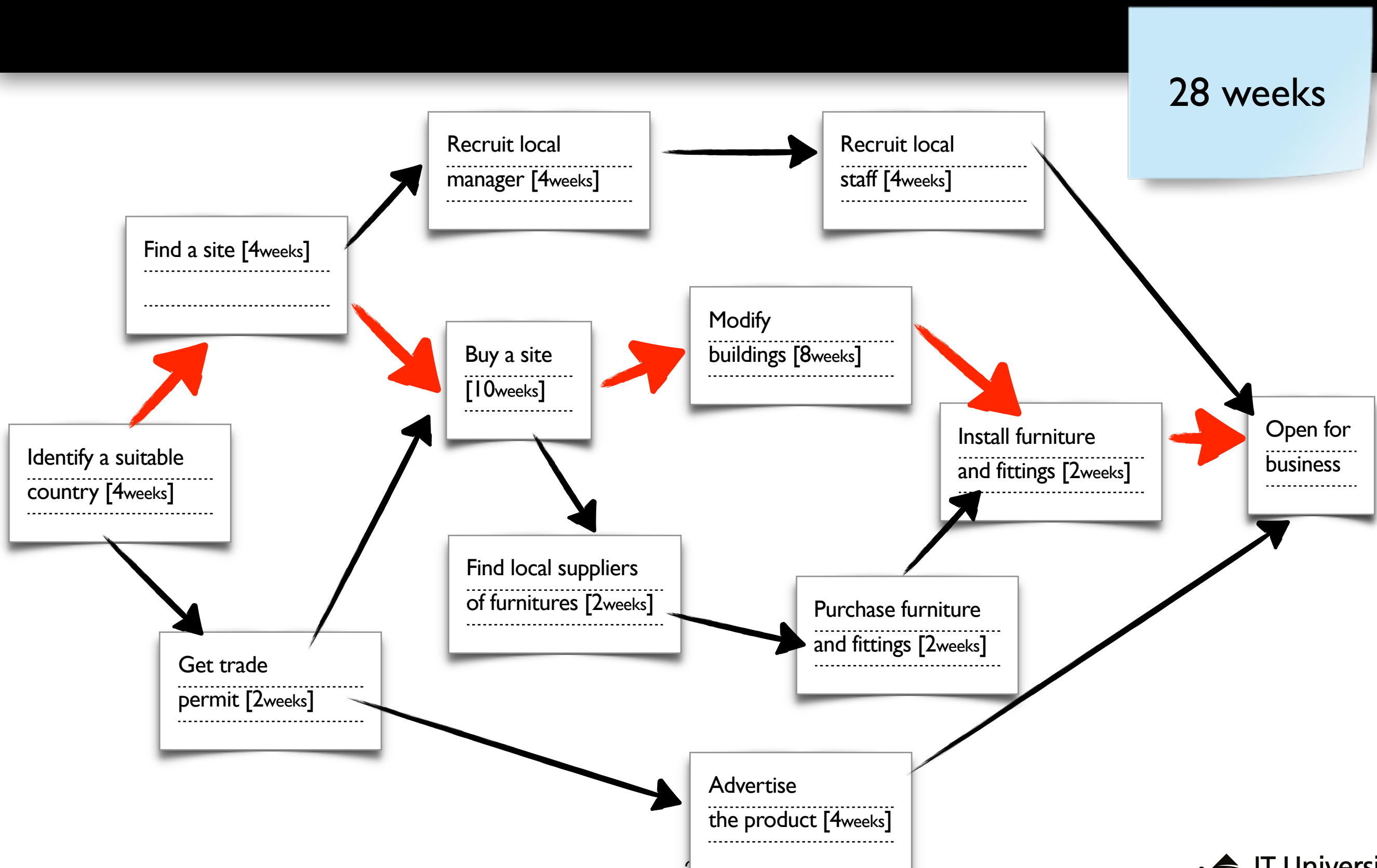
Name	Time estimation (weeks)
Open for business	0
Identify a suitable country	4
Find a site	4
Buy a site	10
Modify buildings	8
Install furniture and fittings	2
Get trade permit	2
Find local suppliers of furnitures	2
Purchase furniture and fittings	2
Recruit local manager	4
Recruit local staff	4
Advertise the product	4
<b>Total</b>	<b><u>46</u></b>

# Activity network diagrams



# Critical path

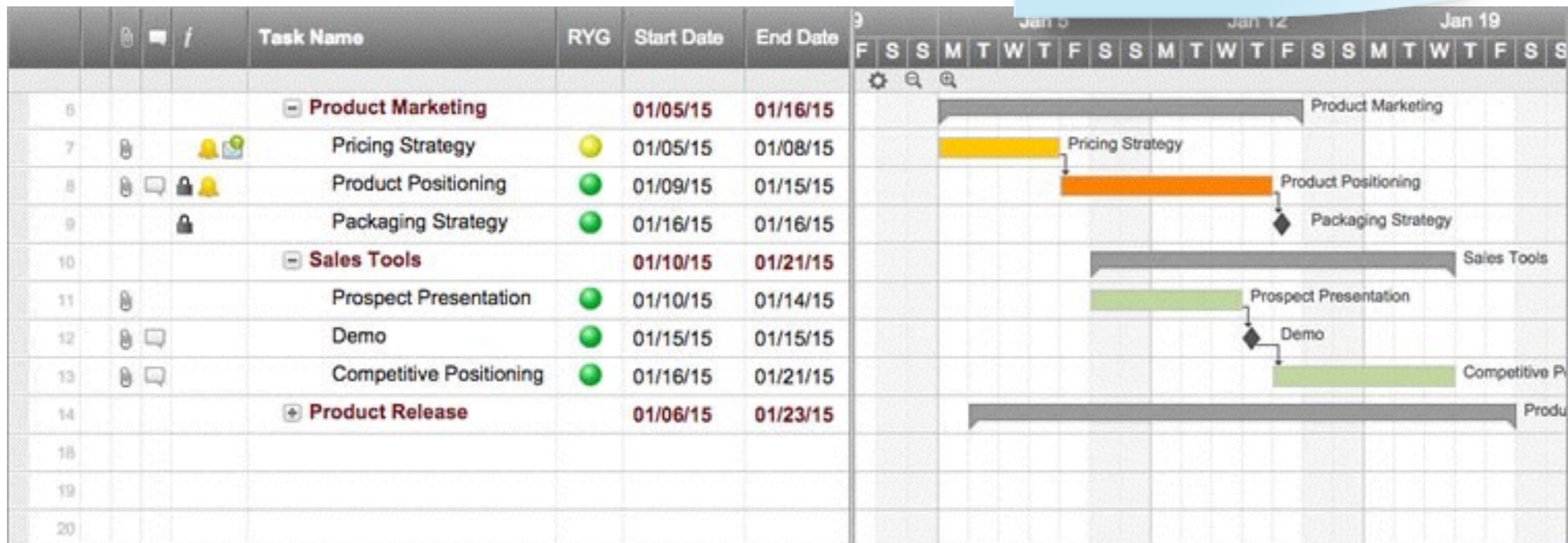
28 weeks



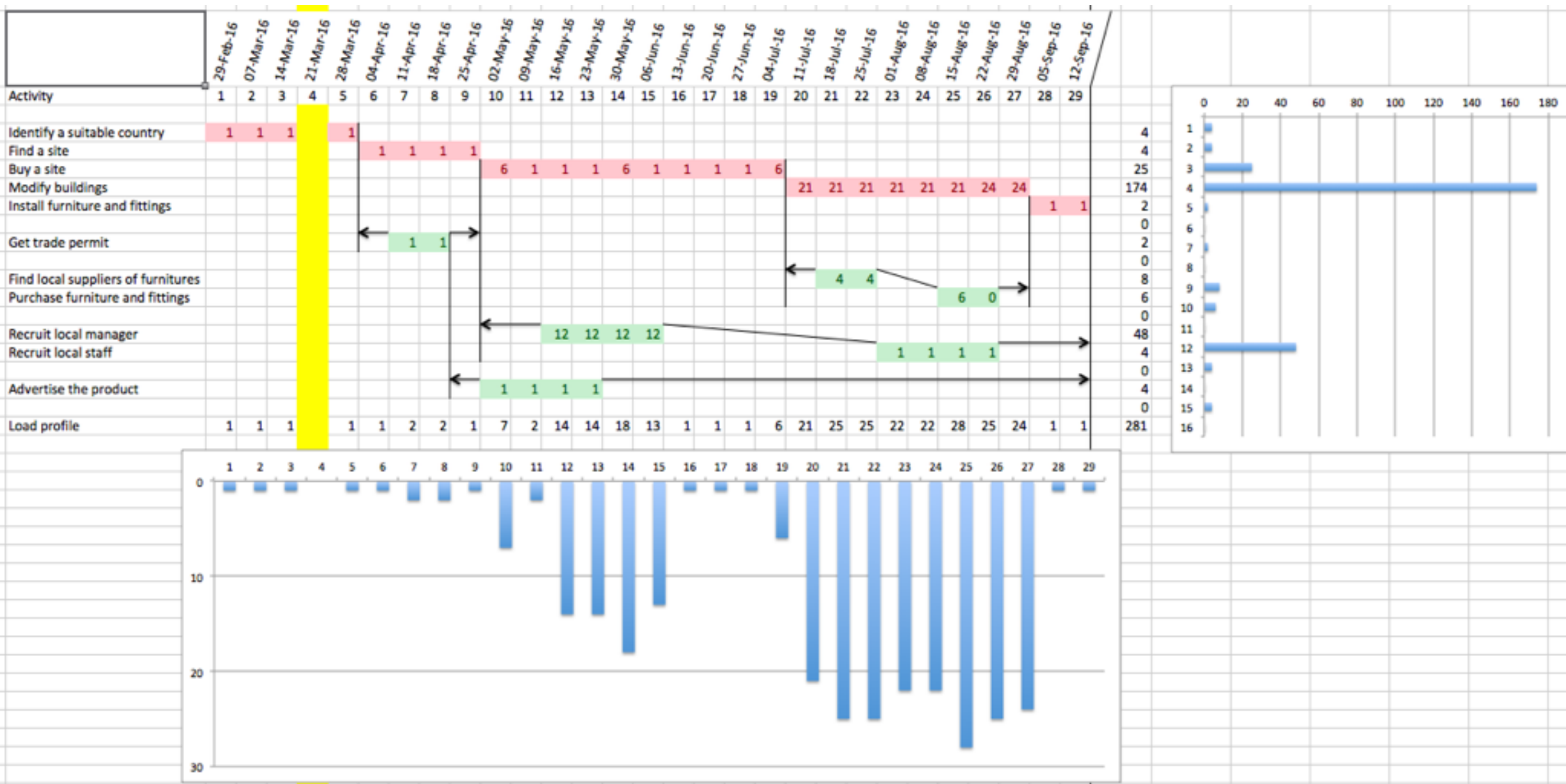


# Gantt chart

Communication  
Resource planning  
Monitoring progress



# Demo — Gantt chart with spreadsheets



# Exercise

Name	Time estimation (weeks)	Precedents
A - Hardware (HW) selection	6	
B - System configuration	4	
C - Install HW	3	A
D - Data migration	4	B
E - Draft office procedures	3	B
F - Recruit staff	10	
G - Use training	3	E, F
H - Install and test system	2	C, D
<b>Total</b>	<u>35</u>	

Prepare an activity network and a Gantt chart based on these activities.

# Concluding

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