



MEC-E3001

pdp

PRODUCT DEVELOPMENT
PROJECT.

A"

Aalto University
Design Factory



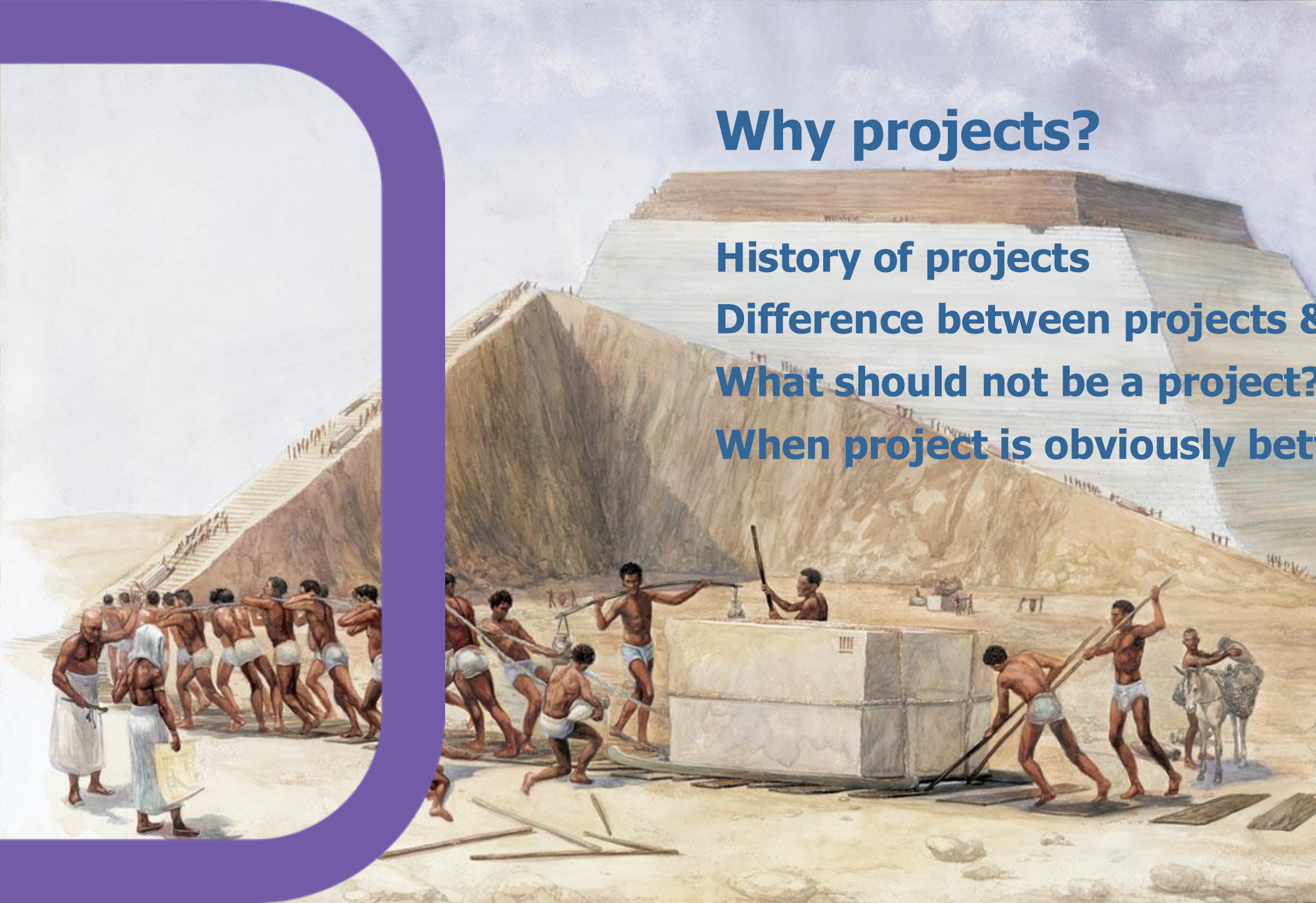
Why projects?

History of projects

Difference between projects & other work

What should not be a project? Example!

When project is obviously better?



TERMINOLOGY

-Project [Artto, Karlos]

A set of unique, complex, and connected activities having one goal that must be completed in specific time, within budget, and according to specification

-Stakeholders

-WBS

-Gant, Pert, DSM charts (Ulrich-Eppinger)

-Sequential, parallel, and coupled tasks

-Critical path

Stakeholders

Team

Sponsor

PDP staff

How about

ADF Staff

Your own professor

Suppliers

Authorities

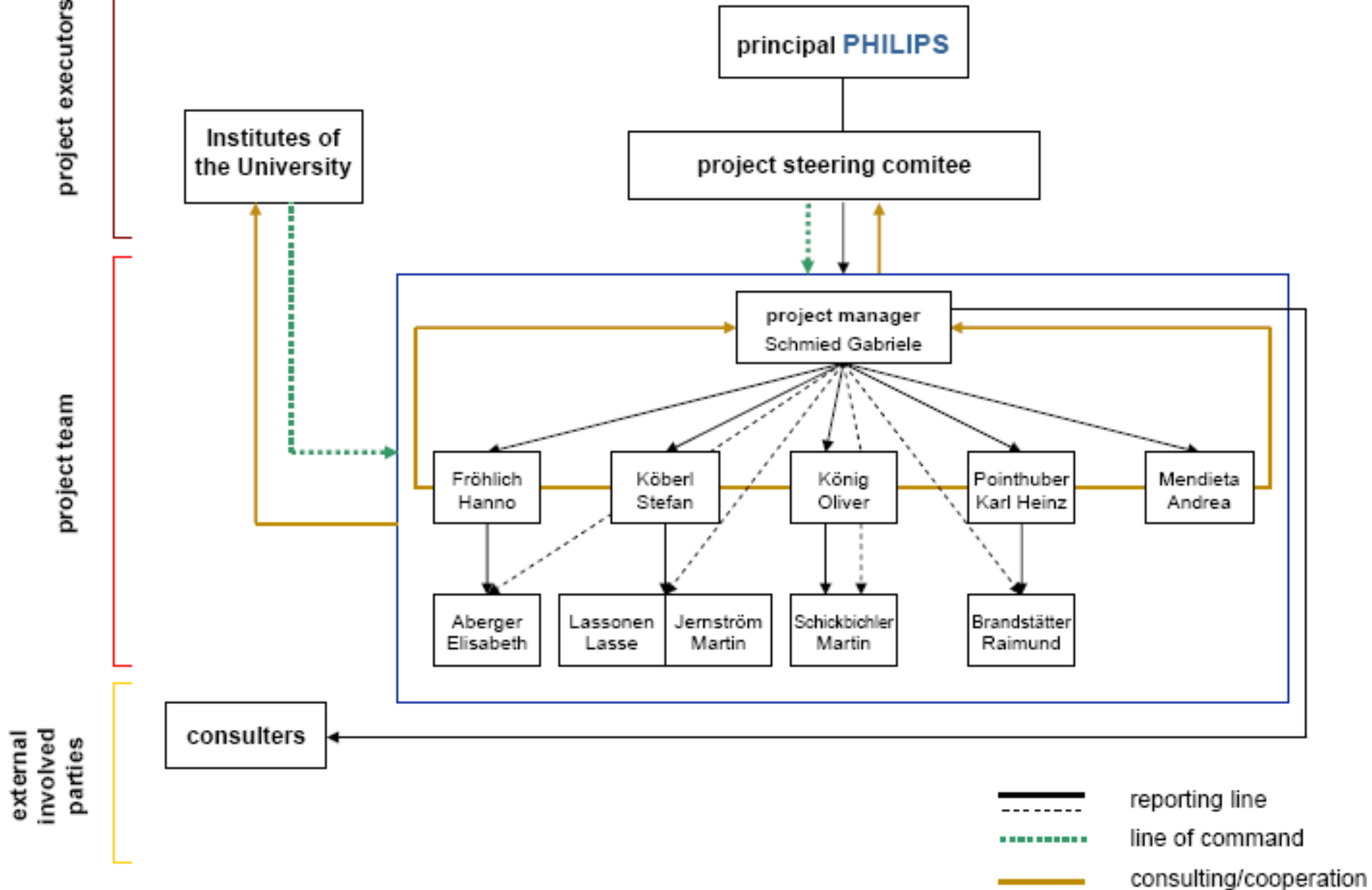
Faculty of remote Uni

Media

Mother, spouse, ...

Your idea for
an unexpected
stakeholder





PROJECT PHASES (process)

- Definition phase**
- Planning phase**
- Execution and control**
- Closing**

P.D.P. PROCESS

- Understand**
- Find**
- Create**
- Choose**
- Design**
- Test**
- Fine tune**
- Report**
- Exhibit**

DEFINITION

- Study and communicate the problem/opportunity
Ask-Watch-Try-Learn; repeat; the Title**
- Define explicitly project goals, objectives, practical results; (“What do we have at Gala? How do we get it?”)**
- Define/share your personal objectives; learn to know your team mates**
- Identify success criteria (project/personal)**
- Start listing assumptions, risks, obstacles**
- Work out drafts of Project plan, agreement, NDA’s**

PLANNING (together with sponsor!)

- Identify project subtasks / activities**
 - Estimate duration of each one**
 - Determine resource requirements**
 - Assign resources (search for?)**
- Define and agree on**
 - working methods**
 - communication**
 - responsibilities**
- Work out detailed project plan**

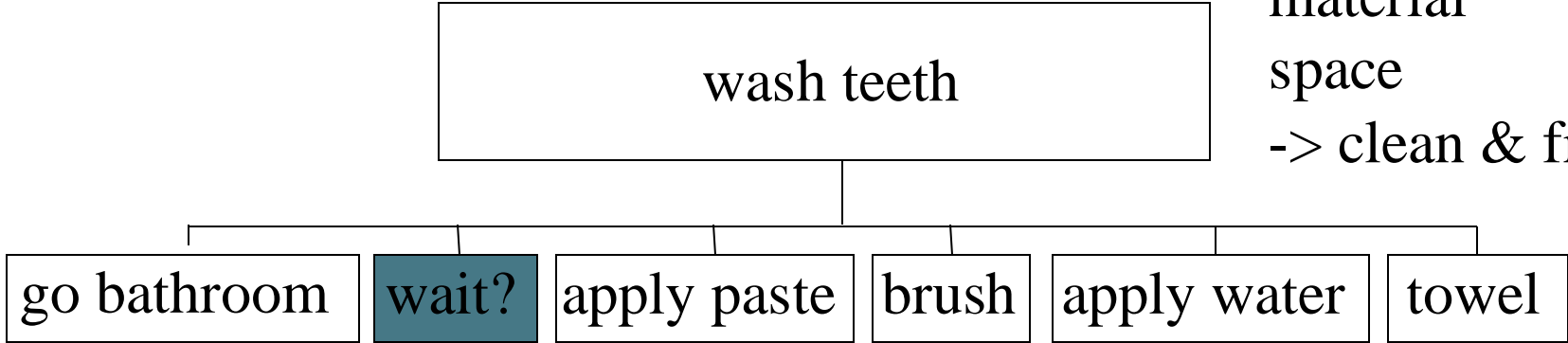
PROJECT PLAN

- Definitions: introduction, goals, results, restrictions, methods**
- Organisation: stakeholders, roles, responsibilities**
- Action plan: scheduled tasks, resources, risks**
- Budget**
- Control: scheduled meetings, supervision and reports definitions**
- Others: documents, communication plan**
- Water fall planning, dynamic**

Project plan

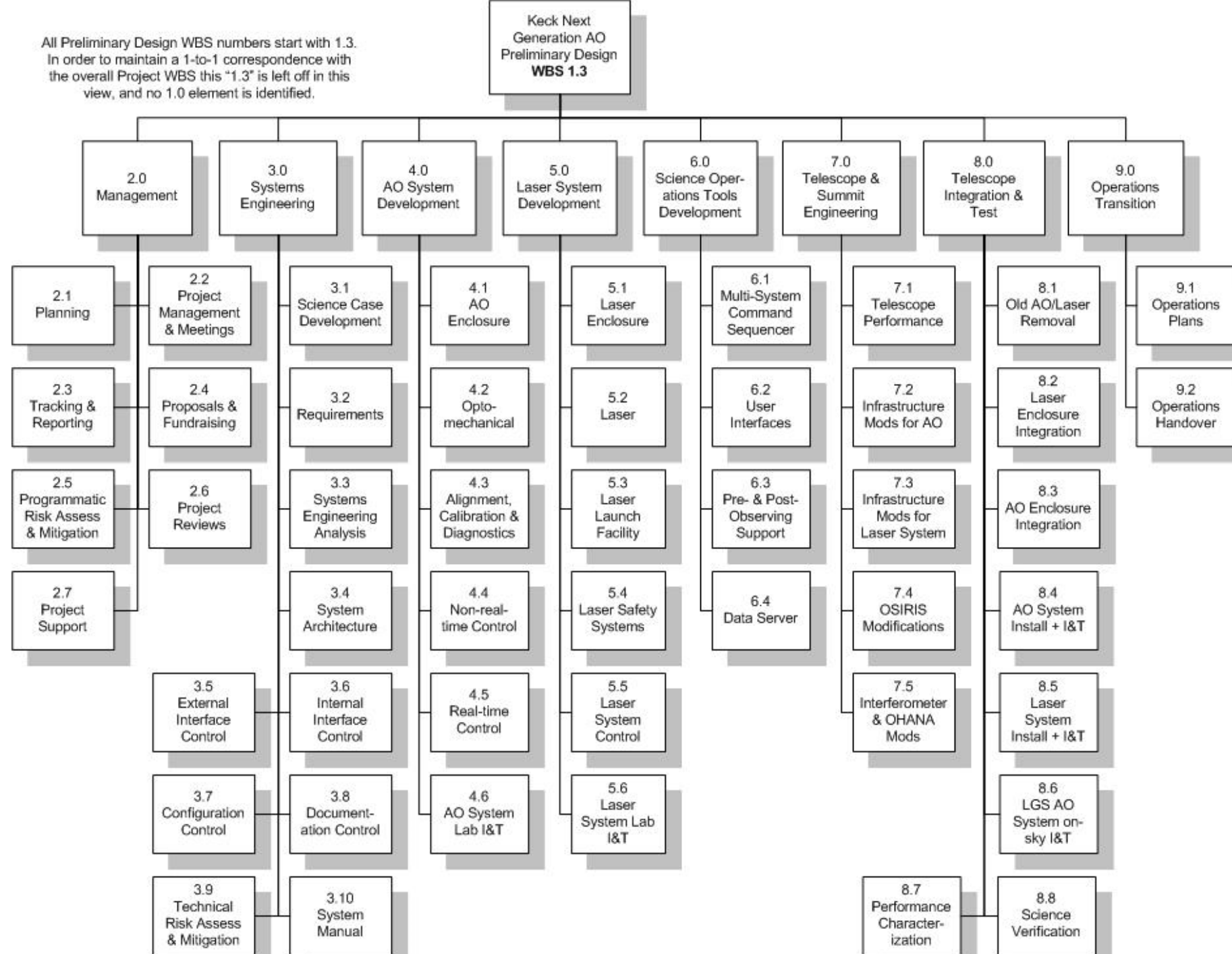
- 1. Background**
- 2. Project objectives, expected deliverables**
- 3. Methods**
- 4. Organization**
- 5. Work breakdown structure**
- 6. Schedule**
- 7. Budget**
- 8. Communication plan**
- 9. Meetings , checks and decision making**
- 10. Risk analysis**
- 11. Plan for reporting and transfer of results**
- 12. Tracking experiences, lessons learned and feedback**

Work Breakdown Structure



you
5 min
material
space
-> clean & fresh

All Preliminary Design WBS numbers start with 1.3.
 In order to maintain a 1-to-1 correspondence with
 the overall Project WBS this "1.3" is left off in this
 view, and no 1.0 element is identified.



Attachment 1 (3)
Source: Ulrich&Eppinger,
Product Design and
development

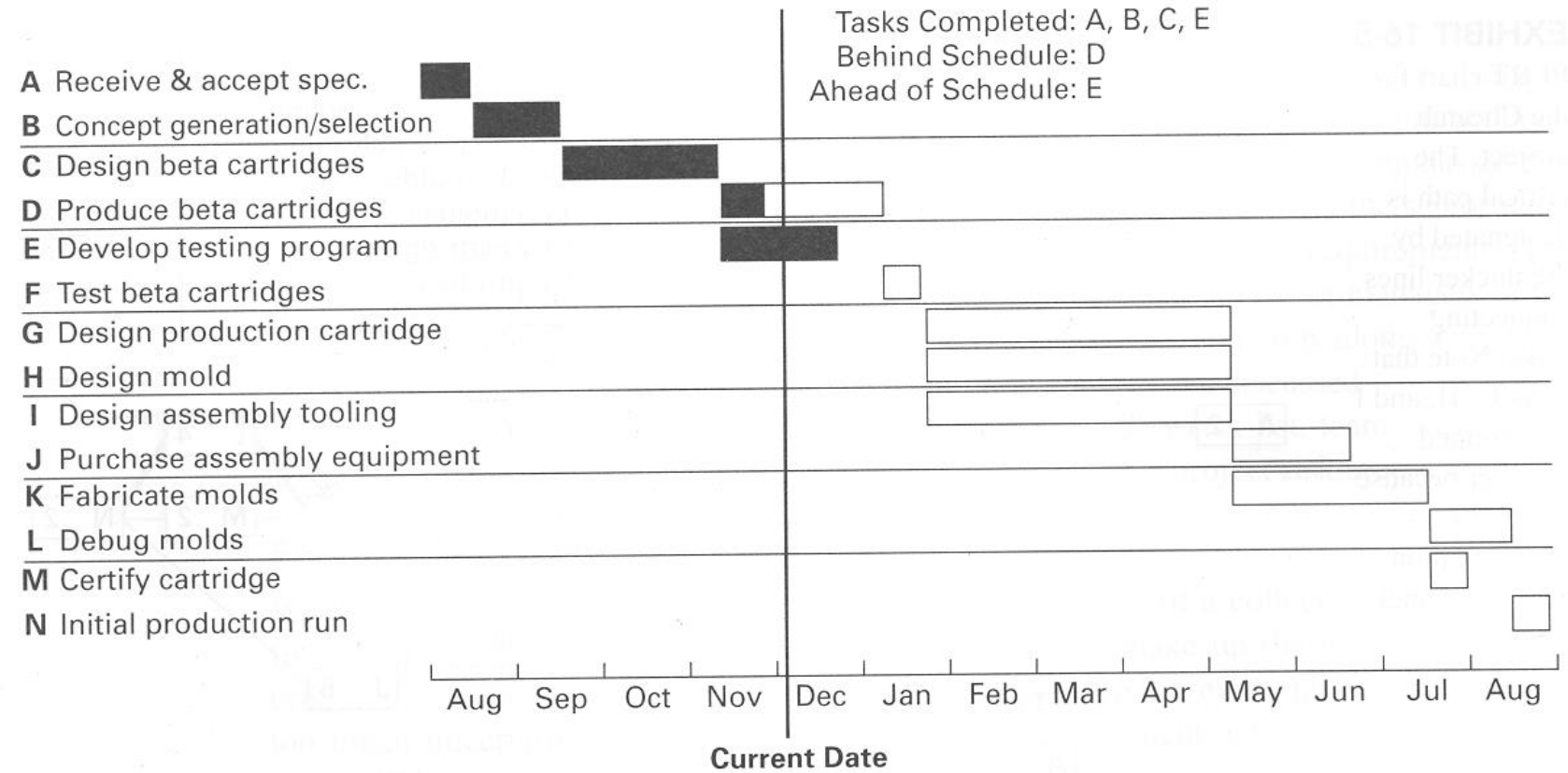
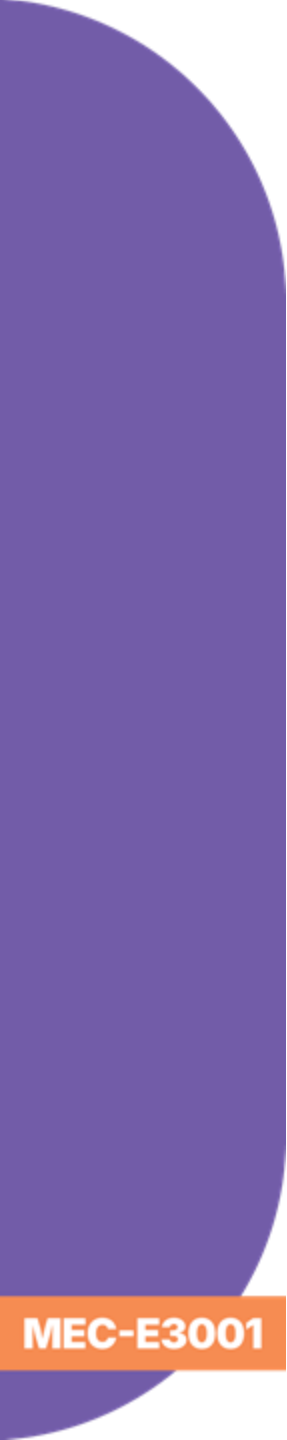
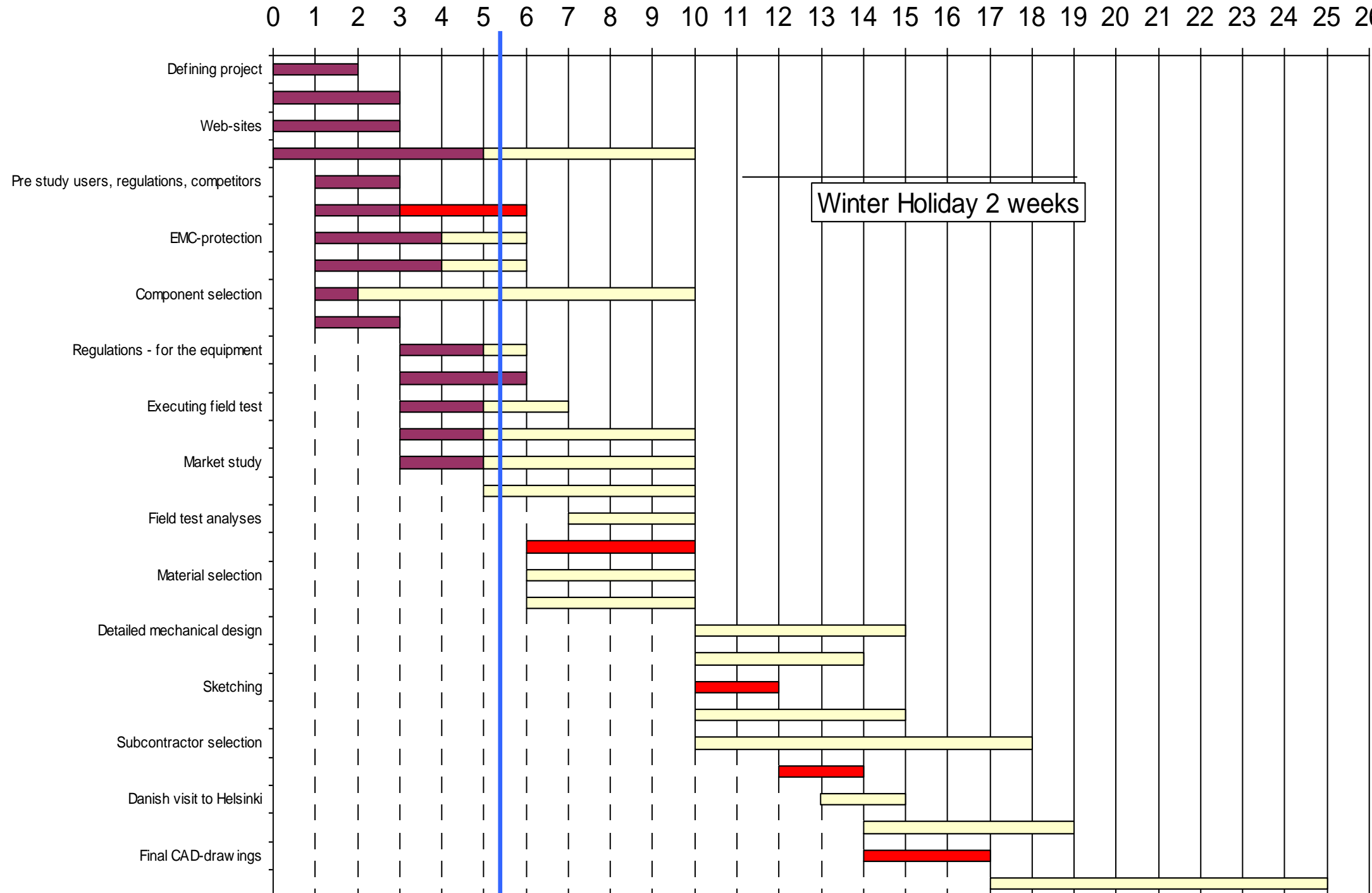


EXHIBIT 16-4 Gantt chart for the Cheetah project.



tasks

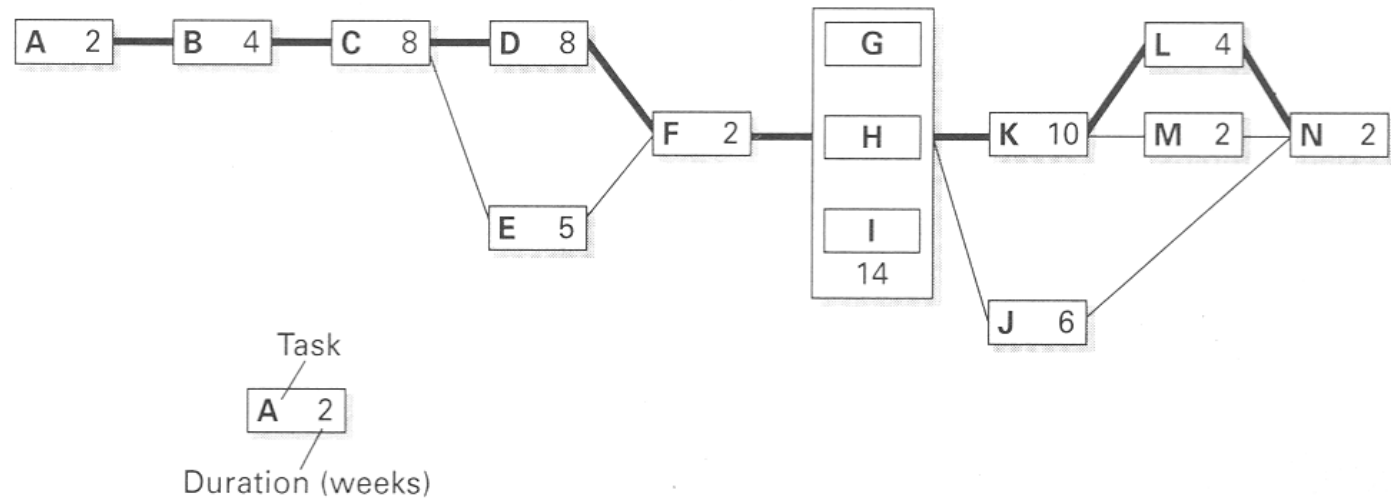


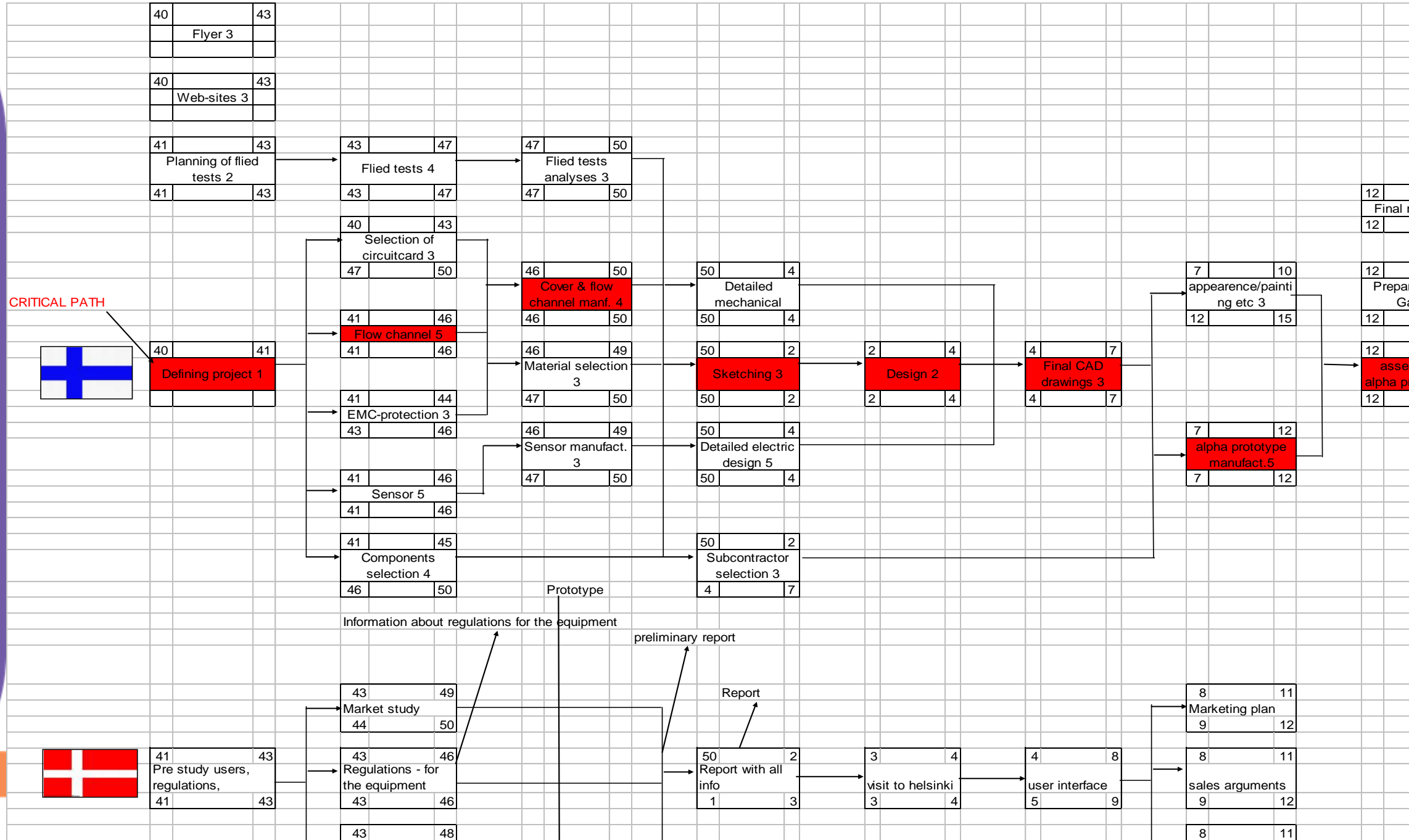
Winter Holiday 2 weeks

EXHIBIT 16-5

PERT chart for the Cheetah project. The critical path is designated by the thicker lines connecting tasks. Note that tasks G, H, and I are grouped together because the PERT representation does not depict coupled tasks explicitly.

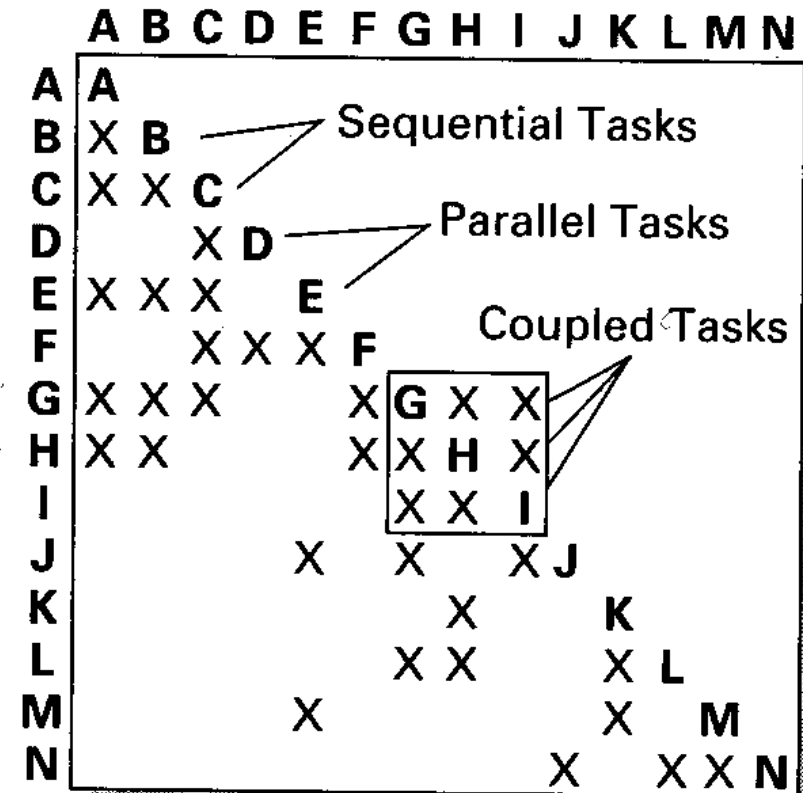
A Receive & accept specification	H Design mold
B Concept generation/selection	I Design assembly tooling
C Design beta cartridges	J Purchase assembly equipment
D Produce beta cartridges	K Fabricate molds
E Develop testing program	L Debug molds
F Test beta cartridges	M Certify cartridge
G Design production cartridge	N Initial production run





Design Structure Matrix

Task	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Receive and accept specification	A													
Concept generation/selection	X	B												
Design beta cartridges	X	X	C											
Produce beta cartridges			X	D										
Develop testing program	X	X	X		E									
Test beta cartridges			X	X	X	F								
Design production cartridge	X	X	X			X	G	X	X					
Design mold	X	X				X	X	H	X					
Design assembly tooling							X	X	I					
Purchase assembly equipment					X		X		X	J				
Fabricate molds							X				K			
Debug molds							X	X			X	L		
Certify cartridge					X						X		M	
Initial production run										X	X	X	N	



RISK ANALYSIS

-Risk description

-team related (skills, motivation, human relations,...)

-sponsor related (changes in personnel, focus, plans,...)

-school related (attitudes, byrocracy, ...)

-others (optimistic promises, attitudes, service,...)

-Risk level: low, moderate, high [1,3,9]

-Risk probability: low, moderate, high [1,3,9]

-Actions to minimize risk

EXECUTION AND CONTROL

- Do, anything – do it now!**
- Hands on, also practical**
- Prepare for meetings, for interviews, for visits...**
- Use your plan and schedule as tools for monitoring**
- Make revisions if necessary**
- React**
- How to maintain team spirit?**

CLOSING

- Complete documentation, final report, presentation**
- Evaluate results vs. success criteria**
- Asses your personal objectives**
- Evaluate lessons learned**
- Give and ask for feedback**
- Obtain acceptance**

DOCUMENTS AND REPORTING

- whom the report is addressed to; and why ?**
- is enough / too much information included?**
- important subjects / problems clearly presented**
- alternative decision choices included**
- progress scenario included**
- reported items, eg.:**
 - product segment map**
 - technology road map**
 - product-process change matrix**
 - product plan**

DOCUMENTS AND REPORTING

-report types

customer needs lists

needs-metrics matrix (QFD)

function structures

concept tables

concept screening / scoring matrix

benchmarking reports

specification lists

LESSONS LEARNED

-personal learning experiences

-feedback to (/from) the parties

team mates

company

other teams

Design Factory staff

-comments on different aspects (time, cost, quality)

-comments on tools, methods, practices

-problems & specific actions



EETU's TIPS

-Use the 'still acceptable' scenario, iterations

-Get results today, tomorrow, everyday

-Invest in human relations (team, other parties)

-Don't wait (for anything, never), especially at start

-Manage the scope – freeze the plan

-Value of personal contacts can't be overestimated

-Don't hide mistakes (or if something isn't done)

-Planning is hard – but do it realistic (waterfall)

-Design for meetings (% of time, efficiency)

-Write down and store all decisions, comments etc

Your team has an international sponsor, a businessman who however lives in Turku (Finland). From the very beginning, the sponsor has been very excited about the project. He has been active in all agreed meetings. Always when the team has shown their ideas, concepts, or other results he has been very positive and supportive.

We are now in late March, and the team feels that the sponsor has suddenly changed a lot. Instead of positive feedback, he criticizes the team. He says that the team has not properly understood the whole project, even though he has invested so much time and effort on it. He is very disappointed with the skills and motivation of the team, he says. According to him, it's rather clear already that nothing useful will come out from this project.

What is your analysis about the situation?

Sponsor of the project is a high tech manufacturing company. The projects were just recently launched and the company invited your team to visit their factory. During the visit your team also had a meeting with the core sponsor team, reinforced by some other experts from the company. They all seem to be tough professionals and very goal-oriented people. During the meeting and observing their faces and body language, you start to feel some disappointment on their side. Is your team too childish and unexperienced to tackle this kind of hard real-life problems?

You feel that it may be super hard to surprise them positively in the future. Or is that so?

What ideas you have for this kind of situation?

There seem to be some issues in the team dynamics. In your team there are two students, who are not very talkative and even when they speak, the voice is very silent. Also, their language skills seem to be limited, which makes it difficult to properly understand their thoughts. On the contrary, there is another team member who always seems to know how things are, and he doesn't hide that. He often tends to criticize others' suggestions and often keeps longish talks how something will be far too difficult to even try – or sometimes so trivial that it wouldn't make sense to spend any time on such nonsense.

When the nature of the project turns from meetings and brainstorming towards more experimental and hands-on, the two silent fellows are always there. But the talkative person seems to always have overlapping exams, mandatory courses or job commitments. Actually after the Half-Way Show in January, nobody from your team has seen him in the past six weeks, neither did he answer any emails or other messages.

Your thoughts about the situation?

Most common complaints we hear from the international team members:

- we don't know what is expected from us
- we can't always hear so well, what the Aalto students are saying
- decisions and changes are communicated to us poorly
- the meetings are held on a very inconvenient time

Most common complaints we hear from the Aalto team members:

- it's so difficult to define meaningful tasks for them
- they are not always available (different academic year)
- technical difficulties related to meetings

Can you imagine any positive aspects, where international cooperation clearly could be an asset? Any thoughts, how to turn the negative comments towards positive?

Our project started pretty well. Most of our team members got their 1# priority project! We had a visit to the company and successful PD6-workshop together with our international reinforcements. We even won the prototyping prize! In my opinion we were quite active in searching for information and brainstorming, but simultaneously a bit frustrated with the slow progress. There was a long Christmas brake and one week before the Half-Way Show I suddenly realized that we haven't had any progress since end of November. I quickly worked out a slide set, with no time to show it even to my team members. Luckily, I had enough time to practice it through. My professor said that our presentation was very convincing!

But the situation didn't become any better after that. Everybody – including myself – seemed to have far too many other commitments, and PDP as a long project, could always be postponed. When I saw the professor, he looked a bit disappointment and asked if I ever come to DF anymore; our early prototype has been collecting dust for 4 months already.

Before the Gala, on the last week, I just had to take some days of from my job. Together with 2 or 3 teammates, we did what we could, in order to save at least some of our reputation. That was no happy ending...

What would be the actions needed and when should they be taken to avoid this scenario from happening?

We had some difficulties in understanding the project briefs properly. In general, our internal communication was always a challenge, because we are coming from different backgrounds. Discussions with the companies didn't go so well, because I feel we couldn't ask the right questions and they didn't want to say what we expected to hear. At the end, we had to start with a project that nobody had previous experience with. We had many internal meetings, where we just didn't know what to do. The time was not spent very efficiently, and everyone seemed to wait for something, for better instructions maybe.

The teaching team told us in the checkpoint meetings that we have to make decisions. But how can you make decisions, when you just have a feeling that there is not enough information? Finally in March our engineers bought a lot of stuff that was shipped to DF. Some of the deliveries never came to us. I'm pretty sure that someone stole them. And it was very unfair towards us when we heard rumours that someone from DF had said that we spent several thousand for an actuator set that could have been found at DF. How could we know what the smart-ass staff is hiding behind the scenes? This kind of unfair treatment decreases the team motivation heavily.

As a summary, our team decided that we were treated wrongly and other teams had much better projects, where the sponsor clearly indicated their expectations.

Our team is a truly interdisciplinary group, consisting of students from various fields and an active, globally distributed team. Everyone is excited about the sponsor we secured and eager to begin work.

In the fall, our engineers were already brainstorming technical solutions, eager to start building right away. However, our designers and business students were determined to take a more structured approach. They applied tools and frameworks from their disciplines to thoroughly understand the problem space, stakeholders, and market needs. This thoughtful process led to a much deeper understanding of the project, ensuring we would build the right solution. During this phase, the engineers felt a bit sidelined, as they were unable to fully utilize their technical skills.

After the mid-point review, the path forward was clear, and it was finally time to start building. The final prototype required significant mechanical design, welding, and electronics work. At this point, the engineers jumped into action, energized and fully engaged. But now, the dynamic had shifted. Some team members, especially those who had been more involved in the earlier strategic phases, came to you, the PM, expressing concerns about their ability to contribute during this more technical stage.

As the Product Manager, how do you ensure that all team members feel valued and involved throughout the project lifecycle? What tools, resources, or strategies would you use to keep the team engaged and informed, and to help them visualize how their roles will evolve at different stages of the project?