



Lecture: Modern Project Management in ICT

Prof. Dr. Harald Wehnes



Agenda

Exam 3/2020

Presentation of the solutions of Task 5

6 Traditional Project Planning 2

6.1 Work Breakdown Structures (WBS)

- Phase oriented Work Breakdown Structure

6.2 Work packages, process and time scheduling

- Process schedule of the project
- Time schedule of the project

6.3 Resource and cost planning

- Result: personal resources

Trello

Task 6: WBS, Kanban board (Trello)

Final presentations

Presentations: “PM in VN” – Part 1

Exam and grades

There is no traditional exam next week and no celebration ceremony

Solution 3/2020:

■ 1. Presentations

For the presentations (PM in VN and final project presentations) I will give everyone a grade for slides and presentation.

■ 2. Solutions of the homework tasks

Also for this, each of you will receive an individual grade.

You will have the opportunity to optimize and upload the task you were responsible for as project manager of the day until Tuesday evening:

"Upload: Optimized solutions of tasks 1-7"

Only **ppt-files** are to be uploaded. For example, all project managers of day 3 upload the (improved) solution of task 3 and only this one.

■ The final grade will be the weighted sum of 1. + 2.

■ 3. Oral exam

In addition, I offer an oral online exam via video conference for those who want to improve their final grade

Exam and grades

3 members will do the presentation of “Project Management in Vietnam” on 16 and 17 Mar 2020.

The remaining 3 (or 4) members of that team will do the presentation of “Startup Project” in the Final presentation on 18 March 2020.

The 6th member of the teams has to upload task 6 and the 7th member (only teams 11+12) has to upload task 7.

Research Tasks: Project Management in Vietnam

1. Large-size historical projects in Hanoi (result, duration, costs)
2. Large-size actual projects in Hanoi (result, duration, costs)
3. Large-size historical projects in VN (result, duration, costs)
4. Large-size actual projects in VN (result, duration, costs)
5. Industry sectors where project management is applied in VN
6. VN portals with job offers for project managers
7. VN universities that offer project management (degree) courses for students
8. Books about project management in Vietnamese
9. Skills of project managers (analyze some pm job offers)
10. PM organizations and groups in VN
11. Software tools for project work
12. Software tools for virtual communication

Presentation of the results by the team members: 16 & 17 Mar 2020

Deadline for Upload: 16th March, 8:00 am

Presentations of the research tasks: Examples

- ▶ Example (team 1)
 - *Overview about "Large-size historical projects in Hanoi" and*
 - *detailed information (result, duration, costs) about three projects - like Ha Noi museum, Long Bien bridge and Imperial Citadel of Thang Long*

- ▶ Example (team 12)
 - *Overview about software tools for virtual communication.*
 - *CBA, brainwriting etc. are **methods** - not (software) tools!*
 - *detailed information of at least three different tools for virtual communication*

Homework: Task 5

1. Complete the **phase plan with milestones** (table);
5 to 7 phases and milestones
2. Develop a **bar chart** with these data
3. ~~Complete your phase-oriented **WBS**~~

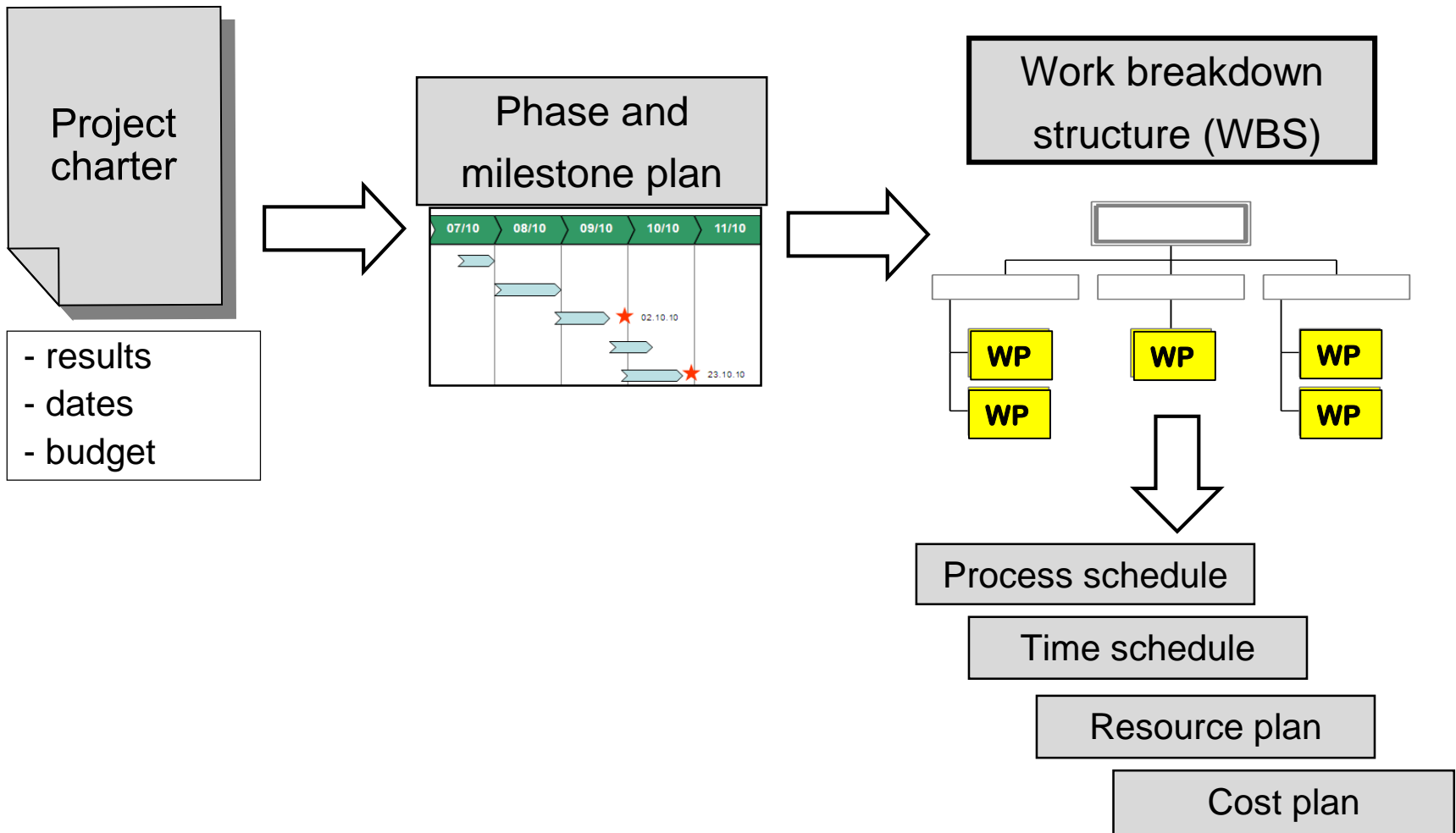
Upload of the presentation **Team_n-Task_5.pptx**
by the project manager of day 5!

Deadline: 16th March, 8:00 am

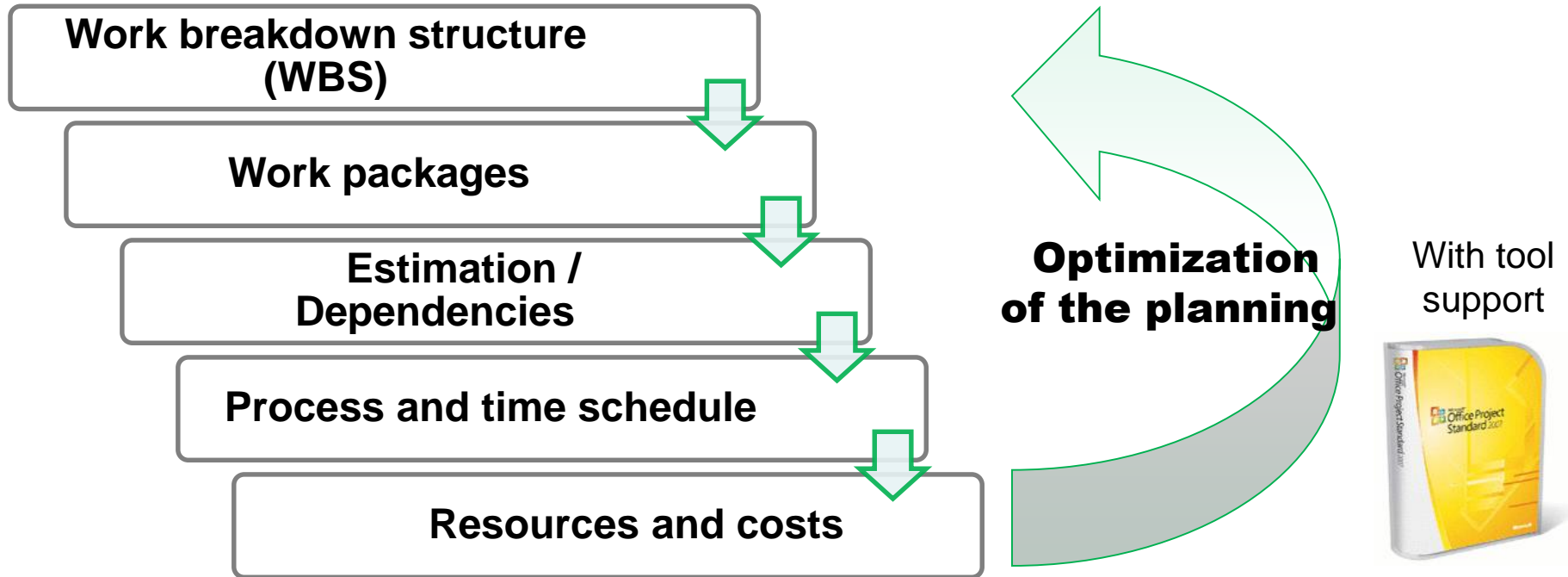
Presentation on Monday morning (Duration: ≤ 3 min)
by the project managers of day 5

6.1 WORK BREAKDOWN STRUCTURE (WBS)

Traditional Project Planning: Overview



Project planning is carried out in steps



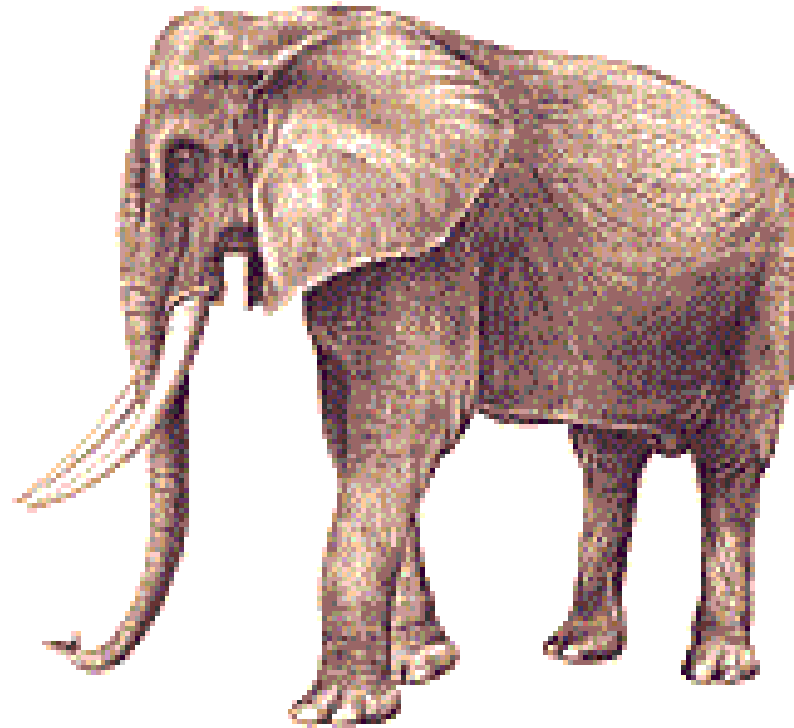
Additional plans, e.g.

- Communication (internal / external) and reporting
- Quality
- Risks and opportunities
- Tools

Project structures

How to eat an elephant?

Bite by bite



Project structures are
a collection of techniques
to create order in a project
by representing certain aspects in a structured manner

Work breakdown structure (WBS)

Definition: Work breakdown structure = full, hierarchical representation of all the elements (sub projects, work packages) of the project structure in form of a diagram or list

Aims of the Work Breakdown Structure (WBS)

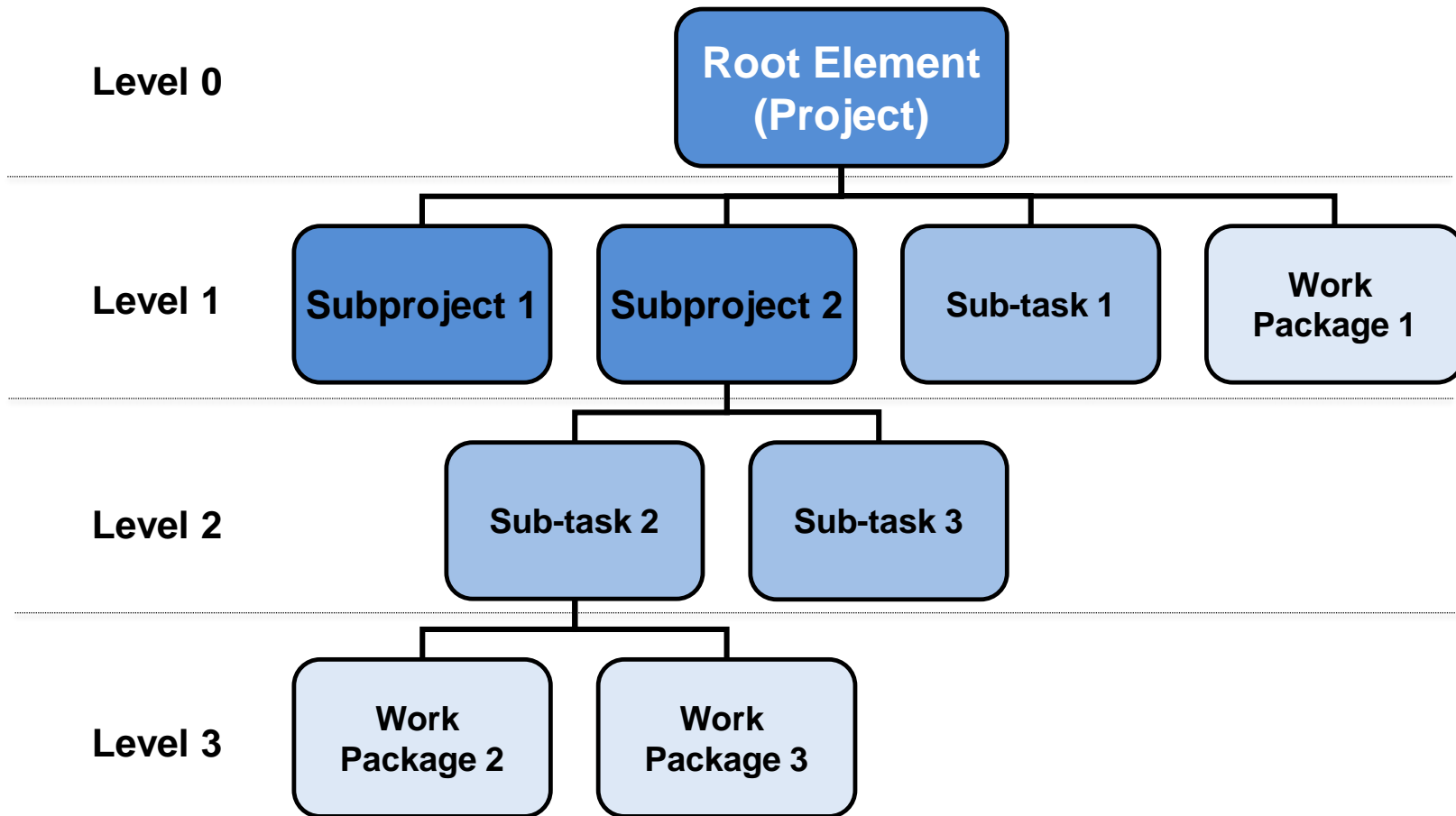
- Total overview of all tasks (work packages) of the project for establishing a shared understanding
- reducing complexity
- creating transparency
- detection of priority tasks, contexts and critical dependencies

WBS = „Mother of the project planning“ (key instrument of pm)

- Basis for all following plans (process/dates, resources, costs, etc.)
- Basis for the control of the project implementation

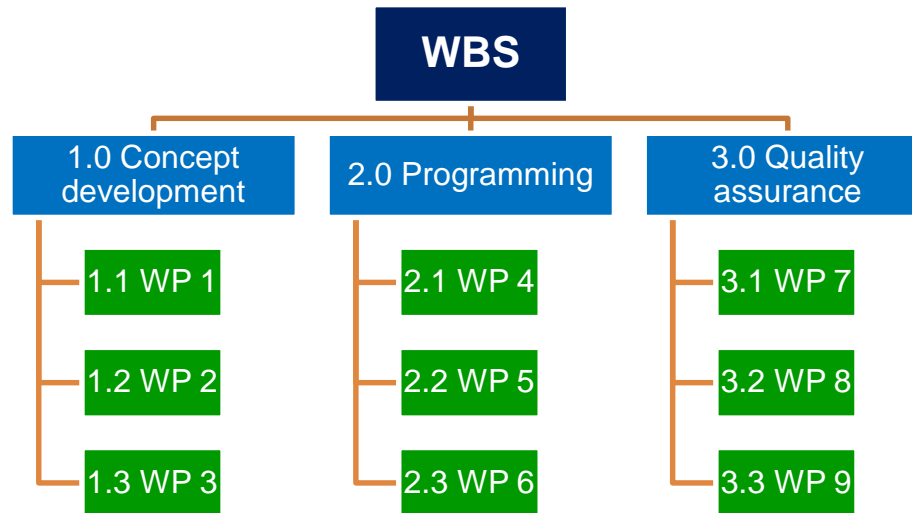
Work Breakdown Structure (WBS): Projects are broken down to sub project, sub-task and work packages

Hierarchical presentation of the project, broken down into several levels



WBS presentation formats

► Diagram



► List

1.0 Concept development

- 1.1 WP 1
- 1.2 WP 2
- 1.3 WP 3

2.0 Programming

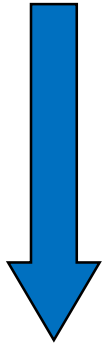
- 2.1 WP 4
- 2.2 WP 5
- 2.3 WP 6

3.0 Quality assurance

- 3.1 WP 7
- 3.2 WP 8
- 3.3 WP 9

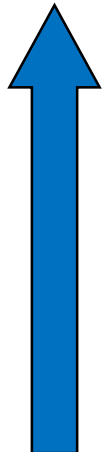
Work breakdown structure (WBS): Basic profiling options

Strategies



Top-Down

- Start with the overall project as a level 1 (root level)
- Division into subprojects or main tasks of at level 2
- More gradual decomposition of the sub-projects and main tasks to work package level is reached



Bottom-Up

- Collection of tasks
(by brainstorming, mind mapping, meta plan)
- Structuring of tasks according to a specific criterion (clusters)
- Structure of the project as a task hierarchy
- Adding missing tasks, removing duplicates

Example: WBS NIMBUS (Bottom-Up)



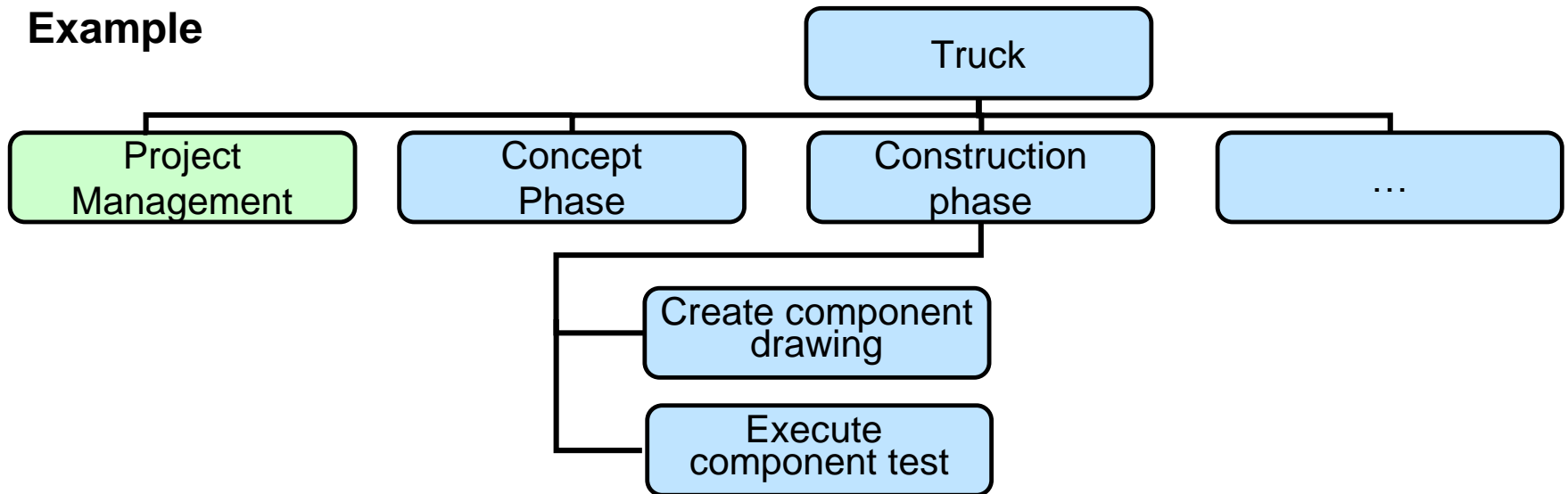
Design principles for a work breakdown structure

- ▶ Phase oriented breakdown
- ▶ Object oriented breakdown
- ▶ Function oriented breakdown
- ▶ Mixed breakdown

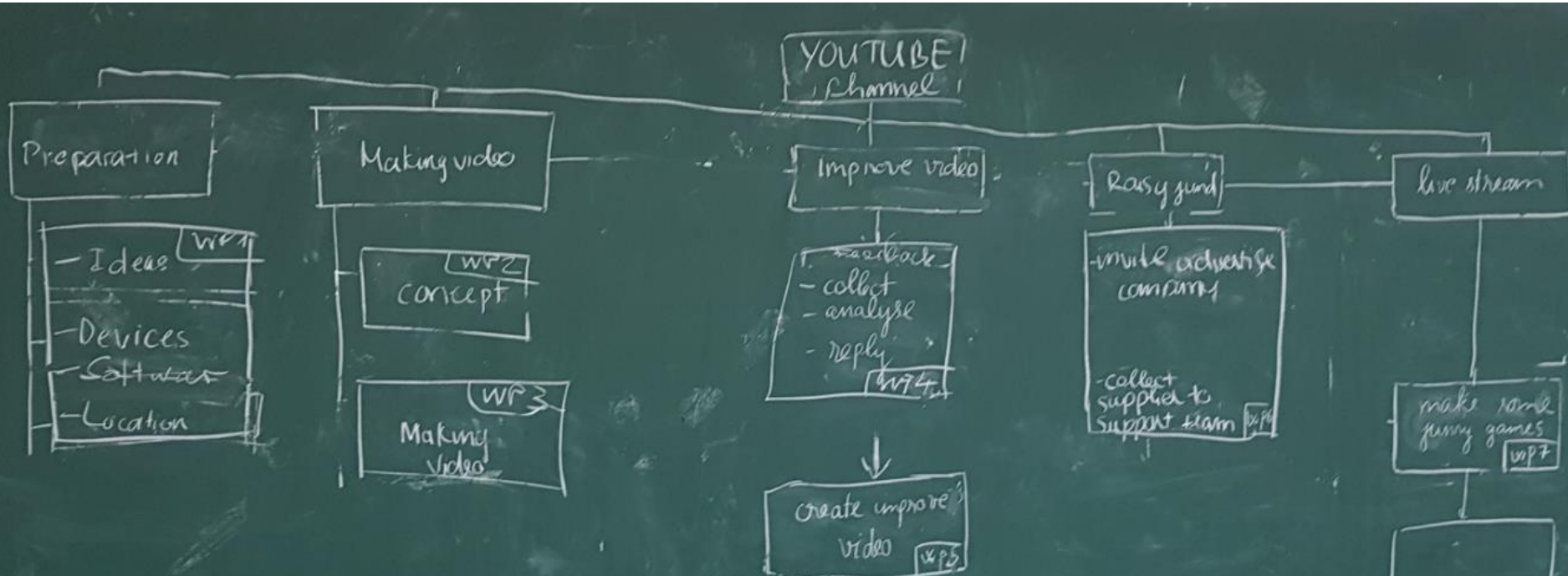
Phase oriented breakdown (sequence oriented)

- ▶ Start with the phases of your project
- ▶ Each work package can be assigned to a phase
- ▶ Exception: WP of Project Management

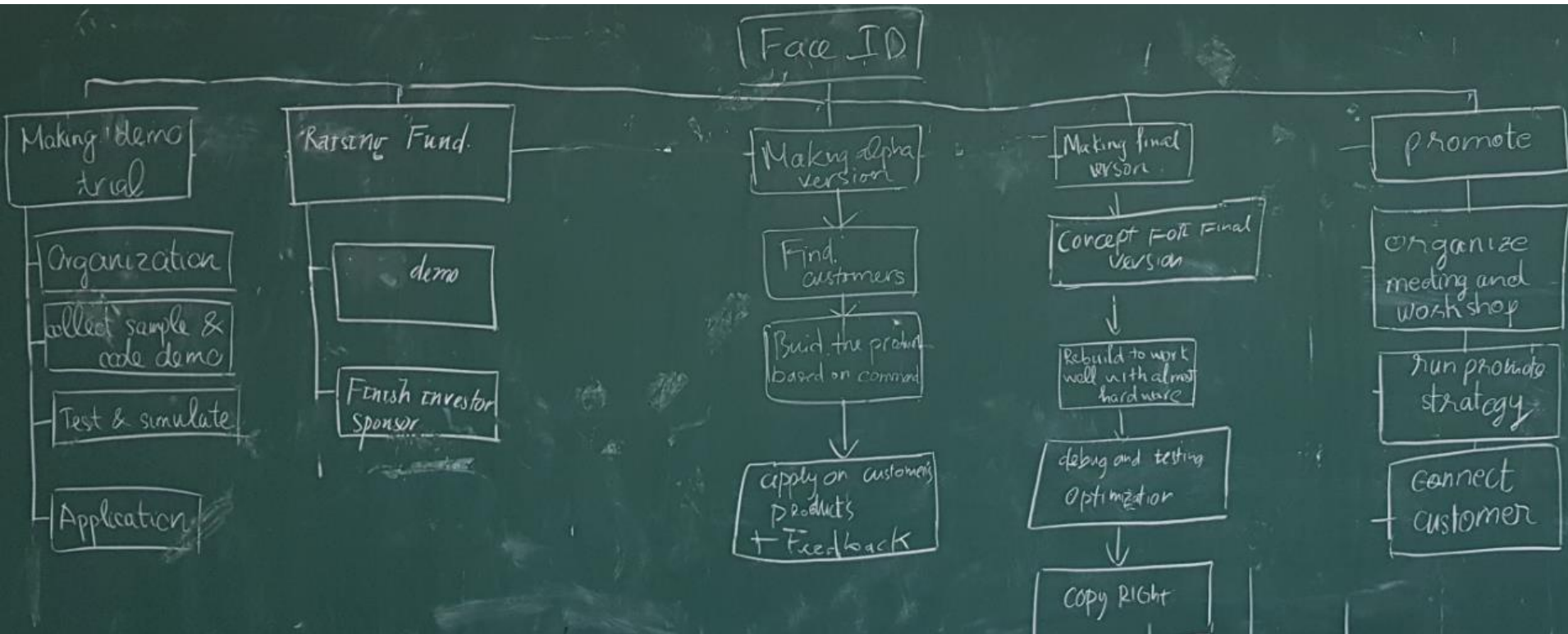
Example



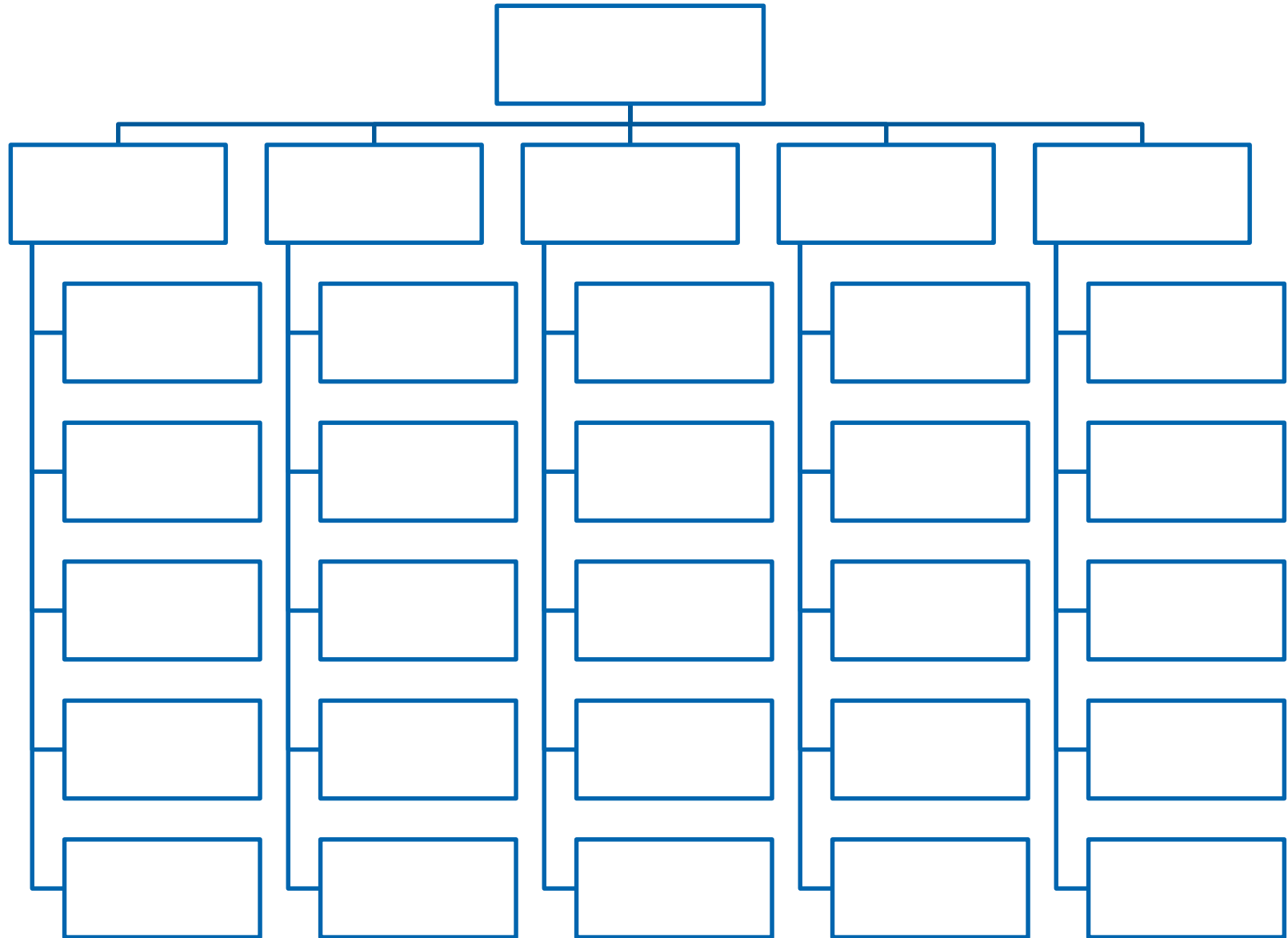
Workshop „Phase oriented breakdown”: Result



Workshop „Phase oriented breakdown“: Result



Work breakdown structure (WBS) – Template

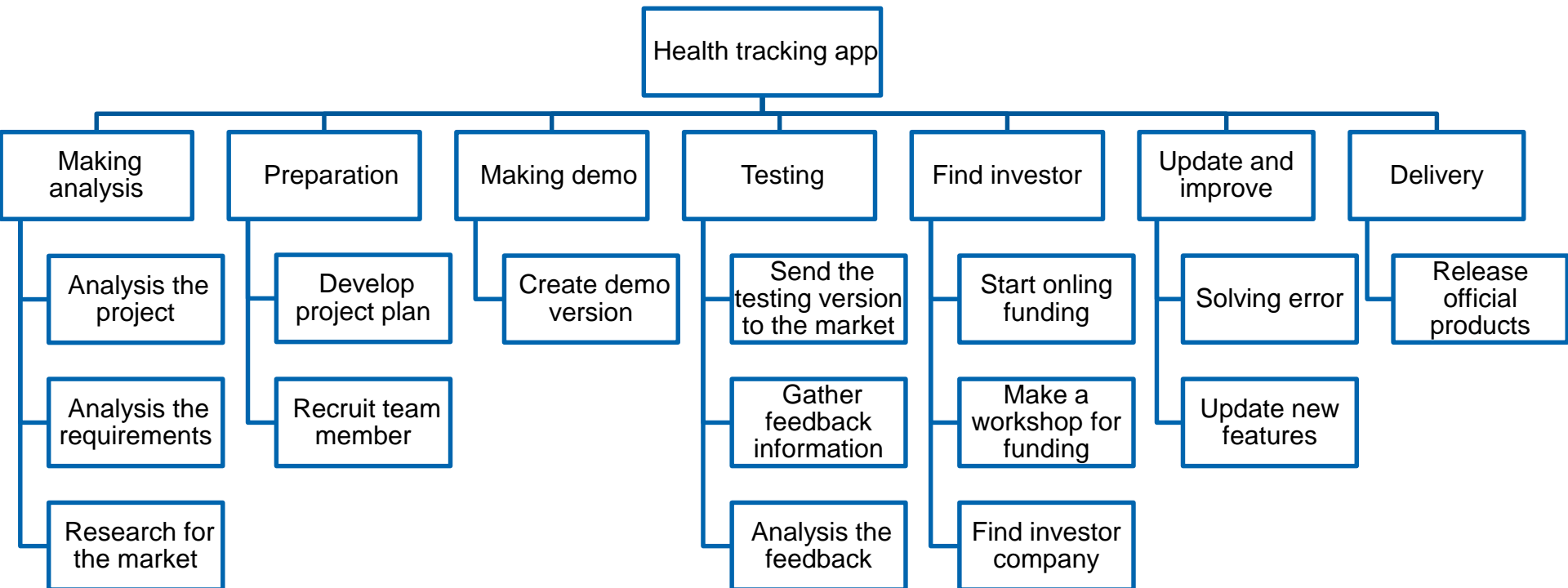


Workshop: Phase oriented breakdown

Create a phase oriented breakdown for your project

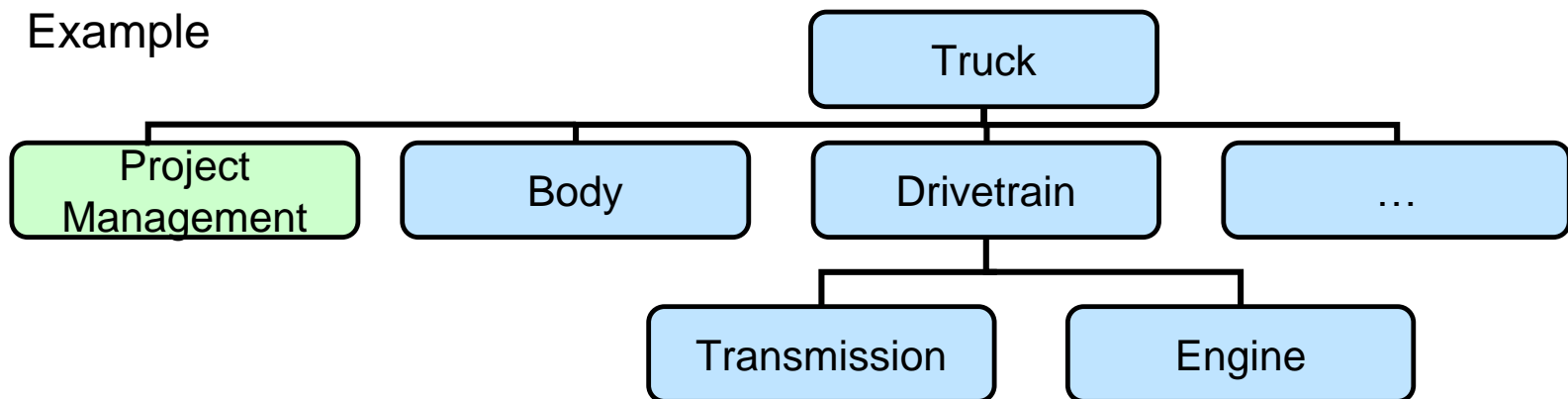
Time: 20 minutes

Work breakdown structure (WBS) – Health tracking app

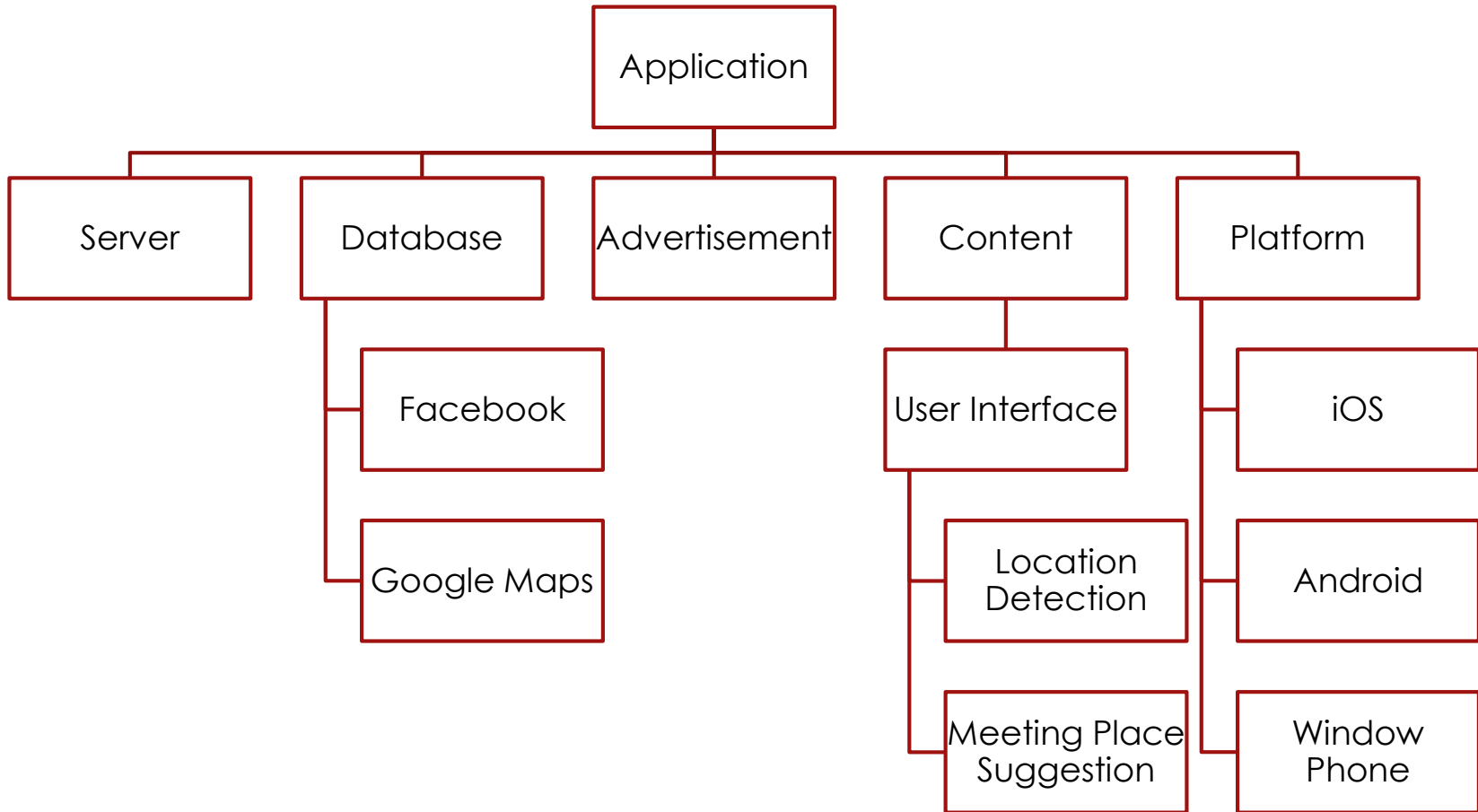


Object oriented breakdown

- ▶ Divide the project objectives into its components, modules and any individual parts
- ▶ If the breakdown process is purely object-oriented, the project structure and the product structure plan are identical to WBS



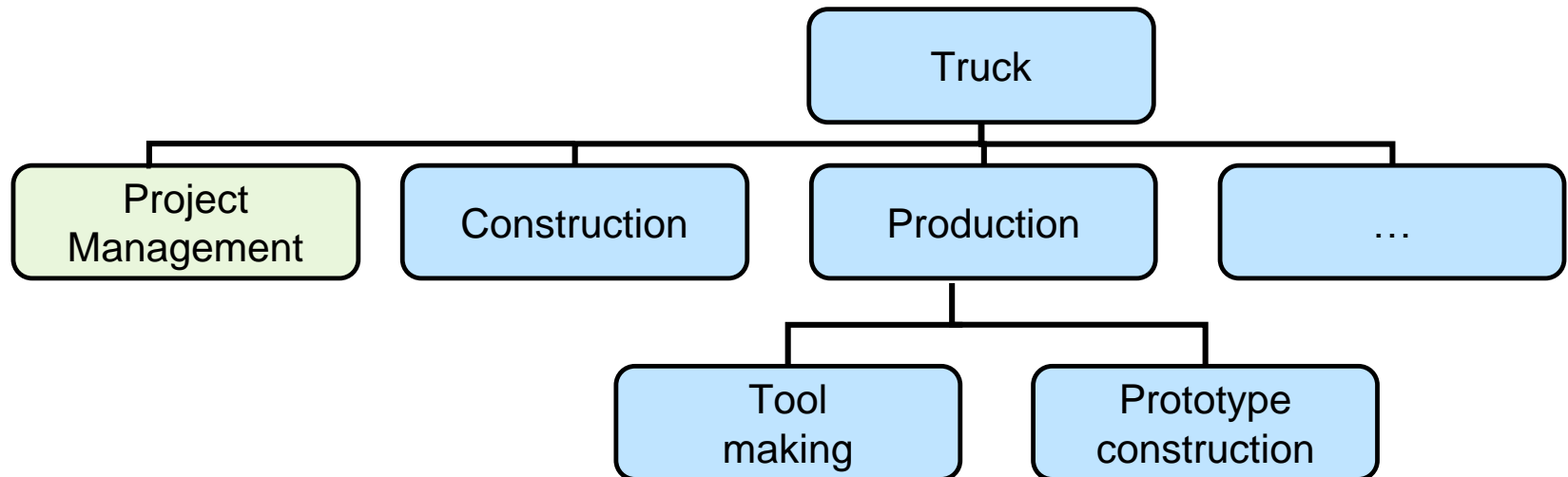
Example: Object oriented WBS



Function oriented breakdown (activity oriented)

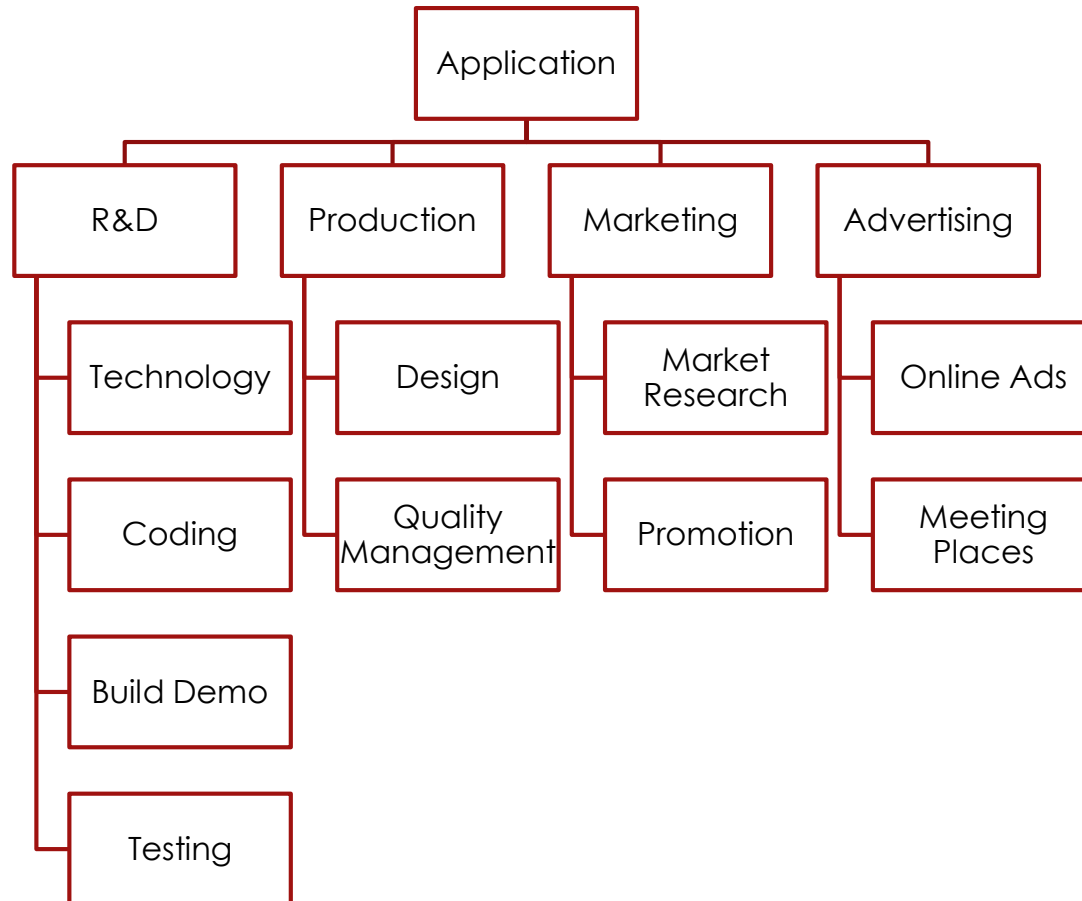
The functions required in the project are in the focus: analysis of customer requirements, system design, quality management, marketing und sales, etc.

Example



Source: Schelle a.o.: Project Manager, p. 162

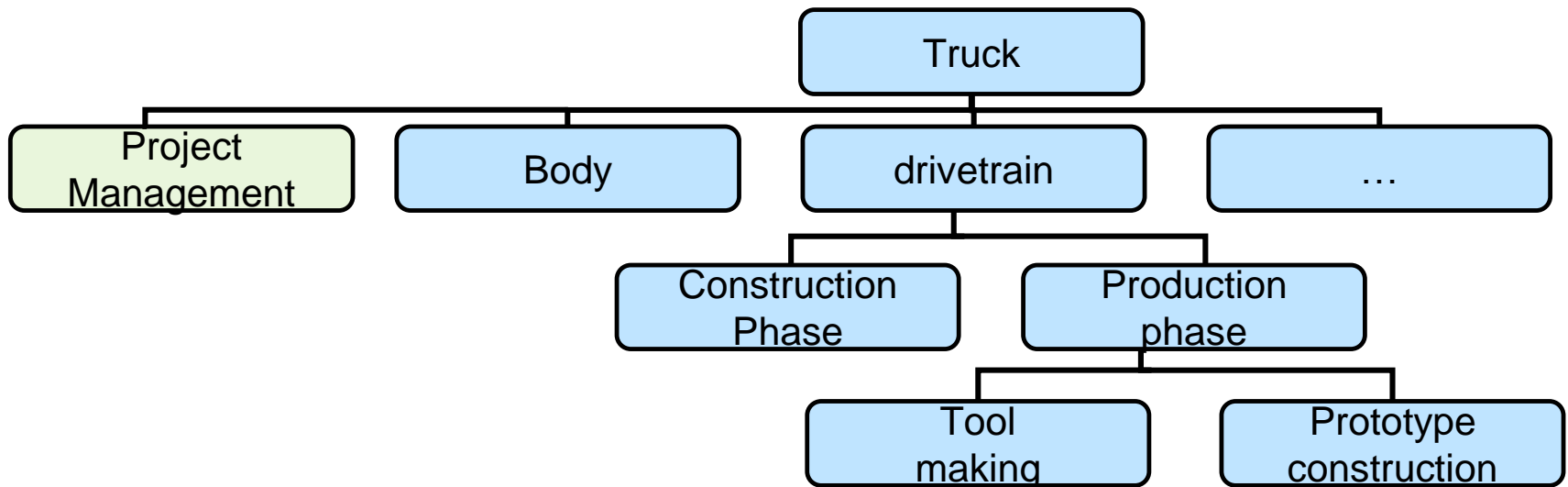
Example: Function oriented breakdown



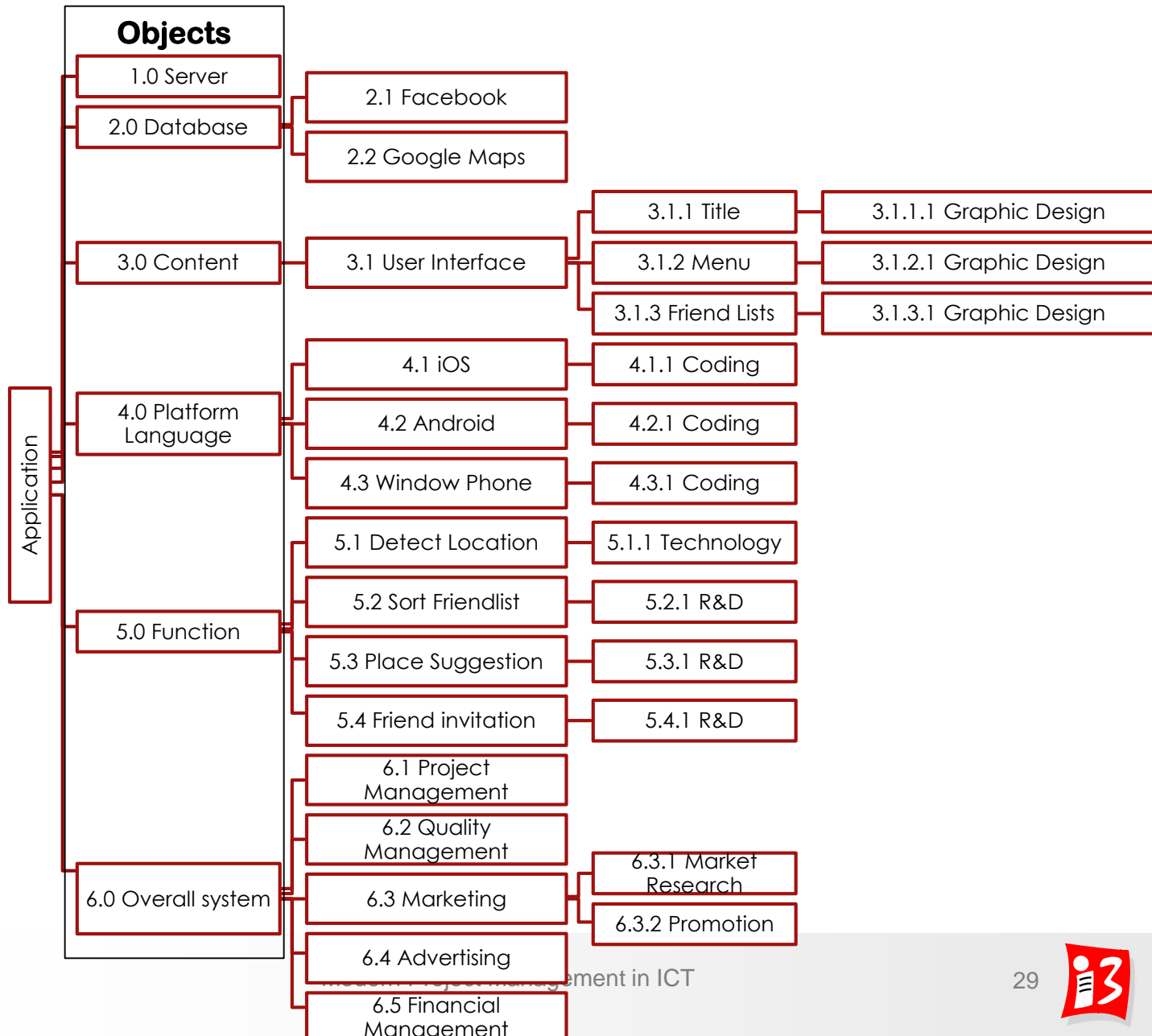
Mixed oriented breakdown

- ▶ To ensure an integrated view of the projects, phase, function and/or object oriented approaches are combined
- ▶ It is common to start with object-oriented (components) in the higher levels and have functional elements in the lower levels

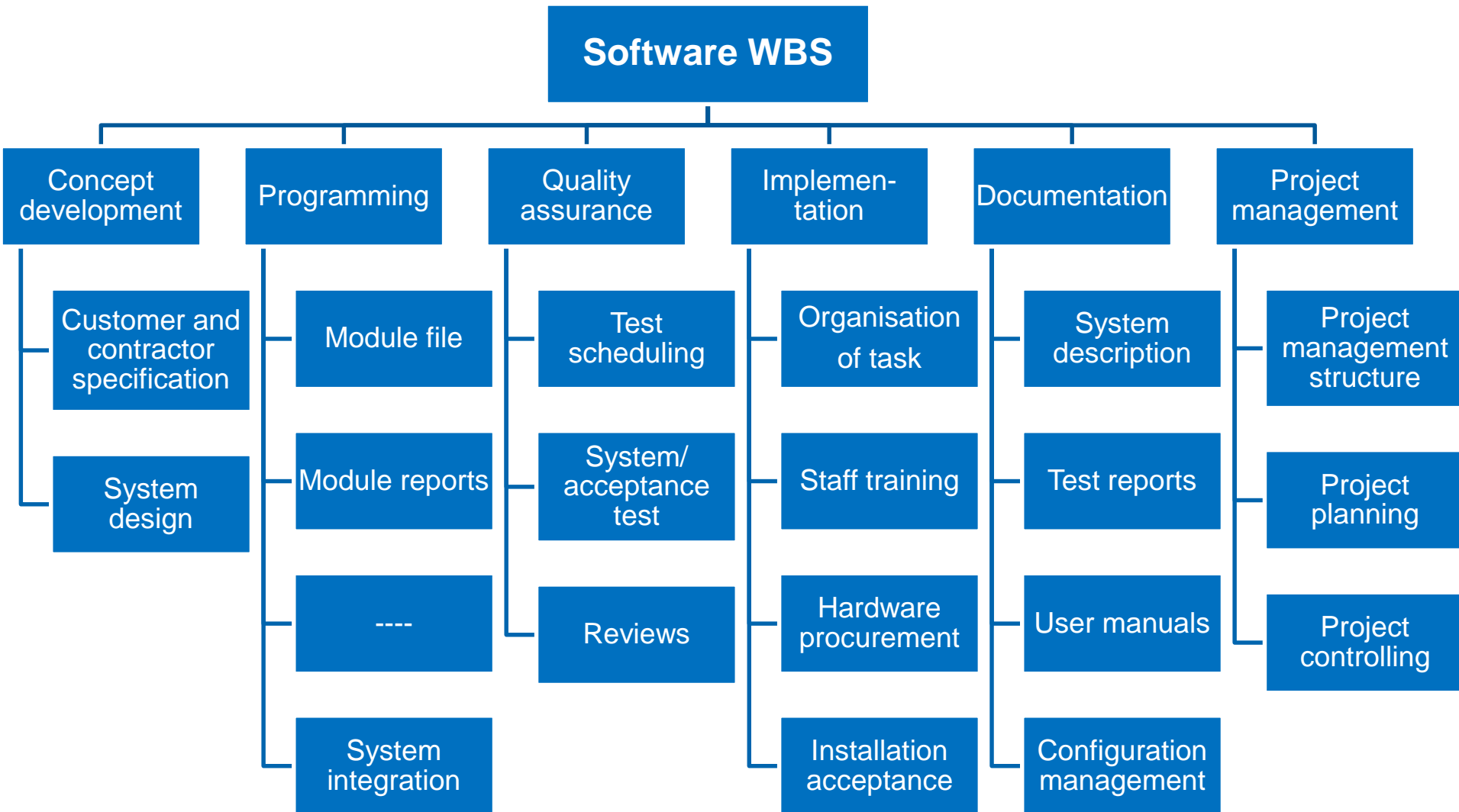
Example



Example: combined WBS



Standard WBS for software projects



Source: Schelle a.o.: Project Manager, p. 167

Completeness test

Important check!

- ▶ Control question: “If all WPs have been completed, are all project objectives achieved?”

- ▶ If the answer is NO, than find the missing WPs and add them to your WBS

Planning depth

- ▶ Plan as **much detailed as necessary**, since project planning ...
 - reduces complexity
 - creates transparency
 - shows opportunities and risks
 - reduces uncertainties

- ▶ Plan **as easy as possible**, because ...
 - planning is time and cost consuming
 - all planning elements must be controlled → additional costs

„The wise man does not push accuracy any further than it is the nature of the matter.” Aristoteles

Recommendations for WBS

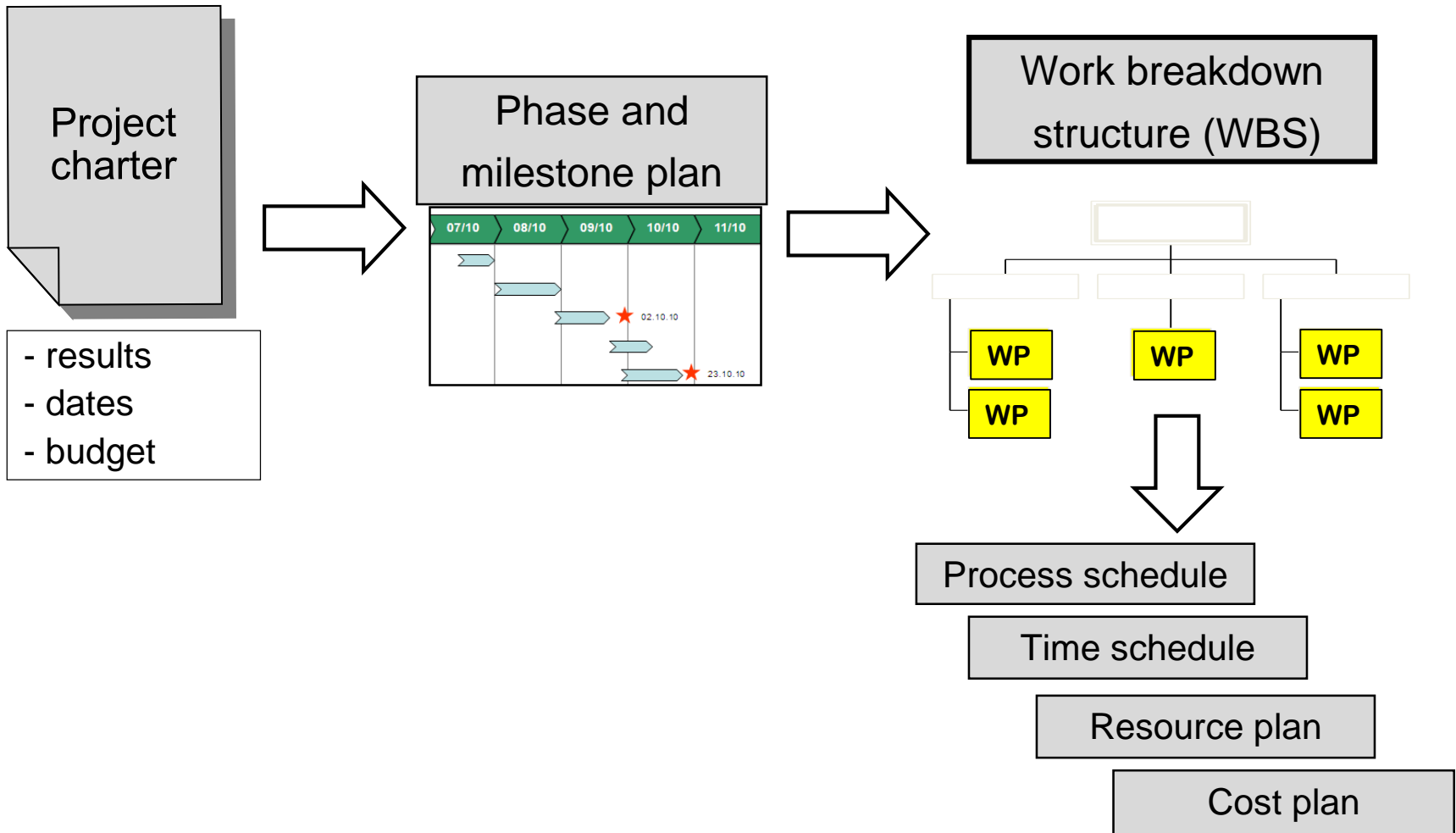
- ▶ Create the WBS with the team (WBS Workshop)
- ▶ Advantages
 - Employee motivation is encouraged
 - Uniform terminology and common understanding
 - Increased security, nothing is forgotten
 - Everyone knows which tasks in the project are to do
- ▶ Use **different** break-down principles
- ▶ There is one person responsible for each work package.
- ▶ Don't forget the WPs with the project management tasks

Project management rap

https://www.youtube.com/watch?v=r22Ty_wZAuw

6.2 WORK PACKAGES; PROCESS AND TIME SCHEDULING

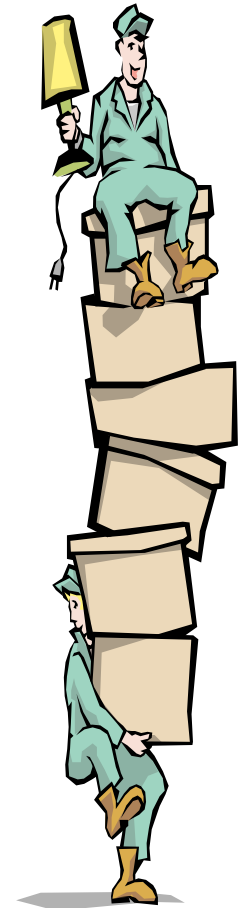
Project planning: Overview



Work packages: The building blocks of the project

Work packages define and describe

- work objectives
- the work content
- work results: deliverables
- responsible person
- dates and duration
- resources
- presumptions and costs



Good planning is half of the project work



**You may not
distribute the work
packages like this**

Coding of work packages creates clarity

- ▶ Project structure code: numbering system, all components of the WBS be clearly marked with a code
- ▶ The numbering shows also, to what level the WBS element belongs :
 - 1.0 Concept development
 - 1.1 WP 1
 - 1.2 WP 2
 - 1.3 WP 3
 - 2.0 Programming
 - 2.1 WP 4
 - 2.2 WP 5
 - 2.3 WP 6
 - 3.0 Quality assurance
 - 3.1 WP 7
 - 3.2 WP 8
 - 3.3 WP 9

Coding

	Level 1	->	Level 2	->	Level 3
Numeric	1	->	1.1, 1.2, ...	->	1.1.1, 1.1.2, 1.2.1, 1.2.2
Alphanumeric	A1	->	B1, B2, ...	->	C1.1, C1.2, C1.3
Decades	1000	->	1100, 1200, ...	->	1110, 1120, 1210, 1220

Work package sheet (Template WP.xls)

Project		Start date				
WP title		Finished date				
WP manager		Duration				
Date / version	WBS code	Status				
Results / deliverables						
Prerequisites, deliveries required for the WP, dependencies						
Dependent WPs and which results have to be passed						
Tasks of the WP						
#	Task	Responsible	Date	Amount of work	Costs	Status
			Sum			

The WP manager is responsible for the prerequisites!

Work package list (WP list)

Overview of all your WPs

Code	Name	Deliverables	Duration (days)	Predecessores	WP manager

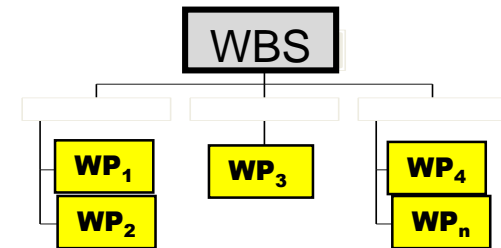
Example: Work package list

Code	Name	Deliverables	Duration (weeks)	Predecessores	WP manager
1	Preparation		5		
1.1	Market Research	Researching about existed similar apps & target group	1		Hiep
1.2	Complete Project Charter	Having an overview of the project	1	1.1	Huy
1.3	Define Specification	Listing details of the project	1	1.2	Ngoc Anh
1.4	Technical Project Planning	Listing technical objectives & planning resources for doing them	1	1.3	Ngoc Anh
1.5	Non Technical Project Planning	Completing the marketing & financial plans	1	1.3	Huy
2	Fund Raising	Raising money from investment funding	3	1.5	Hiep
3	App Development		20	2	
3.1	Build main function blocks	Building location detection & database management blocks	8	1.4	Long
3.2	Design user interface	Designing graphics & logo & items	4	3.1	Hoang
3.3	Build others blocks	Building meeting place suggestion, tap-to-invite function, <u>friendlist</u> arrangement, advertisement blocks	4	3.1	Hoang
3.4	Build the demo app	Connecting blocks & Releasing the demo apps	4	3.1 + 3.2 +3.3	Long
4	Testing app & perfection		24	3	
4.1	Test functions	Finding errors & Collecting feedbacks	16	3.4 + 4.3	Ngoc Anh
4.2	Correction	Fixing errors	4	4.1	Hiep
4.3	Improve & Complete app	Building extended functions & Completing the final application	4	4.2	Long
5	Publication	Releasing the final apps on stores & Closing the project	24	4.3	Long

From the WBS to the process and time schedule

► WBS

- What is to do?
- Who is responsible for what?
- What costs arise?
- How long take the individual WPs?



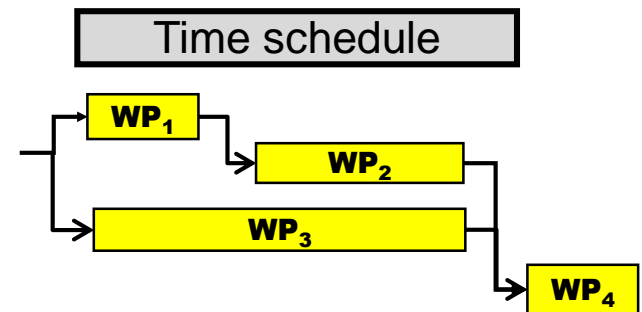
► Process schedule

- Logical and temporal order of processing of the work packages



► Time schedule

- By taking into account the duration of the WPs you generate the time schedule (time table, bar chart)



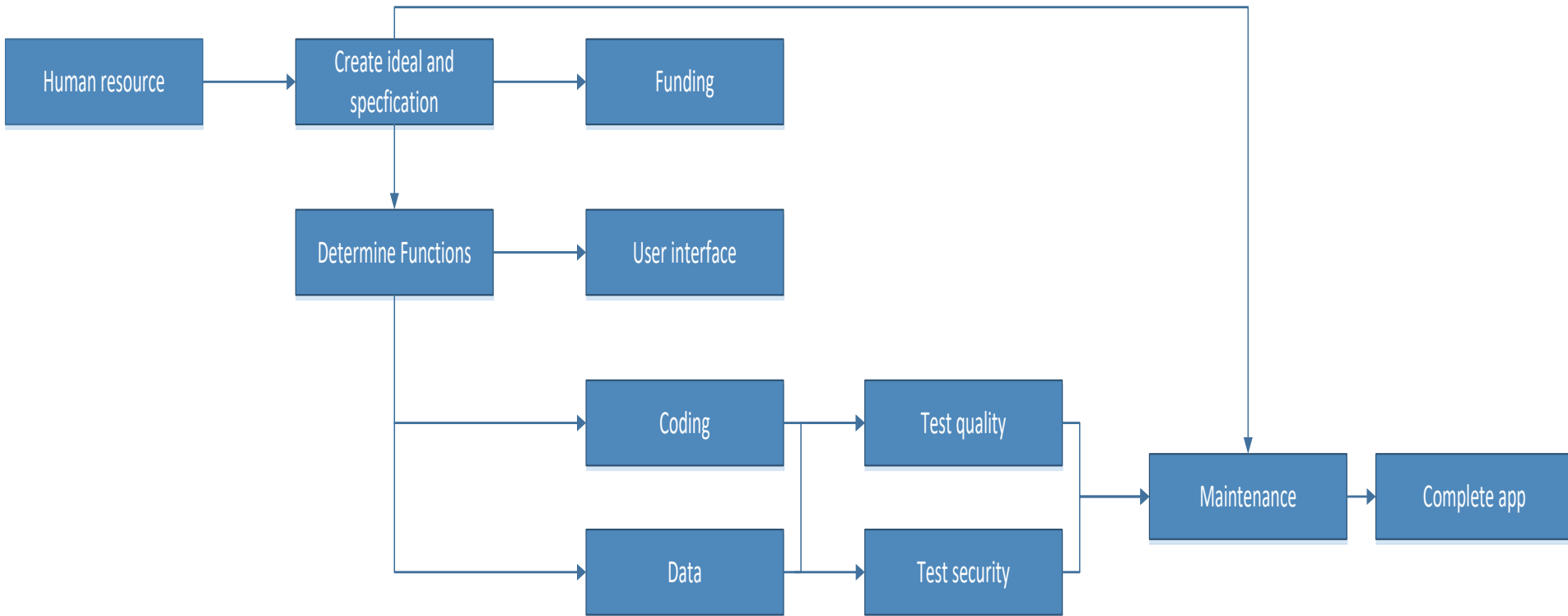
Process and time scheduling at a glance

- ▶ **Process schedule:** The WBS elements (WP) are placed in a logical order of processing from project start to project end
- ▶ **Time schedule:** The duration of the WPs is added to the process schedule.

Steps:

1. Estimate duration and amount of work for each WP
2. Determine relationships (logical dependencies) to create process schedule
3. Transfer process schedule into time schedule
4. Optimise process and time schedule

Example: Process schedule



Common errors in estimation

- ▶ Efforts are estimated too optimistic, i.e. too low
- ▶ Time and costs for project management, meetings, reporting, reports, polls, travel, etc. are neglected
- ▶ Responsible employees are not (sufficiently) included in the estimation

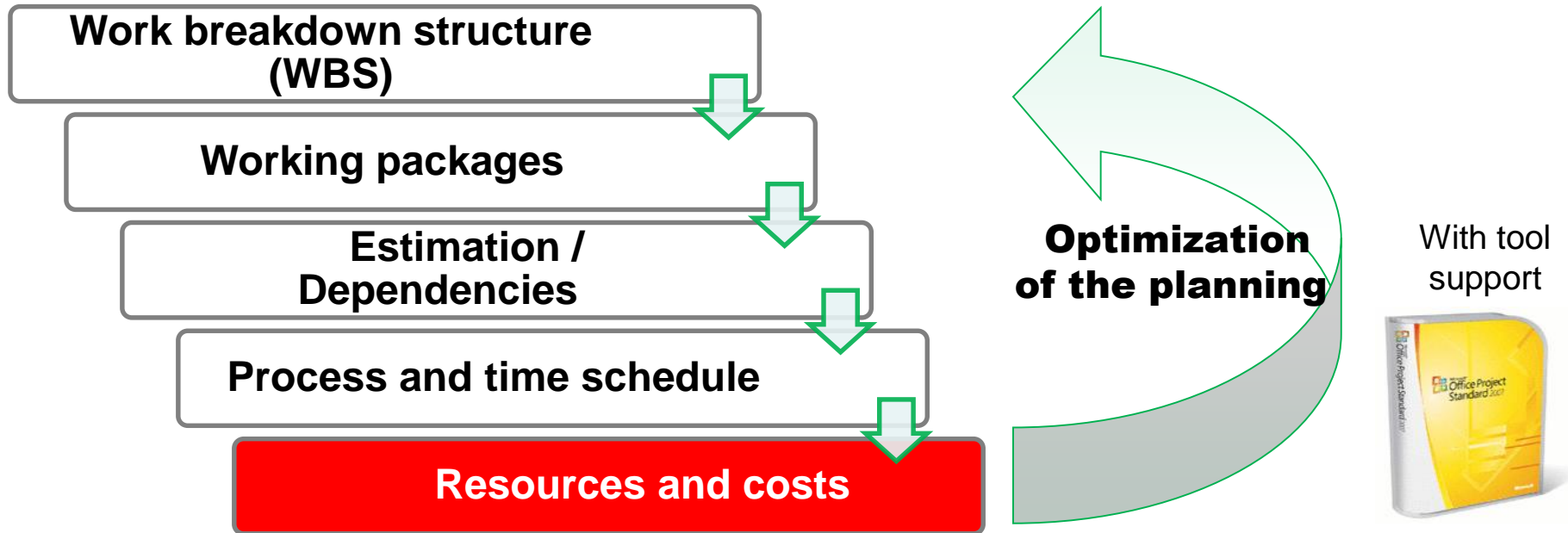


No fear making estimates!

The more frequently you do estimates, they become better.

6.3 RESOURCE AND COST PLANNING

Project planning is carried out in steps



Additional plans, e.g.

- Communication (internal / external) and reporting
- Quality
- Risks and opportunities
- Tools

Resource planning

The success of the project is significantly dependent on the **availability of resources**

- **at the right time**
- **at the right place**
- **in the required type, quality and quantity**



Goals of the resource planning:

- Identify all resources necessary for the implementation of the project (qualitatively and quantitatively)
- Ensure the availability of those resources

It is a great sin to communicate schedules without having an agreed resource plan behind it!

Types of resources

- ▶ people
- ▶ materials
- ▶ equipment
- ▶ facilities
- ▶ services
- ▶ information technology
- ▶ information and documents
- ▶ knowledge
- ▶ funds



Process steps for personnel resources

- 1. Identify what resources are required**, including the specific project management effort. The competences required of the personnel in the project team should also be made explicit
- 2. Schedule the resources**
- 3. Obtain agreement with line management for resource assignments** to the project

Source: ICB 3.0

Characteristics of the personnel resource planning

- ▶ Personnel scheduling is performed usually not purely quantitatively; restrictions:
 - Available staff capacity
 - Special knowledge, skills, experiences
 - Local and temporal availability

- ▶ Role concept / mapping / optimization:
 - by the Scheduler with the skills (skills and their level) defines roles first, which are important for the project.
 - These roles are mapped in the next step with available persons; External may be used → costs

Personnel resource planning

Determination of the roles required for the project and qualifications for the roles

Role	Abbreviation	Qualification (Skills)

Example

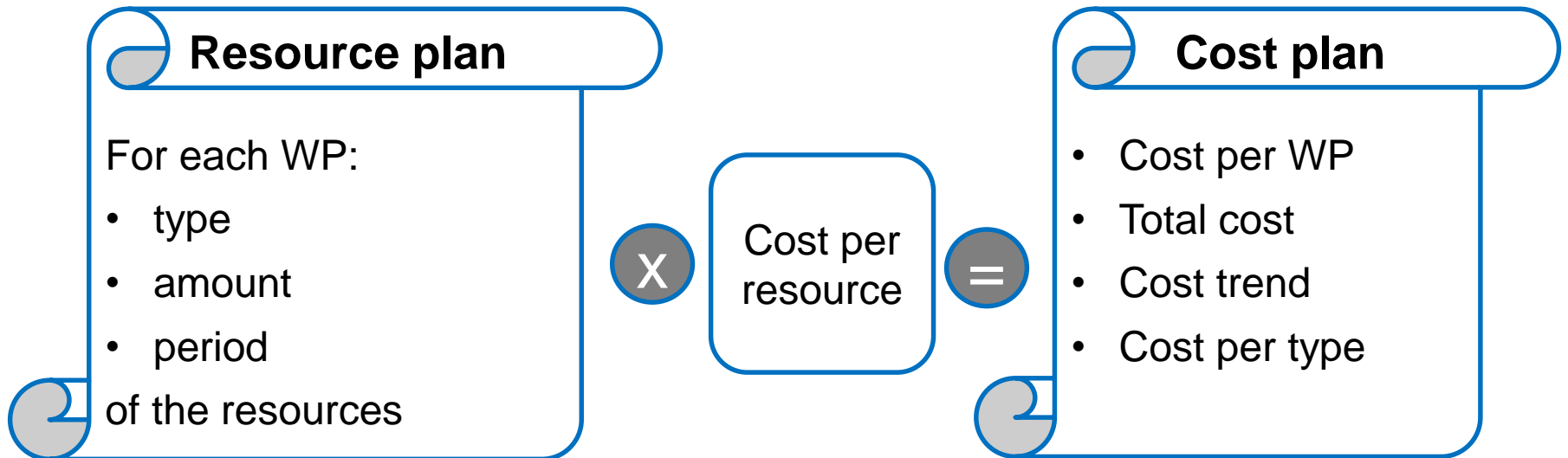
Role	Abbreviation	Qualification (Skills)
Project manager	PM	Management experiences of projects overall overview of the business processes, ...
Senior Software developer	SSD	Experience in the technical coordination of software developers; Organizational skills, ...
Software-developer	SD	Experiences in development with ABAP; Expert knowledge of MS Office
External Software-developer	ESD	Several years of experience in the development with ABAP. Oracle DB specialist, reliability ...

Example: Personnel resource planning

Role	Abbreviation	Qualification (Skills)
Project Manager	PM	Experience management skill, leadership, social skill
Mobile Software Developer	MSD	Experiences in coding, hard-working, certificate (C, C#, Java,..)
Financial Manager	FM	Careful, financial certificate
Marketing Manager	MM	Marketing certificate, high social skill, active
HR Manager	HRM	2-years experience in HR management

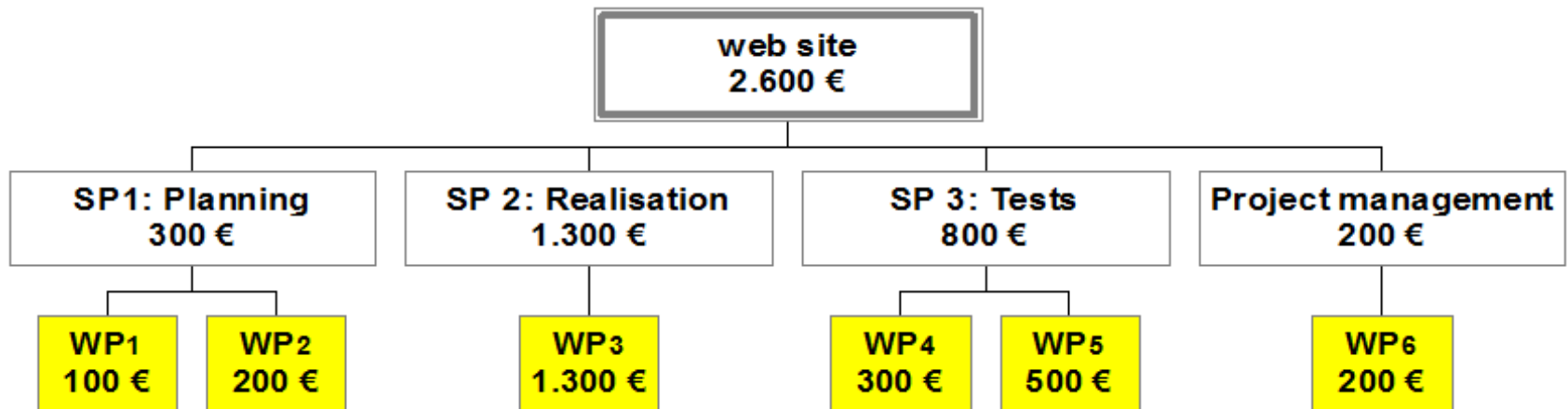
Cost planning

Cost plan is defined as a
“representation of the expected costs for the project”



Project cost representation to WBS elements

The WBS is complemented by the cost per WP
- with summation on the associated higher levels



TRELLO

What is Trello?

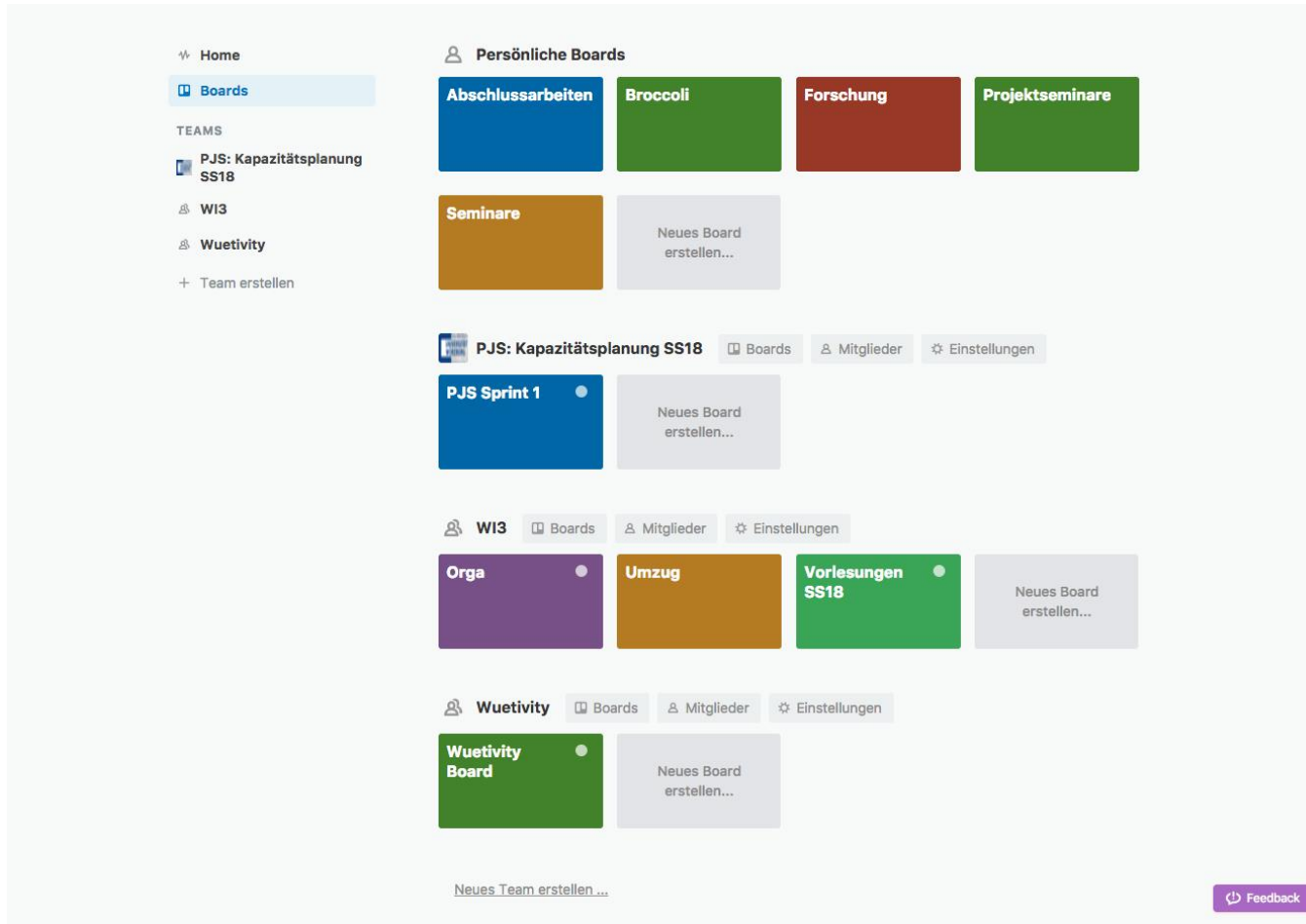
Trello is an application for the organization of:

- projects
- ideas
- processes

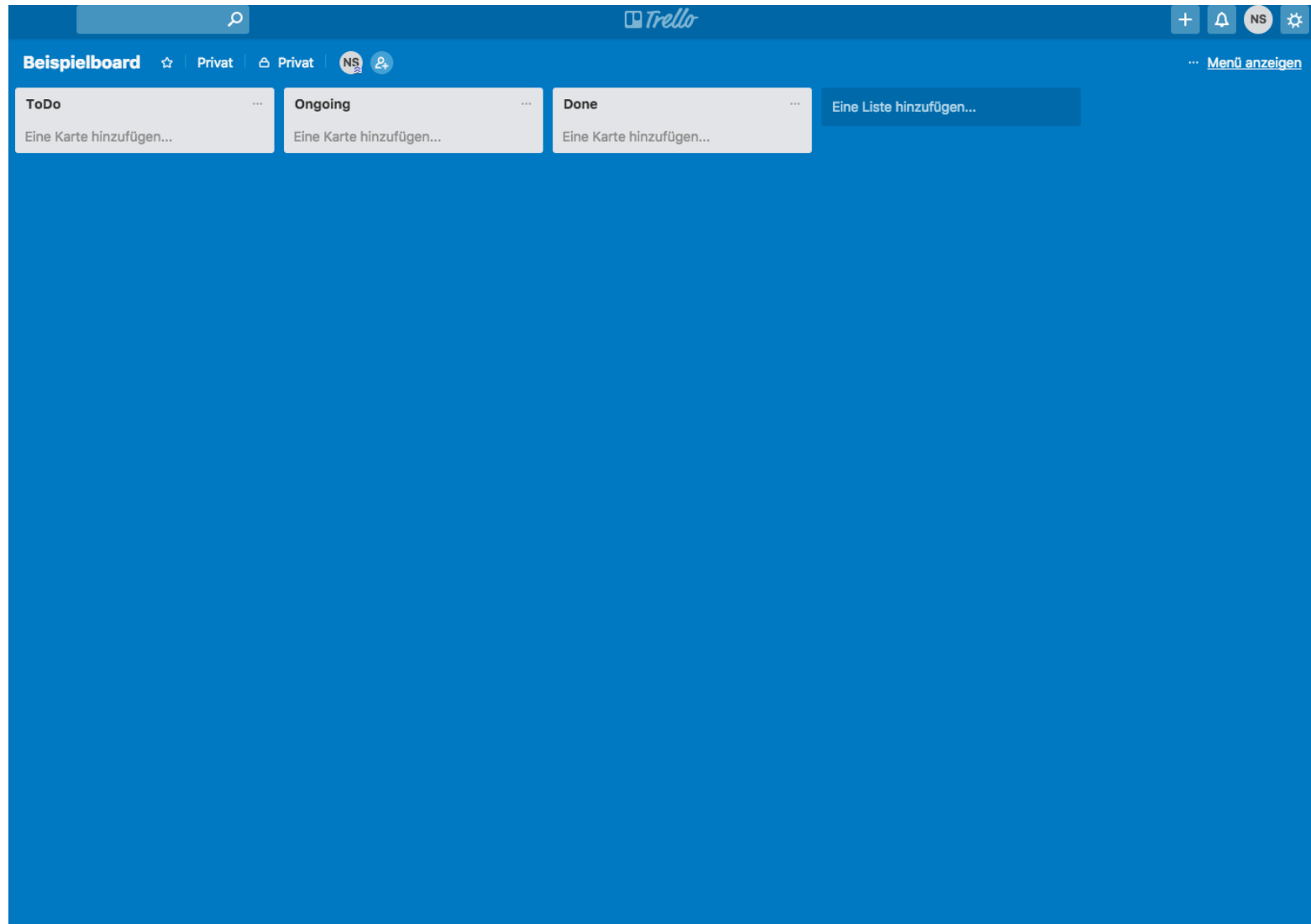
- available on many platforms
- available in English and Vietnamese
- free

<https://www.youtube.com/watch?v=tVooja0Ta5l>

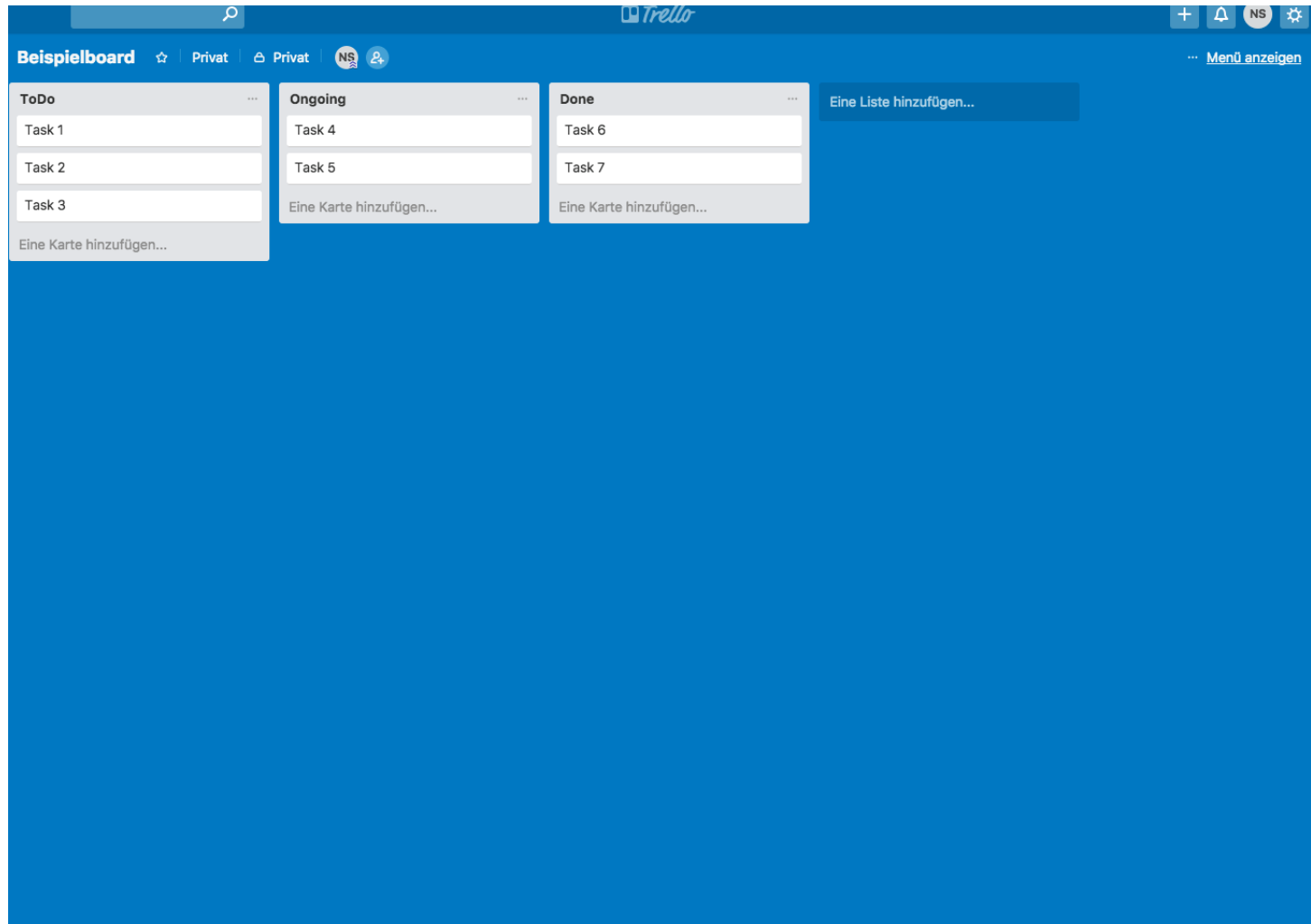
Trello allows the management of multiple boards



Each board consists of several lists



Each list contains several cards



Each card contains different information

The screenshot shows a Trello card titled "Task 1" in a "ToDo" list. The card contains the following information:

- Frist:** A due date field set to "Morgen um 12:00 Uhr".
- Beschreibung:** A text field with the placeholder "In diesem Feld gibt es nicht gespeicherte Bearbeitungen. Bearbeitungen anzeigen - Verwerfen".
- Anhänge:** A dashed box with the text "Verschieben Sie Ihre Dateien per Drag and Drop oder wählen Sie sie aus."
- Checkliste:** A checklist with 67% completion. Items include "Check 1" (checked), "Check 2" (checked), and "Check 3" (unchecked). A "Speichern" button is visible below the checklist.
- Kommentar hinzufügen:** A text input field with the placeholder "Schreiben Sie einen Kommentar..." and a "Speichern" button below it.
- Aktivität:** A section showing recent activity, including "Nikolai Stein hat für diese Karte die Fälligkeit Morgen um 12:00 Uhr eingestellt" and "Nikolai Stein hat Check 2 auf dieser Karte abgeschlossen".

On the right side of the card, there are several action buttons under the heading "Hinzufügen": "Mitglieder", "Labels", "Checkliste", "Frist", and "Anhang". Below these are "Aktionen": "Verschieben", "Kopieren", "Beobachten", and "Archiv". A "Freigabe und mehr..." link is also present.

Example Trello Board

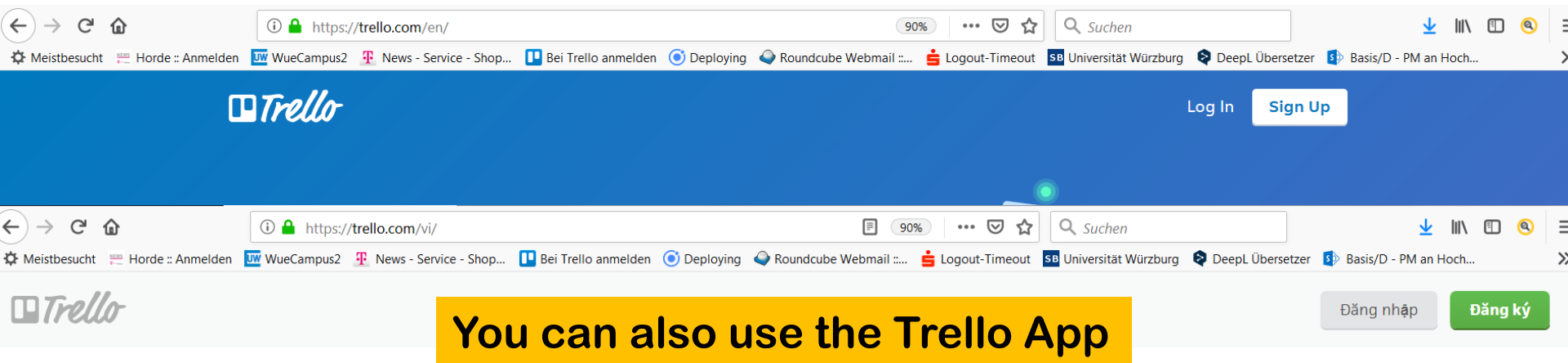
The screenshot shows a Trello board named "infoGration" with a teal header. The board is organized into five columns: "Backlog", "Sprint Backlog", "Doing", "Done", and "Contacts".

- Backlog:** Contains three cards: "Überregionale Presseartikel", "TEDx Vortrag", and "Integrationspreise holen".
- Sprint Backlog:** Contains two cards: "Übersetzungen der deutschen Version" and "Play Store Eintrag aktualisieren".
- Doing:** Contains six cards: "Weitere Tests der App", "Kontakt mit Integrate", "Kontakt mit BAMF", "Kontakt mir Caritas", "Freundeskreis für Flüchtlinge: Antrag auf Finanzierung stellen", and "Presseartikel zum Launch + Pilot".
- Done:** Contains six cards: "Impressum einbauen, Text bereits vorhanden", "Gesundheitsfragen: Kontrolle durch AOK", "AOK updates einbauen", "Update der Inhalte durch Frau Aßländer", "1. Feedback von Hr. Wehnes besprechen", and "Einheitliche Smily Farben + neutrales Gesicht ergänzen".
- Contacts:** Contains three cards: "IGZ Würzburg", "Integreat", and "BAMF".

Each card includes a progress bar, a list of assignees (e.g., HW, AG, AD, ML, SK), and a "hinzufügen" (add) button. The board also features a search bar, navigation icons, and a "Menü anzeigen" (show menu) button in the top right corner.

Workshop: Trello Board

- ▶ Create a Trello Board for your project
 - Members of your team
 - Basic Structure Considerations: list names
 - Transfer of the first 6 WP to cards



The screenshot shows the Trello website interface. At the top, there is a blue navigation bar with the Trello logo on the left and "Log In" and "Sign Up" buttons on the right. Below the navigation bar, there is a yellow banner with the text "You can also use the Trello App". To the right of the banner, there are two buttons: "Đăng nhập" (Log In) and "Đăng ký" (Sign Up).



Trello miễn phí, linh hoạt, và là cách trực quan để tổ chức mọi thứ với bất cứ ai.

Bỏ đi những email dài dòng, bảng tính đã cũ, ghi chú sắp hết thời gian hiện, và phần mềm ít sử dụng để quản lý các dự án của bạn. Trello giúp bạn quan sát nhanh mọi thứ về dự án của bạn.

[Đăng ký Miễn phí](#)

Trello Board: Recommended list names

- ▶ Product backlog (= WP List)
- ▶ Sprint Backlog (next ToDo)
- ▶ Doing
- ▶ Testing
- ▶ Done
- ▶ Information
- ▶ Events
- ▶ Team members
- ▶ Contacts

Homework: Task 6

1. Complete your phase-oriented **WBS**
2. Complete your **Trello Board**

Upload of the presentation **Team_n-Task_6.pptx**
by the project manager of day 6!

Deadline: 17th March, 8:00 am

Presentation on Tuesday morning (Duration: ≤ 3 min)
by the project managers of day 5

Final presentations (Mar 18)

Presentation by 3 (4) team members

Total duration: < 15 minutes

**Concentrate on
the essentials**

Part 1: Presentation of the project management

- Summing up of the project
 - Short description with the main project design data:
purpose, customer, result and quality
- Story map and MVP
- Project plan
 - Phase plan with milestones (graphic)
 - Phase-oriented WBS
- Stakeholder & Communication plan
- Project review
 - Lessons Learned for future projects

Part 2: Presentation of the project product (prototype)

- Demo of the product (**pptx**)