IT Project Management

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- This presentation is based on a work of Daud Alam and Uwe Gühl
- It may be used only for academic research and work at Kasetsart University, Bangkok, Thailand

IT Project Management
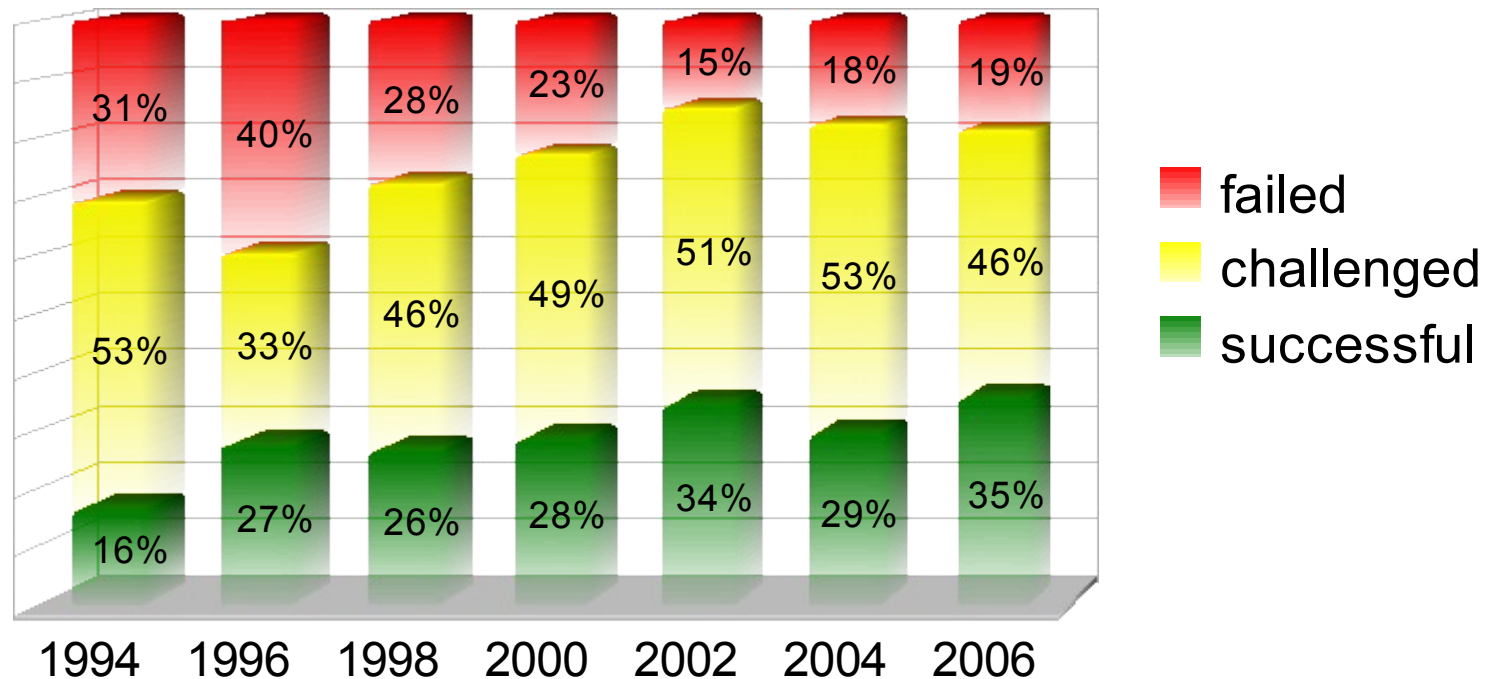## Contents

- Overview / Introduction
- Definitions
- Comprehensive topics
    - Project culture
    - Communication
    - Documentation
    - Quality
    - Risk Management
- Project stages
    - Strategy stage
    - Planning stage
    - Execution stage
    - Completion stage
- Sources / outlook

Standish Group

Chaos Report 2006

Results of IT-Projects [CW07]

Note: "challenged" means that the project had cost or time overruns or didn't fully meet the user's needs

- Success factors – general [Wik07a]
  - Difficult: Projects are unique, but out of questioning experts and studies of successful projects:
    - Professional project management
    - Experienced project manager

- Success factors – named [Ang07]
  - Support of highest management level (management attention)
  - Fit project team, functional and personnel
  - Communication in the project team
  - Leadership of project manager
  - Proper definition of goals

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Project

Following PMBOK* *(pronounced PEM-BOK):*
A project is a temporary endeavor undertaken to create a product or service

James P. Lewis (author of „The Project Manager's Desk Reference"):
A project is a one-time, multitask job that has clearly defined starting and ending dates, a specific scope of work to be performed, a budget, and a specified level of performance to be achieved.

"We can't solve problems by using the same kind of thinking we used when we created them"
Albert Einstein (1879 - 1955)

*Project Management Body of Knowledge

Project

- **Characteristics of a project** are thus:
  - Temporary
  - There is a start and an end
  - Unique
  - Typically a project handles something completely new
  - Defined goal
  - Complex
  - Trans-sectoral
  - Limited resources are available

Project management

DIN 69901:
"Project management is the complete set of tasks, techniques, tools applied during project execution"

- Project Management Institute (PMI):
"Project Management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements"

- Gesellschaft für Informatik: „Leading, coordinating, controlling and monitoring a project"

Project culture

DIN 69905: "General behaviour of a project team, influenced by Know how, experience and tradition of project members, and the general estimation by the project environment."

- The general attitude toward projects within the business [Wid07]
- Project culture covers the soft skills in a project, e. g.
  - Ability to communicate
  - Conflict handling skills
  - Will to work together in the team and out of the team
  - Activity level for the project
  - Frankness
  - Fairness and respect
  - Identification with the project

A "project culture" is a set of beliefs, attitudes and behaviors that exist independently of the individuals in the project [tt07a].

Project communication

Information exchange between people involved in the project – especially in the project team
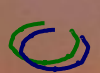
- Important success factor

- Communication with and without words (nonverbal)

- Communication problems because of cultural differences are especially in international projects possible

Project documentation

The collection of reports, user information and references for distribution and retrieval, displays, back-up information and records pertaining to the project. [Wid07]

- Parts of the project documentation are among others
  - Initial situation and problem description
  - Presentation of project history (e. g. project reports)
  - Description of used method of resolution
  - Project costs
  - Realized advantages
  - Final report of the project
- Collection in (digital) project handbook

Quality in Project Management

Focus is the quality of the technical project contents. Quality Management (QM) ensures, that the results of work follow the project goals.

- Coverage
  - Check and assure consistence
  - Check and assure the use and achievement of defined methods and standards in the project
  - Test of working results

Risk management

DIN 69905 describes risk management as "exclusion, avoidance, or mitigation of project risks". It is the part of the project analysis that deals with project risks.

- Scope:
    - Identification of risks
    - Evaluation of risks
    - Taking actions to manage risks

Project stages

DIN 69901: "Chronological sequence of a project, separated against other stages because of matter of facts."

- Typical separation of phases by milestones

- Every project has at least the stages
  - Planning
  - Realization (Execution)
  - Completion (Finalization)

Project contract

DIN 69905 defines „contract" as „Agreement about deliveries and services of the parties to a contract."

- Typically we talk about a mandatory contract document, where a signing contracting body (customer)

  – instructs a contractor to perform the agreed services

  – commits to pay a corresponding commission

- Synonyms: Project assignment, project order, project definition, project scope

Project goal

DIN 69901 defines the project goal as "measurable result under defined constraints of a project".

- The complete goal descriptions could be covered by the questions:
  - What?
  - How much?
  - When?
  - Where?

- Goals are desires!

- Strategy describes the path to the goal

- Synonyms: Project scope, Project charter, Project assignment, Project order

"The slowest person, who does not lose sight of his goal, walks faster than he, who is wandering about aimlessly."
Gotthold Ephraim Lessing (1729 - 1781)

Attention: Difference between requirement specification and target specification out of German language use. In international literature not clearly documented.

Requirement specification

DIN 69905: The requirement specification describes the "by the customer defined totality of requirements concerning the deliveries and services of a contractor in a contract".

- A requirement specification describes the requirements, expectations, and desires concerning the planned product.

- Synonyms: Statement of Work, terms of reference, product requirements document

Attention: Difference between requirement specification and target specification out of German language use. In international literature not clearly documented.

Target specification

Following DIN 69905: The target specification covers "the by the contractor developed realization plan based on the requirements specification from the customer."

- The target specification is the contracted, detailed description of a service to be fulfilled

- Synonyms: To-be-concept, feature specification, design specification

Project plan:

The entire plan for a project, consisting of the work breakdown structure, network diagram, and task budgets, but sometimes taken to mean only the network diagram [Wid07]
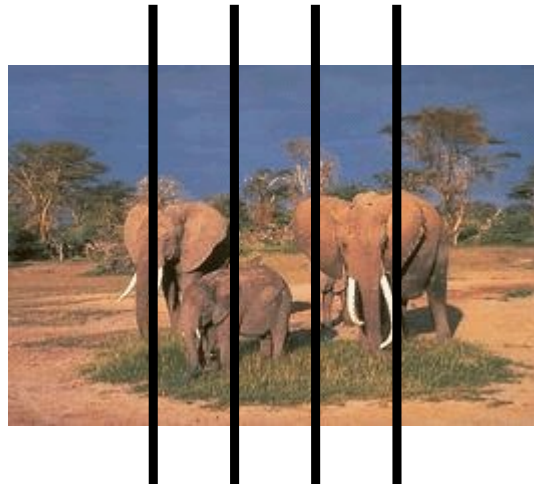
"Planning substitutes coincidence by error."
"Two things are necessary for our work: Tireless patience and the willingness, to throw away again, where one invested much time and work."
Albert Einstein (1879 - 1955)

Work breakdown structure (WBS)

Following DIN 69901 a WBS is a "representation of the project structure".

- The structuring could be done following
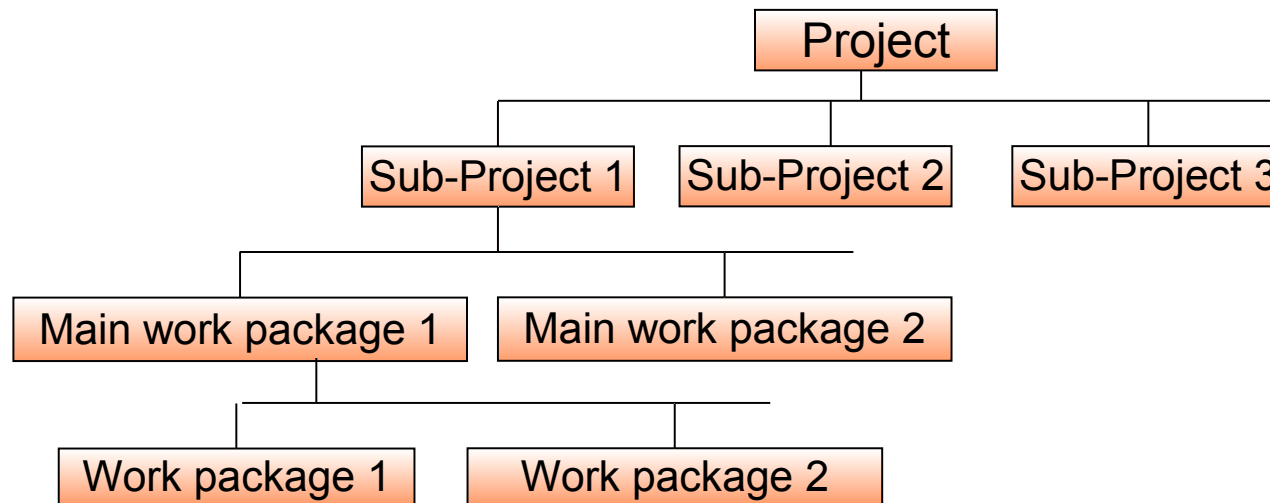 - Functions
  - Objects, or
  - Tasks

Work breakdown structure (WBS)

The WBS structures a project in smaller items, so that it is easier to plan and control

- – Subprojects
  Segmentation following regional, organizational, or functional criteria

- – Work packages
  Complete assignment of tasks, that could be done normally by one person
  Optional: Main work package, Sub work package

- – Tasks
  "Elementary particles" of a project

Work breakdown structure (WBS) – Example

```
                              ┌─────────┐
                              │ Project │
                              └────┬────┘
          ┌────────────────────────┼────────────────────┐
   ┌──────────────┐        ┌──────────────┐      ┌──────────────┐
   │ Sub-Project 1│        │ Sub-Project 2│      │ Sub-Project 3│
   └──────┬───────┘        └──────────────┘      └──────────────┘
    ┌──────────┴──────────┐
┌────────────────┐  ┌────────────────────┐
│Main work package 1│ │Main work package 2│
└────────┬───────┘  └────────────────────┘
   ┌──────┴──────────┐
┌──────────────┐  ┌──────────────┐
│Work package 1│  │Work package 2│
└──────────────┘  └──────────────┘
```

Every structure entity got tasks associated

Milestone

Following DIN 69900-1 a milestone is an "event of special relevance"

- These are typically interim goals with an important project result

- Important part of project management, especially of the project controlling

- Synonyms: Stop-or-go points, Quality Gates, review points, release, customer approval

Milestone

- A Milestone includes
  - a due date
  - checkable criteria

- Typical contents of a milestone plan
  - Start date of the project
  - Milestone dates because of important events and their scope
  - End date of the project

Time schedule

Alignment of the in the WBS identified work packages to a realistic project schedule.
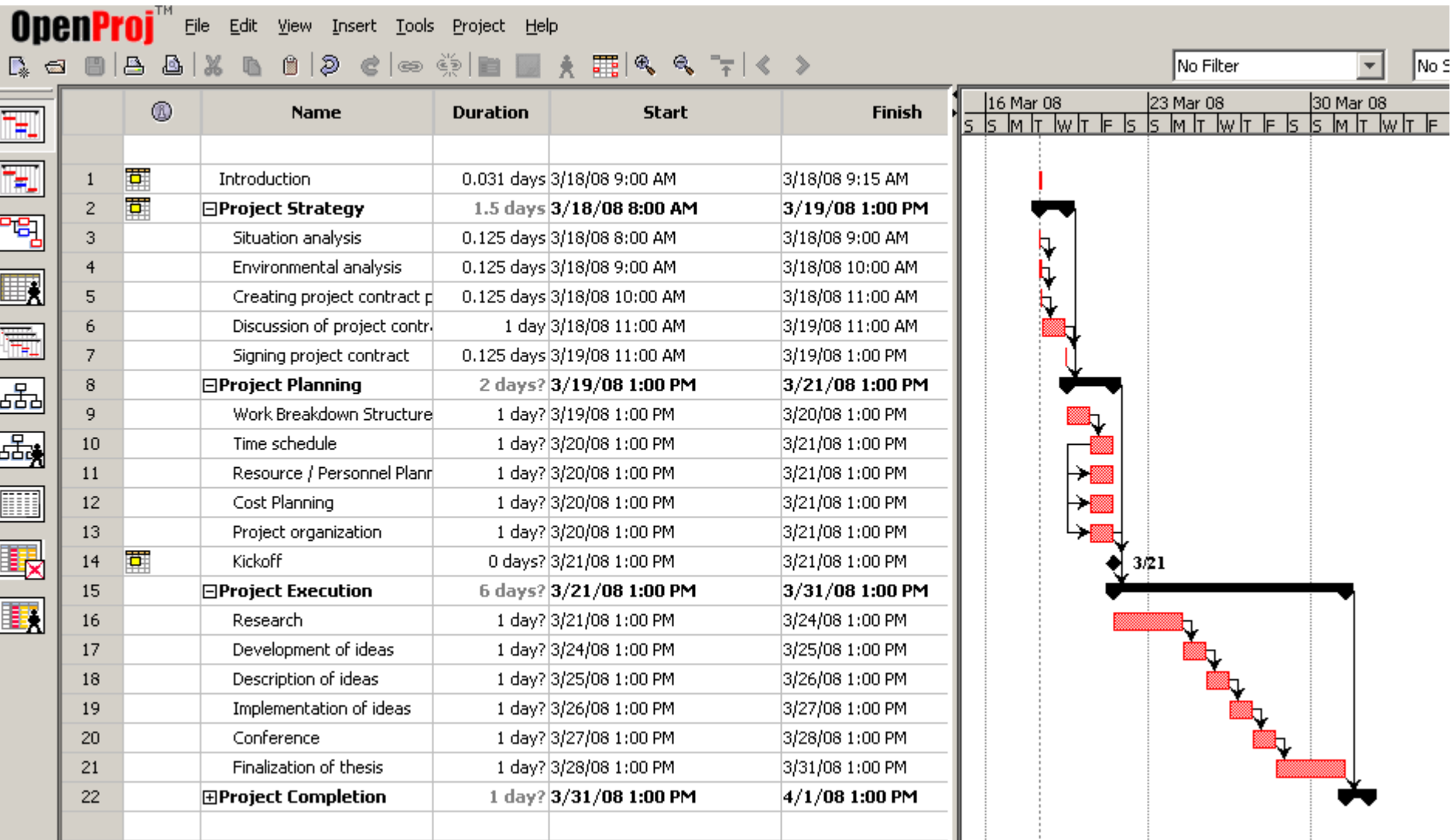Definition of start and finish date.
Duration of the working packages, buffer time, and constraints have to be considered

- Proposal for proceeding
  - Close coordination with resource plan necessary
  - Define start and end milestones for all work packages
  - Chronological arrangement dependent on duration of work packages, buffer time, access to resources

		Name	Duration	Start	Finish
1		Introduction	0.031 days	3/18/08 9:00 AM	3/18/08 9:15 AM
2		**Project Strategy**	1.5 days	**3/18/08 8:00 AM**	**3/19/08 1:00 PM**
3		Situation analysis	0.125 days	3/18/08 8:00 AM	3/18/08 9:00 AM
4		Environmental analysis	0.125 days	3/18/08 9:00 AM	3/18/08 10:00 AM
5		Creating project contract p	0.125 days	3/18/08 10:00 AM	3/18/08 11:00 AM
6		Discussion of project contr	1 day	3/18/08 11:00 AM	3/19/08 11:00 AM
7		Signing project contract	0.125 days	3/19/08 11:00 AM	3/19/08 1:00 PM
8		**Project Planning**	2 days?	**3/19/08 1:00 PM**	**3/21/08 1:00 PM**
9		Work Breakdown Structure	1 day?	3/19/08 1:00 PM	3/20/08 1:00 PM
10		Time schedule	1 day?	3/20/08 1:00 PM	3/21/08 1:00 PM
11		Resource / Personnel Planr	1 day?	3/20/08 1:00 PM	3/21/08 1:00 PM
12		Cost Planning	1 day?	3/20/08 1:00 PM	3/21/08 1:00 PM
13		Project organization	1 day?	3/20/08 1:00 PM	3/21/08 1:00 PM
14		Kickoff	0 days?	3/21/08 1:00 PM	3/21/08 1:00 PM
15		**Project Execution**	6 days?	**3/21/08 1:00 PM**	**3/31/08 1:00 PM**
16		Research	1 day?	3/21/08 1:00 PM	3/24/08 1:00 PM
17		Development of ideas	1 day?	3/24/08 1:00 PM	3/25/08 1:00 PM
18		Description of ideas	1 day?	3/25/08 1:00 PM	3/26/08 1:00 PM
19		Implementation of ideas	1 day?	3/26/08 1:00 PM	3/27/08 1:00 PM
20		Conference	1 day?	3/27/08 1:00 PM	3/28/08 1:00 PM
21		Finalization of thesis	1 day?	3/28/08 1:00 PM	3/31/08 1:00 PM
22		**Project Completion**	1 day?	**3/31/08 1:00 PM**	**4/1/08 1:00 PM**

Resource plan

DIN 69902 talks about "operating resources plan", meaning "definition of operating resources, necessary for sequences, working packages, and projects". Additionally objectives and constraints as well as „action needed" have to be considered.

- Proposal for a personnel planning proceeding
  - Determine the staff requirements
  - Determine the available capacity
  - Comparing capacity and requirement
  - Capacity balancing, or optimization of capacity, deadlines (time), and costs

Cost schedule

Following DIN 69903 "Description of the estimated costs of the project." Optional the cost schedule could be part of the cost baseline

- Proposal for a proceeding
  - Based on the structures in the WBS each working package delivers target figures
  - The target figures of the working packages are added for the subprojects
  - Finally the plan for the overall project takes place

Project organization

DIN 69901 describes the project organization as "Totality of the organizational units and the organizational control to process a defined project."

- **Possible organization forms**
  - Pure functional project organization (following division, departments)

  - **Functional project organization**
    Synonyms: Influence project organization, influence project management, project coordination

  - **Matrix project organization**
    Synonym: Matrix project management

  - **Pure project organization**
    Synonyms: Pure project management, Task-Force

  - Project society

Functional
Project
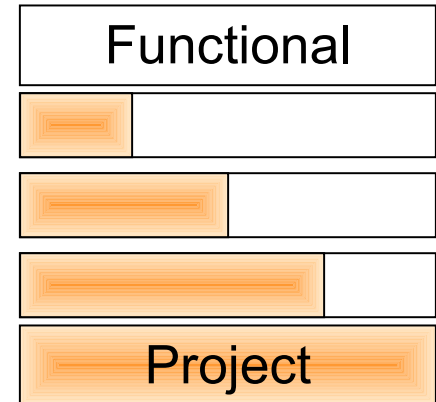
Project organization

- Scope
  - Boards like steering committee, core team meetings, project meetings, working team
  - Organizational regularization like a project handbook
  - Organizational diagrams (org charts) of the project including reporting path and decision path

Project controlling

means according to DIN 69903 the "assurance of the reach of economical Project contracts".
DIN 69904 summarizes "Controlling" as the "processes and rules, that ensure inside project management the assurance of the reach of the Project contracts".

- Basically the project controlling covers all activities to ensure the reach of the project goals

Project controlling

- Coverage
    - Target-performance comparison with cause analysis, if variations occur
    - Evaluation of the consequences of new findings and (positive or negative) events affecting the progress of the project
    - Planing, developing, executing, and controlling of operation of (corrective) activities
    - Update of the planning and analysis of the further progress of the project

Project conclusion

Following DIN 69905 the project conclusion means the "formal ending of a project" and means "Finishing of all activities that are in relation to the project".

- Overview / Introduction
- Definitions
- Comprehensive topics
  - Project culture
  - Communication
  - Documentation
  - Quality
  - Risk Management
- Project stages
  - Strategy stage
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  - Completion stage
- Sources – Outlook

Project culture

There is a close relationship to the topic communication

- – Meaningful project name

- – Project logo

- – Project vision

- – Project glossary

- – Arranging a good working atmosphere, e. g. with common project events
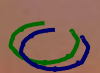
Project culture

- We work with *humans* in the project!

- Deal positive with mistakes

  - Mistakes are legitimate! Who is working makes mistakes.

  - Every error we fix now, saves subsequent costs and ensures the success of the project

  - No apportioning of blame – no fingerpointing

  - Working goal oriented: How could we correct together mistakes?

- Be authentic and hosted: Accept own weaknesses; NEVER blandish your project!

Project culture

– Value people

– Working on one's own authority

– Integrative approach: Make people concerned (passive) to people involved (active)

– Clear responsibilities

– Measurable goals

– NOT: Until when you are done?
  BUT: What will you do until xx.xx.xx?

– Prioritization

– Common rules (of the game)

– Regulation of the communication
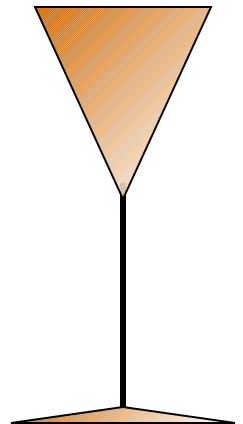
"Measure what is measurable, and make measurable what is not so."
Galileo Galilei (1564 - 1642)
"Not everything that counts can be counted, and not everything that can be counted counts."
Albert Einstein (1879 - 1955)
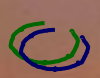
Discussion

- What do you think, what is the main reason, if projects fail?
    - Money?
    - Abilities of the team members?
    - Planning?

Communication

- Communication is a (if not **the**) key to project success (see for example [pmb08])

- Tom de Marco already wrote: „**Projects don't fail because of technique, but because of people**"

"One cannot not communicate."

Paul Watzlawick (1921 - 2007)
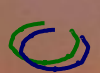
Communication

- Continuous communication with the team and in the team

- Always addressable:
  Right in the middle instead of outside located

- Communication model (regularly in the project, core team, customer, stakeholders, to external, …)

- Facilitate project members interchange; establish several opportunities like „sweeties corner" and coffee dispenser

- Creation of tandems (Review), always merging

- No regional separation

- Consider intercultural differences
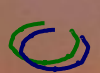
Communication

- Set up a communication model
  - Meetings with the customer principal / contracting body
  - Project meetings
  - Bidirectional communication between project manager and individual project team members
  - Informal communication
  - Other meetings
    - Specialist meetings concerning special topics
    - Regular communication with sponsors
  - Marketing

Communication model – Template

Meeting	Contents	Participants	Period
Customer meeting			
Project meeting			
Subproject meeting			
One-to-one interviews			
Specialists meeting			

Communication – Meetings

- Mindjet* was reporting about critics on meetings
    - a good organization is missing
    - the agenda was not posted in advance
    - the agenda did not plan fix timing
    - the parties were not on time or bad prepared
    - no minutes after the meeting with clear tasks and target dates

*http://www.mindjet.com/de/

Communication – Meetings

- Rules for project meetings
  - Agenda in advance, differ
    - Information
    - Discussion
    - Proposals for decision (Demanded determination)
  - Keeping time schedule
  - Online documentation of decisions and tasks

Discussion

- Documentation
  - Why is documentation important in a project?
  - For whom is documentation?
  - What has to be documented?
  - How detailed and comprehensive must be documented?

Documentation

- Goal

  – Transparency – Enable traceability of the project

  – Increasing of quality

  – Presenting the current status in the project with continuous documentation of the status of all working packages and tasks

  – For Project team / Customer: Presenting of the results

- Differ the documentation of the project from the documentation of the project product
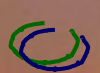 (e. g. software)
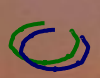
Documentation

- Reasons

  – Documented decisions prevent repeating discussions, give confidence

  – An open documentation gives transparency and facilitates traceability

  – Realtime documentation saves a lot of trouble ...

  – Documentation is necessary to conform legal accountability / warranty deed

  – ISO 9000ff requires documentation

Documentation

- Requirements
  - Everybody in the project should be able to orient!
  - Establishing a standard!
  - Tasks, ideas, decisions, minutes from meetings / regular communication should be located at one place
  - A responsible person should care about the documentation and (better) the quality of the documentation!

Documentation

– Scope

- A complete project documentation typically could be found as project handbook in a (digital) project file

- The documentation in the working packages is basic for the documentation in the project

- Minutes, status reports, and final documentation

- Responsible: Work package leader

- At the end of the project all project relevant documents are needed

- Using a checklist helps, that this documents originate in time during the project

Documentation, example project handbook (extract)

1   **Overview / Summary / Glossary**
2   **Project strategy**
- Project contract

3   **Project planning**
- Project plans (Work breakdown structure, ...)
- Project milestone plan
- Kickoff

4   **Project execution**
- Status reports

5   **Project completion**
- Final project report
- Final project closing event

6   **Appendix / sources**

No.	Document	Project area	Location	Creator	Status of document
1	Project contract	Project management	Server1/Project/ Projectcontract	Customer	
2	Project handbook	Project management	Server1/Project/ Projecthandbook	Project manager	
3	Requirement specification	Project management	Server1/Project/ Specification	Project manager	
4	Functional / Target specification	Project management	Server1/Project/ Specification	Vendor	
5	Project plan	Project management	Server1/Project/ Plan	Project manager	
6	WP status reports	Work package	Server1/Project/ AP/Status	WP leader	
7	Project status reports	Project management	Server1/Project/Status	Project manager	
8	WP meeting minutes	Work package	Server1/Project/ WP/Minutes	WP leader	
9	Meeting minutes	Project office	Server1/Project/Minutes	Project office	
10	Decisions	Project office	Server1/Project/Minutes	Project office	
11	Acceptance protocol	Project management	Server1/Project/ Acceptance	Customer	
12	Final report	Project management	Server1/Project/ Completion	Project manager	

Quality

- Goal:
  - Ensuring of quality in project (management) itself
  - [PMI04] lists concerning project quality management following processes
    - quality planning
    - quality assurance
    - quality control

Quality

- How do I assure quality?
  - Checklists
  - Development of a learning organization
    - We all make mistakes, but we would like to learn from them!
    - Lessons Learned Workshops
    - Consolidation with project partners
    - Regularly reviews, especially in phase transitions
    - quality handbook

Quality

- How do I assure quality?
  - Considering of company specific guidelines and regulations
  - Audits
    - Analysis and reviewing of the project and the progress of the project
    - Discussion of problems
    - Development and implementation of proposals
  - Professional project management with coaching
  - Qualification (Project leader education)

Risk management

1st goal: Avoiding project crisis and providing risks

- Basis: Project scenarios based on environmental analysis
  - Goal scenario
  - Best Case
  - Worst Case
- Planning activities and creating alternative project plans

Risk management

2nd goal: Managing risks

- Keep in mind:
  - Most critical are the unknown risks! That's why: Everyone must be able to inform about risks easily

- Handling risks: Activities to
  - lower the probability of incidence
  - reduce the estimated damage

	Risk Description					Quantification				
Id	Risk Identification	Potential Cause	Contact person	Along with	Date	P	T	Risk	Status	Actions
R001	Example of a Risk Number 1 with low probability, but possible critical damage	Source 1	Uwe		18.03.08	1	3	3	in progress	2008-03-18 [Uwe] informed [Arnon]
R002	Example of a Risk Number 2 with high probability	Source 2	Arnon		18.03.08	3	2	6	done	2008-03-18 [Uwe] informed [Arnon]

Risk management

- Proposal how to quantify risks
  - **Probability** of incidence
    - 3 = high
    - 2 = possible
    - 1 = low
  - **Effect** on project if risk occurs
    - 3 = very critical
    - 2 = critical
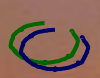   - 1 = less critical
  - **Risk** = **Probability** * **Effect**
    Possible values:

9	6	4	3	2	1
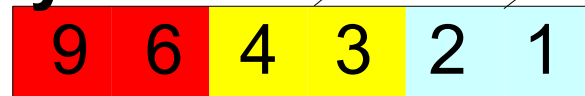
high risk

medium risk

low risk

Risk management

- When to do?
  - Start as soon as possible
  - Repeat continuously (e. g. once a month)

- Overview / Introduction
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| Strategy | Planning | Execution | Completion |

- **Strategy stage**
  Synonym: Conception stage

- **Planning stage**

- **Execution stage**
  Synonyms: Implementation stage, Construction stage, Operational stage, Doing stage

- **Completion stage**
  Synonyms: Close Down, finalization stage

Strategy

– Objective / results

– Situation analysis

– Environment analysis

– Project goals

– Project contract

– Requirement specification

– Target specification

– Checklist

Goal: Project contract

Results:

- Project contract
- Requirement specification
- Target specification

Situation analysis

- **What** is the situation?

  1 - Understanding the subject

- **Why** are we doing the project?

  2 - Identification of actual problem

  - Trying to find several solutions

" The mere formulation of a problem is far more essential than its solution,..."
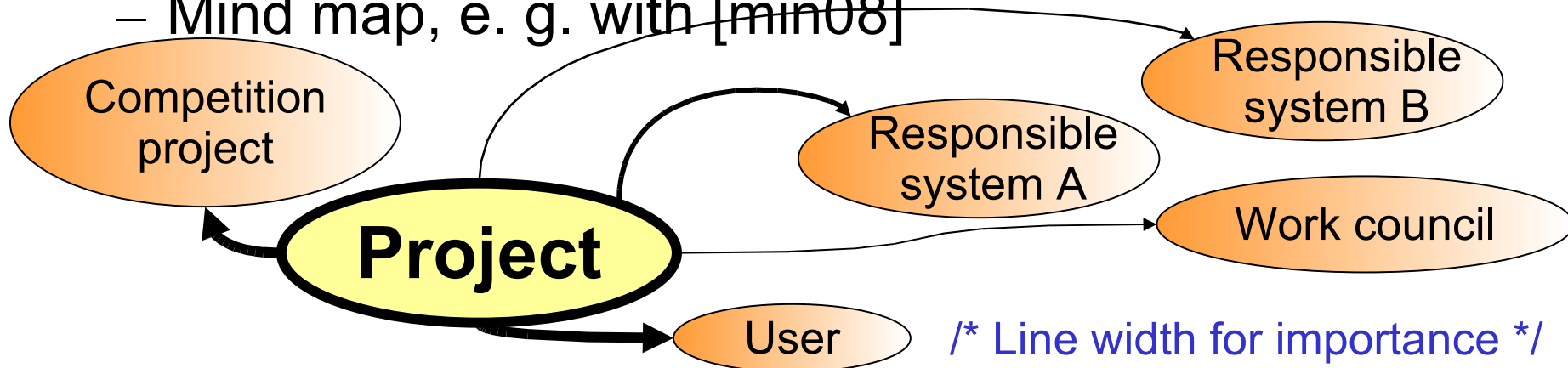*Albert Einstein (1879 - 1955)*

Environment analysis

- Synonyms: Project environment analysis, stakeholder analysis

- Goal: Identifying of all involved people, who (could) play a role in the project, and involving them in communication

- Ideas

  - Who is confronted with the project, who is affected, who has to be integrated how?

  - Are there projects working on the same topic?

  - Are there projects needing the same resources?

  - Which systems, processes are involved?

  - Political situation: Are there sponsors, competitors?

Environment analysis

– Method: RACI-Matrix (Responsibility matrix)

- Responsible, i. e. disciplinary responsible
- Accountable, i. e. responsible concerning the cost center point of view
- Consulted, i. e. giving specialist advice
- Informed, i. e. needs information for other things

– Mind map, e. g. with [min08]

Competition project

Responsible system B

Responsible system A

Work council

Project

User   /* Line width for importance */

Project goals
are necessary to

– control the project

– measure the project result

3 **What** would we like to achieve?

- Scope

  – Main goal

  – Sub goals

  – Non goals

  – Conditions and criteria

Project goals

- How do I know the status of my project?
  - Making goals measurable
  - Description of solution concept (first draft)
  - Planning of review dates
- How could I make project goals measurable?
  - Prioritization
  - Describing, when I reached my goal
  - Operationalization of the goals
    - Performance goals
    - Time target
    - Cost target

Project goals – Template

Description	Basic plan	Iteration 1	Iteration 2	Iteration 3
Key goals				
Sub goals				
Project process goals				
Non goals				

Project contract

- Clarify everything and write it down

- Let it confirm in written form

- The project contract is the formal start of a project

- Important: So is the start of a project traceable

- Hint
  - During this stage you should try to find high ranked sponsors and to inform them regularly

Project contract

– Typical content:

- People involved, especially project manager

- Initial position

- Goal

- Assignment of tasks

- Expected project results

- Critical success factors

- Costs and benefits

- Time schedule and milestones

- Organization

- Signature

Project contract – Example (1)

Responsibilities for creation of the project contract

Project contract

Customer	Project manager

Goal

Assignment of tasks

Critical success factors

Time schedule / Milestones

Signature

Project contract – Example (2)

Project contract form

Project Contract	
Name of the project:	<Project name>
Customer:	<Name Customer>
Steering Committee	
Vorsitzender:	<Name Steering Committee Chairman>
	<Name Steering Committee-NN1>
	<Name Steering Committee-NN2>
	<Name Steering Committee-NN3>
	<Name Steering Committee-NN4>
Project team	
Project manager:	<Name Project manager>
Substitute	<Name Project manager substitute>
	<Name Project team member-NN1>
	<Name Project team member-NN2>
	<Name Project team member-NN3>
	<Name Project team member-NN4>
Project goals	
Goals	<Goal1>
	<Goal2>
Project process goals	<Project process goal1>
	<Project process goal2>
Non-goals	<Non-goals1>
	<Non-goals2>

Requirement specification

- The requirement specification describes the requirements, expectations and wishes concerning the planned product and covers the deliveries and services of a contractor
  - The principal should write the requirement specification. It is the groundwork to ask for "Request for proposals" (RFP)
  - **Which** service should be offered?

- Contents
  - Specification of the product to be created
  - Product requirements
  - General conditions for the product and requested services
  - Contracted conditions
  - Contractor requirements

Target specification

The target specification contents the "plan how to realize the requirements", developed by the contractor.

– It describes how the "functional specification of the principal should be implemented"

– **How** should services be performed?

• Depending on the project a collaborated target specification could content additionally the complete project plan, including time schedule and resource plans.

> ⇨ *It is then realized at the end of the Planning stage*

Target specification

The functional specification contents mainly the specification of the product.
The target specification describes, how the contractor plans to performs services

- Contents
  - Detailed contents of the functional specification
  - Definitions concerning the realization

Checklist for the strategy stage:

- Principal
- Project contract with agreement on on project goals: Measurability, non goals, constraints
- Situation analysis
- Environmental analysis
- First drafts for
  - Project structure / project organization
  - Resource plan and time schedule
  - Communication concept
  - Project team

Strategy Planning

- Goal / Results
- Project plan
- Work breakdown structure
- Time schedule
- Resource plan / cost schedule
- Project organization
- Plan optimization
- Plan coordination
- Project Kickoff
- Checklist

Goal: Complete project plan and project kickoff

Results:

- Project plan
  – Work breakdown structure
  – Time schedule
  – Resource plan / cost schedule
    Resource plan covers personnel planning
- Project organization
- Project kickoff carried out

Project plan

- Project planning is together with project control **the** central task of the project manager

- But always keep in mind:
  Project management means achievement of goals, not meeting plans!

- A plan is an estimation, it is

  – never exact

  – out-dated, as soon as finished

- A wrong plan is better than no plan

Project plan

- Magical triangle

Time

Quality

Costs

Scope
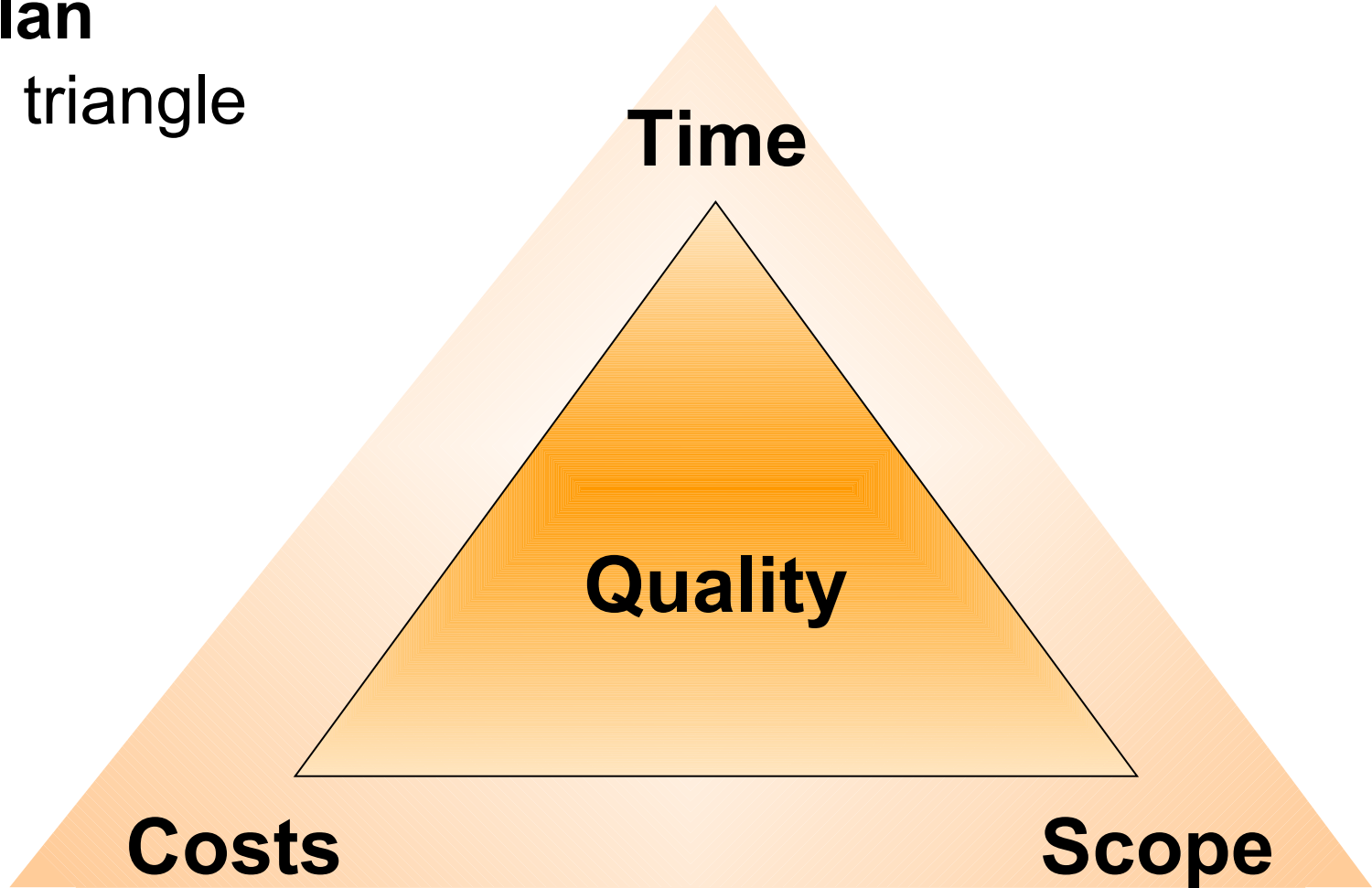
Project plan

- Project members need orientation – visualize if applicable

- Always integrate involved people into the planning!

  – Personal goals, expectations, identification with the project?

  – Do the participants have time?

Project plan

- A project plan should answer following questions:

4 — **What?**
Identification and depiction of sub projects, working packages, and tasks:
Result is the work breakdown structure

5 — **Until when?**
Result is time schedule and milestone planning

6 — **How much?** Result: resource plan / cost schedule

7 — **Who?** Project organization

— **Prerequisites?**
Technical and spatial preconditions, restrictions

Project plan

- Discussion:
  Changes of requirements (change management)

- Recommendation: Planning buffer for requirement changes, especially in larger projects

  – Simplifies change management

  – No additional assignment, no additional budget, etc. necessary

Project plan → Work breakdown structure (WBS)

Why and for what do I need a WBS?

- Distribution of responsibilities in the project
- Basic for estimation of time needed and project costs
- Basic for project control
- Basic for structuring the project documentation

Project plan → Work breakdown structure (WBS)

- A WBS splits a project hierarchically down to the tasks

Highest level

Structure the project following specified criteria, e. g. sub project manager for functional control

Project

Sub project 1

A work package typically gets not subdivided any more. If additional hierarchies are necessary, you could structure like this:
- Main work package
- Work package
- Sub work package

Determine for the work packages tasks, capacity, and responsibilities

Work package 1

Task 1
Task 2
...
Task n

Tasks = "Atoms of a project"

Project plan → Work breakdown structure (WBS)

- Methods
  How should I develop a WBS?

  – Inductive
    (Bottom up – from specific to general)
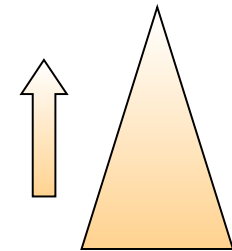
  – Deductive
    (Top down – from general to specific)
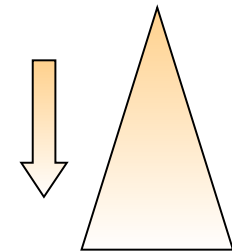
Project plan → Work breakdown structure (WBS), Template work package

WP No. – Title
Goal ………….
Results ………….
Contents • ….. • ….. • …..
Criteria to measure progress

Project plan → Time schedule

- Alignment of the working packages out of the WBS to a realistic project procedure

- Consider dependencies to resource planning / cost schedule!

- Milestones
  - You can't do everything at once
  - Coordinate stage plan with principal
  - Activities converge at milestones

Project plan → Time schedule

- Planning techniques / Methods
  - Bar chart
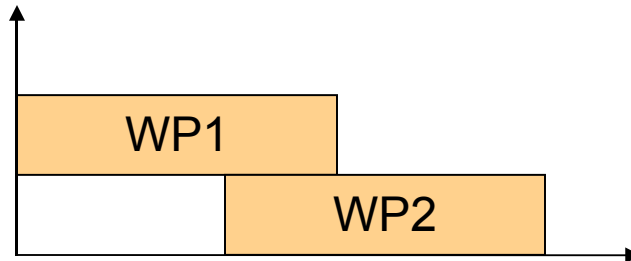
  - Network planning technique (Forward calculation / backward calculation)
  - Milestone planning

Project plan → Time schedule, Template Milestone plan

MSt No.	Name	Criteria	Plan date	Updated plan date	Actual date
7	Start of project				
6					
5					
4					
3					
2					
1	End of project				

Project plan → Resource plan / Cost schedule

- Resource planning
  - Goal:
    - Optimal workload of resources
    - Especially in matrix project management: Clarification, which resources in which volume are available from the Business Units
  - Project members need resources!
  - Scope: Planning of staff members (Personnel plan), machines, tools, and additional needed g material resources
  - ... typically together with cost schedule

Project plan → Resource plan / Cost schedule

- Cost schedule
    - Goal: Calculating costs of the project
    - Differentiate
        - Personnel costs (Project management, internal / external staff members)
        - Material costs (Printers, computers, furniture)
        - Consumption costs (rent, electricity, network)
        - Additional costs
    - Reasonable is the structuring of the costs following the work packages out of the WBS

Project plan → Resource (Personnel) plan, Template

WBS No.	Work package	Qualification internal / external	Hourly rate	Hours (Plan)	Costs (Plan)	Hours (Actual)	Costs (Actual)
1.1							
1.2							
1.3							
2.1							
2.2							
3.1							
3.2							

workscope

Employee B

Employee A

time

Project plan → Cost schedule, template

WBS No.	Work package	Cost type	Quantity	Price	Costs
1.1		• Personnel • Material • Miscellaneous			
1.2		• Personnel • Material • Miscellaneous			
1.3		• Personnel • Material • Miscellaneous			
2.1		• Personnel • Material • Miscellaneous			
2.2		• Personnel • Material • Miscellaneous			

Project organization

... covers all organizational units and regulations concerning the execution of a project

- Roles in the project
  - Principal
  - Steering Committee / Core team
  - Project manager
  - Project team
  - Controller
- The project organization answers, who accepts which results

Project organization

- Typical forms:
    - Functional project organization
        - Project members are controlled in the functional unit
    - Matrix project organization

Functional
Project

        - Project members work in a defined part of their time in the project
        - At least personnel they still belong to the functional unit
    - Pure project organization
        - Project members work for a defined time schedule complete in the project, and are no longer organized in the functional unit
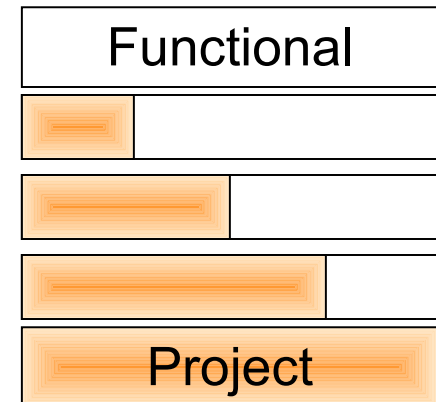
Project organization

- The project organization chart shows
    – project roles,
    – their relationships among each other
    – the communication channels in the project

    Additionally it could depict the specified meetings and their frequency
    (see „Communication")

- Assignment of tasks
  Every project role is assigned to work packages and tasks

Project organization

- How do I set up my project?
  - Structuring the project in manageable sub teams
    - Every sub team should have about 7 people
    - Social mixing:
      - Female / male
      - Old / young (experienced, carefree)
      - International
    - Mixing competence
      - Technical know-how / business know-how
      - Method know-how / expert know-how
      - Generalists / specialists
      - Practical / theoretical
    - Creation of tandems across-the-board (working, reviewing)
    - Collaboration with functional units

Project organization

- Project organization chart Example

Communication

Technical lead, gets reports from

Reports to
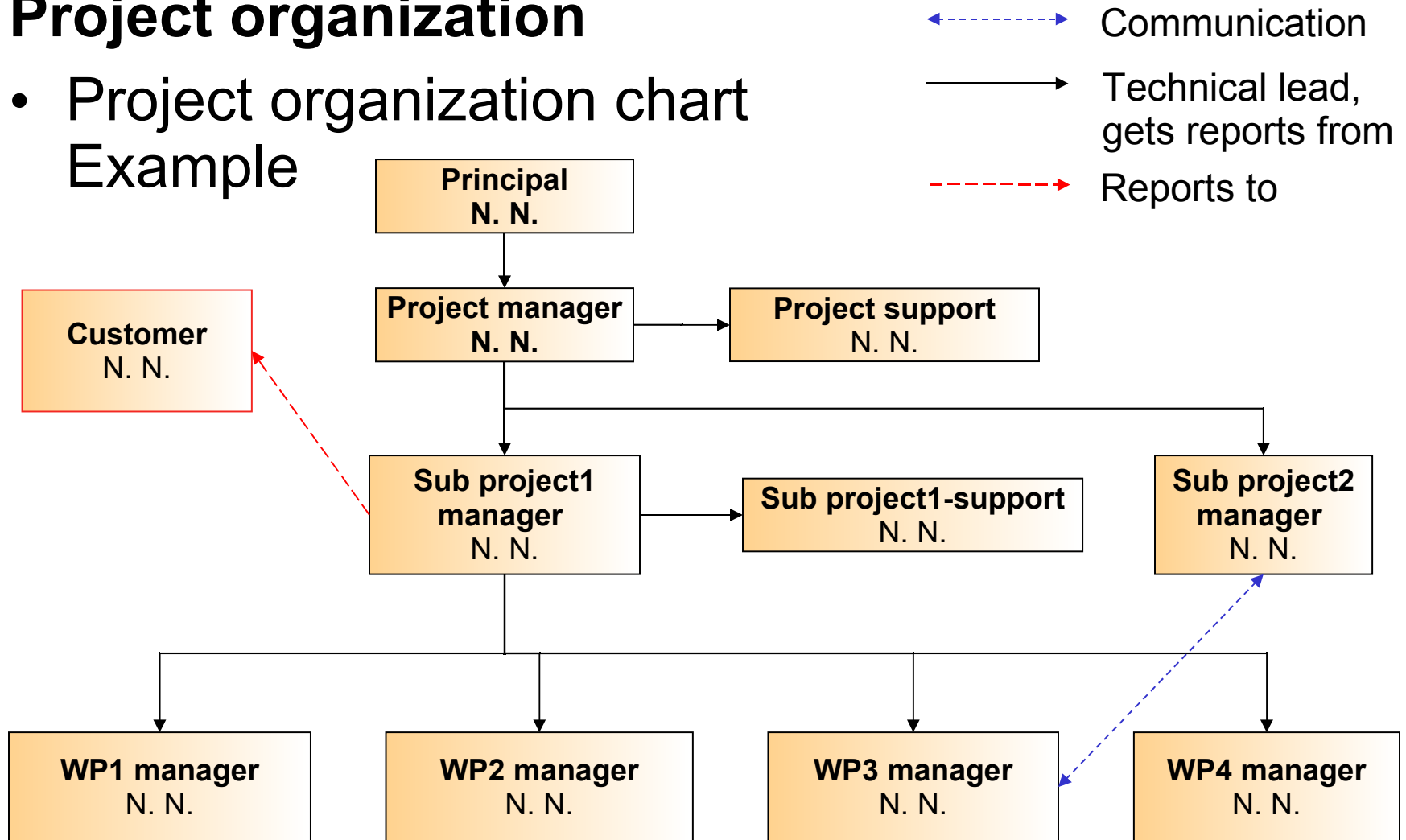
Plan optimization

- Project plan iteration – possibilities to optimize
  - Resources
    - Vacation / Absence planning (Functional tasks, other projects)
    - Equalization of load (Avoiding of overload)
  - Time schedule
    - Plan optimization using network planning technique (critical path analysis)
    - Planning of buffer
  - Costs
    - Start cost intensive work packages as late as possible
    - Start risky work packages as soon as possible

Plan coordination

- Communication with supervisor of project members because of their commitment in the project (especially in matrix project management)

- Coordination with principal

Project kickoff

- Goal at the end:
  - Information about the project goal
  - Information about the project plan
  - Motivation
    - Project is important and decision maker support the project
    - To get to know each other
    - Corporate feeling: It could work like this!
  - Kickoff: Conflicts and critical points are solved
- Scope
  - Information, Motivation
  - Results of planning
  - Next two milestones
- The more political, the more important: Be consequent!

Checklist concerning the planning stage (1/2):

- Results of project planning
  - Does every project member understand the project goal including sub goals?
  - Are all activities planned and coordinated with project members and their executive managers?
  - Was there a review and acceptance by the project members? Was there a common communication?
  - Holiday season and possible sickness considered?
  - Training needs considered?
  - Capacity utilization good arranged?
  - Received commitment for all needed resources?

Checklist concerning the planning stage (2/2):

- Project organization
- Status of the project culture
- Project documentation
  – Duration and costs of planning stage
- Project marketing
- Project communication

| Strategy | Planning | **Execution** |

- – Goal / Results
- – Milestones
- – Project control
- – Project management
- – Trend analysis
- – Checklist

Past

Present

Future

Goal: Achievement of the project goals

Results:

The result is depending on the project goals: Hence it could be a service, a product, a document, or something else.

Abstractly consolidated a result is:

– Project success

– Partial project success

– Project stop

Tasks – Summary:

- Project controlling
  - Executing and finishing tasks out of work packages
  - Update of planning (Dates, work packages)
  - Control activities, if variations occur
- Milestone management
- Ongoing communication
  (see Comprehensive Topics / Communication)
  - Regular meetings with principal
  - Regular project meetings
  - Regular meetings of working groups
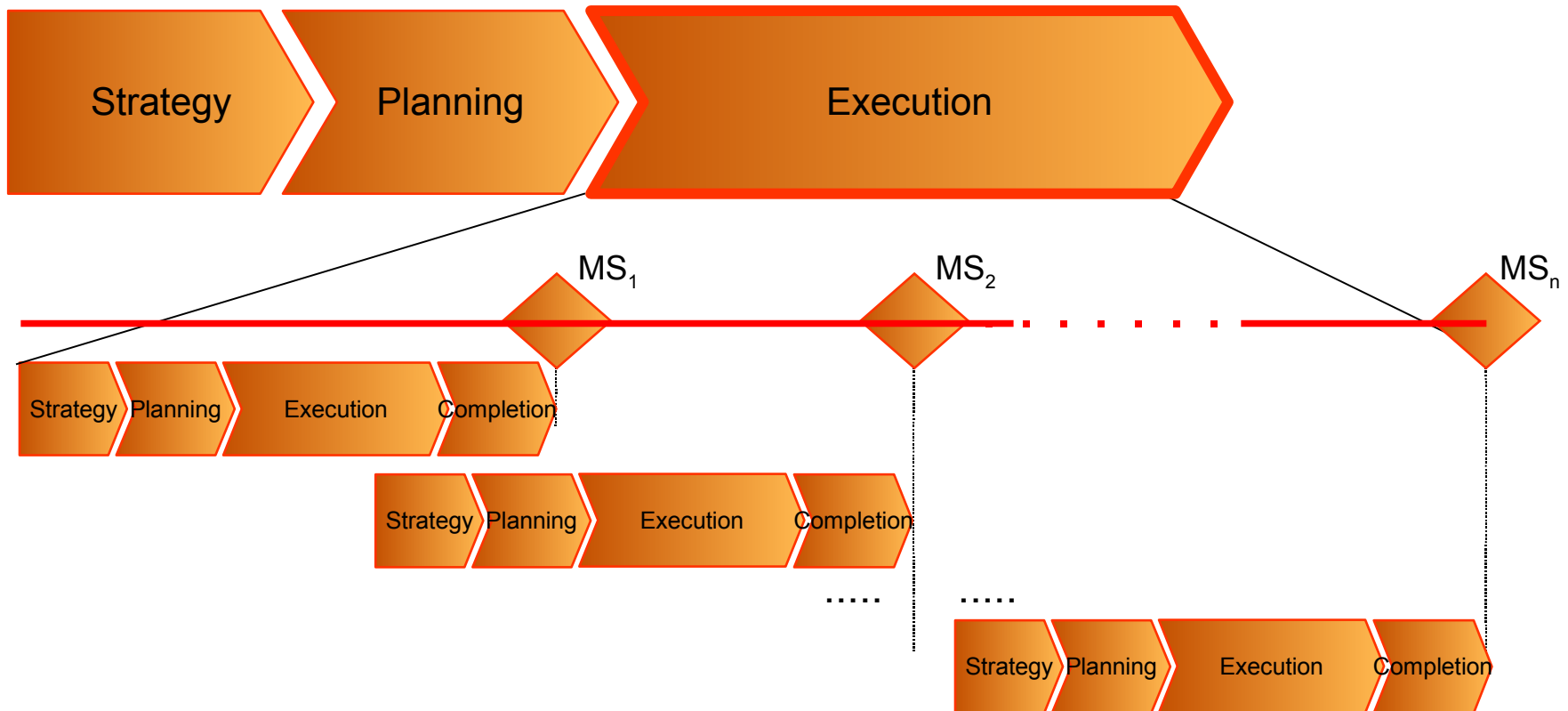
Milestones

- With milestones the project stages repeat themselves in little: Consider overlapping!

Milestones

- Contents of a milestone
  - Complete information and presentation of the current status to involved people, especially steering committee
  - Acceptance of partial success, milestone results
- Milestone plan
  - Update of overall plan if necessary, uncovering and solving conflicts concerning time / scope of milestones
  - Planning next milestone concerning contents
  - Planning next but one milestone concerning dates and headlines

Project control

- Goal

  – Always knowing the current status of work and how much has to be done until the end of project

  – Good working

  – Having always an updated plan

Project control

- Project control as prerequisite for an efficient project management

- Scope
  - Target / actual comparison
    - Use of key figures / key performance indicators
    - Objective progress – in terms of content against the goals
    - Dates – based on Time schedule
    - Cost control
  - Milestone management (Activities, if necessary)
 - Presentation of the project status

Project control

- Objective progress
  - Most important control task, but the most difficult as well
  - How do I determine the degree of completion of a working package?
  - Example: Measuring of the degree of completion in percent → 90-percent-complete trap
  - Progress control should be based on technical facts – professional know-how needed!
  - Proposal:
    - Common definition of indicators and criteria
    - Judging of quality with maturity levels

Project control

- Presentation of project status
  ... is done typically by status reports
  - Goals
    - Information for principal
    - Feedback and validation for the project team: Are we still on the right way?
  - Target-performance comparison, depicting of project management ratios
  - Traffic lights logic
  - Time schedule: Every 2 to 4 weeks
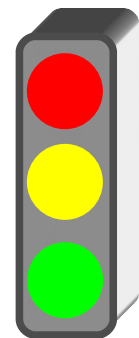
Project management

- Declaring the (successful) end of the project or applying for the stop of the project

- Applying / accompany a project review

- Starting, accompanying (changes), and ending working packages

- Acceptance or organization of acceptance of (partial) results of the working packages

Project management

- Management of project members
- Ensuring communication
  - Principal / project management
  - inside the project team
  - to the outside world
- (General) presentation of results / status
- Conflict management if trouble occurs
- Change management

Trend analysis

- Statements concerning the further project progress
  Contents

  – Forecast project progress

    - Considering cognitions and communicating them

    - Looking for solutions, deciding, and realizing

  – Continuous updating and correction of the project plan as reaction on interfering events and new knowledge
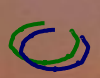   → Continuous process

Trend analysis

- Milestone trend analysis (MTA)
  Special form of trend analysis based on milestone plan

  – Monitoring the progress of the project and detection of possible delays in time

  – Regular meetings between responsible people and involved people to discuss the status of the milestones

Checklist concerning the execution stage:

- Regular project status documentation, in particular concerning the milestones

- Minutes and project progress reports including documentation of decisions and agreements

- Comparison structure, duration and costs of the execution stage compared with planned values

- Status of the project documentation

- Project communication

- Advancement of project culture

- Project marketing

| Strategy | Planning | Execution | **Completion** |

- Goal / Results
- Execution of the acceptance
- Final documentation and lessons learned
- Liquidation
- Checklist

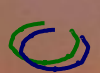**Goal:** Acceptance, final documentation, liquidation

Results:

- Exoneration
- Final documentation

Execution of the acceptance

1. Delivery of the project results to the principal:

   – Product

   – Product documentation

   – Final report – contents most important facts of the project

     • Project contract

     • Management Summary:
       How was the project planned and executed?

     • Project result
       In which scope was the goal reached? Statements concerning quality, costs, and time? Which solution methods? Needed effort (time, costs, resources)

Execution of the acceptance

2. Exoneration

– The principal signs the final report and gives so formal exoneration to the project

– The principal acknowledges:

- The achieved level of the goal

- The delivered quality

- The costs

- The needed time

– It's possible that the principal gives only partial exoneration – then there will be typically an agreement concerning a rectification of defects

Execution of the acceptance

3. Transition of the project
   (depending on project and result of the project)

   – to operation including integration, customizing, and instruction

   – to functional units

Final documentation and lessons learned

- Lessons-Learned Workshop

- Feedback

- Creation of a final documentation

- Creation of a presentation out of the final documentation

- Final meeting

  - Final presentation

  - Further proceeding

  - Delivery of final documentation to the principal

- Providing the final documentation into a company knowledge base

Liquidation

- Everything has an (explicit) end

- Project management and project team finish their activities

- Closing boards / committees

- Release of project resources

- Closing the cost center

- Collection of results

- Nice party!

Completion stage: Checklist

Checklist concerning the completion stage:

- Agreement for the final project stage – remaining work
- Project documentation
  - Minutes
  - Final project report
  - Complete duration and costs of the project
- Projekt Know-how Transfer
- Duration and costs of the completion stage
- Project communication
- Emotional completion and termination of the project

- Overview / Introduction
- Definitions
- Comprehensive topics
  - Project culture
  - Communication
  - Documentation
  - Quality
  - Risk Management
- Project stages
  - Strategy stage
  - Planning stage
  - Execution stage
  - Completion stage
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    Free online course (German) with the possibility to receive a certificate (with costs)
  - http://en.wikipedia.org/wiki/Project_management

- ... and what we would like to tell you at the end
  - Let the concerned department estimate, not IT specialists
  - Claim for truth
  - Accept only realistic promises
  - Let it shipwreck on time, if it is foredoomed

"When you discover you are riding a dead horse, the best strategy is to dismount.
Old American-Indian saying