Folie 1

Internationales Projektmanagement

International Project Management

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Folie 2

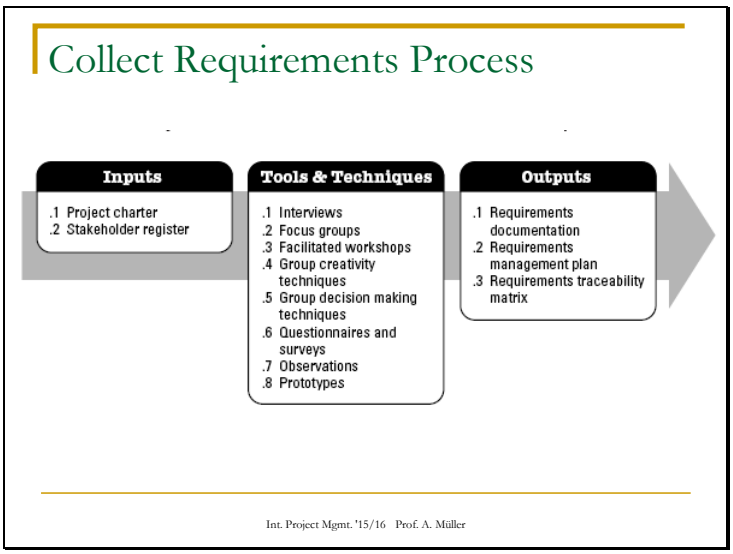
Scope Management

- Project Selection
- Initiation of the project
- (*) Project Charter
- WBS, WBS Dictionary
- Scope Management Processes

Definitions (PMBOK, 2013):

- Project Scope Management ...
- ..is the process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled. The key benefit of this process is that it provides guidance and direction on how scope will be managed throughou tthe project.
- ... includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully.

Folie 4



Collect Requirements is the process of defining and documenting the project and product features and functions needed to fulfill stakeholder's needs and expectations. The project's success is directly influenced by the care taken in capturing and managing requirements. Requirements are a condition or capability that must be met or possessed by a system, product, service, result, or component to satisfy a contract, standard, specification, or other formal document. Requirements include the quantified and documented needs, wants, and expectations of the sponsor, customer, and other stakeholders. These requirements need to be elicited, analyzed, and recorded in enough detail to be measured once the project execution phase begins. Collecting requirements is as much about defining and managing customer expectations as any other key project deliverable and becomes the very foundation of the work breakdown structure (WBS). Cost, schedule, and quality planning are all built upon these requirements. The development of requirements begins with an analysis of the information contained in the project charter (Section 4.1),

Stakeholder Register

The stakeholder register is used to identify stakeholders that can provide information on detailed project and product requirements.

.2 Focus groups

Focus groups bring together prequalified stakeholders and subject matter experts to learn about their expectations and attitudes about a proposed product, service or result. A trained moderator guides the group through an interactive discussion, designed to be more natural than a one-on-one interview.

.3 Facilitated Workshops

Requirements workshops are focused sessions that bring key cross-functional stakeholders together to define requirements. Workshops are considered a primary technique for quickly defining crossfunctional requirements and reconciling stakeholder differences. Because of their interactive group nature, well-facilitated sessions can build trust, foster relationships and consensus, and improve communication among the participants. Another benefit of this technique is that issues can be discovered, and resolved more quickly than in individual sessions.

For example, facilitated workshops called Joint Application Development (or Design) (JAD) sessions are used in the software development industry. These facilitated sessions focus on bringing users and the development team together to improve the software development process. In the manufacturing industry, Quality Function Deployment (QFD) is an example of another facilitated workshop technique that helps determine critical characteristics for new product development. QFD starts by collecting customer needs (called "voice of the customer") and then objectively sorts, prioritizes, and sets goals for those needs.

.4 Group Creativity Techniques

Several group activities can be organized to identify project and product requirements. Some of the group creativity techniques that can be used are:

Brainstorming. Generate and collect multiple ideas related to project and product requirements.

Nominal Group Technique. Enhances brainstorming with a voting process used to rank the most useful ideas for further brainstorming or for prioritization.

The Delphi Technique. A selected group of experts answers questionnaires and provides feedback regarding the responses from each round or requirements gathering.
Idea/Mind Mapping. Ideas created through individual brainstorming are consolidated into a single map to reflect commonality and differences in understanding, and generate new ideas.

.1 Stakeholder Requirements Documentation
Stakeholder requirements documentation describes how individual requirements meet the business need for the project. Requirements may start out at a high-level and become progressively more detailed as more is known. Before being baselined, requirements must be unambiguous (measurable and testable), traceable, complete, and consistent. The format of a stakeholder requirements document may range from a simple document listing all the requirements categorized by stakeholder and priority, to more elaborate forms containing executive summary, detailed descriptions, and attachments.
Components of stakeholder requirements documentation can include but are not limited to:
Business problem to be solved or opportunity to be seized, describing the limitations of the current situation and why the project has been undertaken;
Business and project objectives for traceability;
Functional requirements, describing business process, information, and interaction with the product, as appropriate which can be documented textually in a requirements list, in models, or both;
Non-functional requirements, such as level of service, performance, security, compliance, supportability, retention/purge, etc.;
Quality requirements;
Business rules stating the guiding principles of the organization;
Impacts to other organizational areas, such as call center, sales force, technology groups;
Impacts to other entities inside or outside the performing organization;
Support and training requirements; and
Requirements assumptions and constraints.
.2 Requirements Management Plan
The requirements management plan documents how requirements will be analyzed, documented, and managed throughout the project. The phase-to-phase relationship, described in 2.1.3.2, strongly influences how requirements are managed. The project manager must choose the most effective relationship for the project and document this approach in the requirements management plan. Many of the requirements management plan components are based on that relationship.
Components of the requirements management plan can include but are not limited to:
How requirements activities will be planned, tracked, and reported;
Configuration management activities such as how changes to the product, service or result requirements will be initiated, how impacts will be analyzed, how they will be traced, tracked, and reported, as well as the authorization levels required to approve these changes;
Requirements

Requirements prioritization process;
Product metrics that will be used and the rationale for using them; and
Traceability structure, that is, which requirements attributes will be captured on the traceability matrix and to which other project documents requirements will be traced.
.3 Requirements Traceability Matrix
The requirements traceability matrix is a table that links requirements to their origin and traces them throughout the project life cycle. The implementation of a requirements traceability matrix helps ensure that each requirement adds business value by linking it to the business and project objectives. It provides a means to track requirements throughout the project life cycle, helping to ensure that requirements approved in the stakeholder requirements documentation are delivered at the end of the project. Finally, it provides a structure for managing changes to the product scope.
This process includes but is not limited to tracing:
Requirements to business problems, opportunities, goals, and objectives;
Requirements to project objectives;
Requirements to project scope/WBS deliverables;
Requirements to product design;
Requirements to product development;
Requirements to test strategy and test scenarios; and

High-level requirements to more detailed requirements.
Attributes associated with each requirement can be recorded in the requirements traceability matrix. These attributes help to define key information about the requirement. Typical attributes used in the requirements traceability matrix may include: a unique identifier, a textual description of the requirement, the rationale for inclusion, owner, requirement, source, priority, version, current status (such as active, cancelled, deferred, added, approved) and date completed. Additional attributes to ensure that the requirement has met stakeholders' satisfaction may include stability, complexity, and acceptance criteria.

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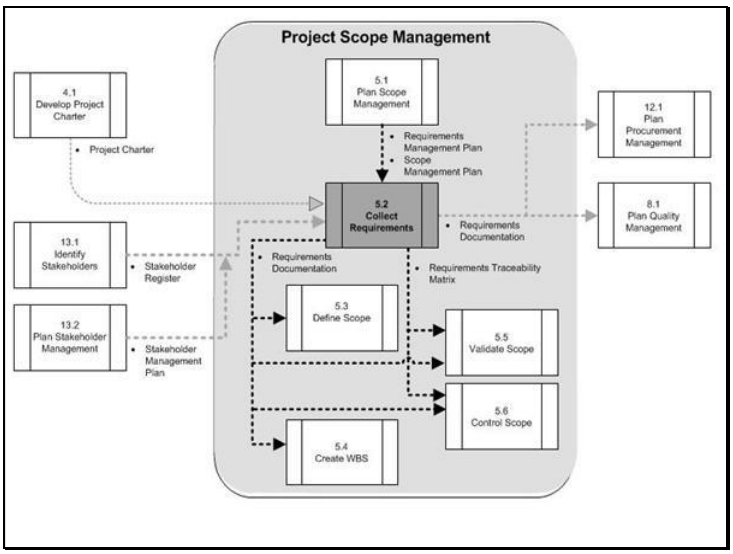


The project's success is directly influenced by the care taken in planning for and capturing the requirements of the overall project as well as the requirements of the product, service, or result of the project. Requirements include conditions or capabilities that must be met by the project or present in the product, service, or result to satisfy an agreement or other formally imposed specification. Requirements include the quantified and documented needs and expectations of the sponsor, customer, and other stakeholders. These requirements need to be elicited, analyzed, and recorded in enough detail to be included in the scope baseline and be measured once project execution begins. Requirements become the foundation of the WBS. Cost, schedule, and quality planning are all based upon these requirements. The development of requirements begins with an analysis of the information contained in the project charter (Section 4.1.3.1), the stakeholder register (Section 13.1.3.1), and the stakeholder management plan (Section 13.2.3.1). Many organizations categorize requirements into different types, such as business and technical, the former referring to stakeholder needs and the latter to how those needs will be implemented. Requirements can also be grouped into classifications allowing for further refinement and detail as the requirements are elaborated. These classifications include:

- Business requirements, which describe the higher-level needs of the organization as a whole, such as the businesses issues or opportunities, and why a project has been undertaken.
- Stakeholder requirements, which describe needs of a stakeholder or stakeholder group.
- Solution requirements, which describe features, functions, and characteristics of the product, service or result that will meet the business and stakeholder requirements. Solution requirements are further grouped into functional and nonfunctional requirements.
    - Functional requirements describe the behaviors of the product. Examples include processes, data, and interactions with the product.
    - Nonfunctional requirements supplement functional requirements and describe the environmental conditions or qualities required for the product to be effective. Examples include: reliability, security, performance, safety. level of service, supportability,

retention/purge, etc.

- Transition requirements describe temporary capabilities, such as data conversion and training requirements, needed to transition from the current "as-is" state to the future "to-be" state.
- Project requirements, which describe the actions, processes, or other conditions the project needs to meet.
- Quality requirements, which capture any condition or criteria needed to validate the successful completion of a project deliverable or fulfillment of other project requirements.

5.2.1 Collect Requirements: Inputs

5.2.1.1 Scope Management Plan

Described in Section 5.1.3.1. The scope management plan provides clarity as to how project teams will determine which type of requirements need to be collected for the project.

5.2.1.2 Requirements Management Plan

Described in Section 5.1.3.2. The requirements management plan provides the processes that will be used throughout Collect Requirements to define and document the stakeholder needs.

5.2.1.3 Stakeholder Management Plan

Described in Section 13.2.3.1. The stakeholder management plan is used to understand stakeholder communication requirements and the level of stakeholder engagement in order to assess the level of stakeholder participation in requirements activities.

5.2.1.4 Project Charter

Described in Section 4.1.3.1. The project charter is used to provide the high-level description of the product, service, or result of the project so that detailed product requirements can be developed.

5.2.1.5 Stakeholder Register

Described in Section 13.1.3.1. The stakeholder register is used to identify stakeholders who can provide information on the requirements.

5.2.2 Collect Requirements: Tools and Techniques

5.2.2.1 Interviews

An interview is a formal or informal approach to elicit information from stakeholders by talking to them directly. It is typically performed by asking prepared and spontaneous questions and recording the responses. Interviews are often conducted on an individual basis between an interviewer and an interviewee, but may involve multiple interviewers and/or multiple interviewees. Interviewing experienced project participants, stakeholders, and subject matter experts can aid in identifying and defining the features and functions of the desired product deliverables.

5.2.2.2 Focus Groups

Focus groups bring together prequalified stakeholders and subject matter experts to learn about their expectations and attitudes about a proposed product, service, or result. A trained moderator guides the group through an interactive discussion, designed to be more conversational than a one-on-one interview.

5.2.2.3 Facilitated Workshops

Facilitated workshops are focused sessions that bring key cross-functional stakeholders together to define product requirements. Workshops are considered a primary technique for quickly defining cross-functional requirements and reconciling stakeholder differences. Because of their interactive group nature, well-facilitated sessions can build trust, foster relationships, and improve communication among the participants, which can lead to increased stakeholder consensus. Another benefit of this technique is that issues can be discovered and resolved more quickly than in individual sessions.

For example, facilitated workshops called joint application design/development (JAD)

sessions are used in the software development industry. These facilitated sessions focus on bringing business subject matter experts and the development team together to improve the software development process. In the manufacturing industry, Quality Function Deployment (QFD) is another example of a facilitated workshop technique that helps determine critical characteristics for new product development. QFD starts by collecting customer needs, also known as Voice of the Customer (VOC). These needs are then objectively sorted and prioritized, and goals are set for achieving them. User stories, which are short, textual descriptions of required functionality, are often developed during a requirements workshop. User stories describe the stakeholder who benefits from the feature (role), what the stakeholder needs to accomplish (goal), and the benefit to the stakeholder (motivation).

5.2.2.4 Group Creativity Techniques

Several group activities can be organized to identify project and product requirements. Some of the group creativity techniques that can be used are:

- **Brainstorming.** A technique used to generate and collect multiple ideas related to project and product requirements.
- **Nominal group technique.** A technique that enhances brainstorming with a voting process used to rank the most useful ideas for further brainstorming or for prioritization.
- **Idea/mind mapping.** A technique in which ideas created through individual brainstorming sessions are consolidated into a single map to reflect commonality and differences in understanding and generate new ideas.
- **Affinity diagram.** A technique that allows large numbers of ideas to be classified into groups for review and analysis.
- **Multicriteria decision analysis.** A technique that utilizes a decision matrix to provide a systematic analytical approach for establishing criteria, such as risk levels, uncertainty, and valuation, to evaluate and rank many ideas.

5.2.2.5 Group Decision-Making Techniques

A group decision-making technique is an assessment process having multiple alternatives with an expected outcome in the form of future actions resolution. These techniques can be used to generate, classify, and prioritize product requirements.

There are various methods of reaching a group decision, such as:

- **Unanimity.** A decision that is reached whereby everyone agrees on a single course of action. One way to reach unanimity is the Delphi technique, in which a selected group of experts answers questionnaires and provides feedback regarding the responses from each round of requirements gathering. The responses are only available to the facilitator to maintain anonymity.
- **Majority.** A decision that is reached with support obtained from more than 50 % of the members of the group.
- **Plurality.** A decision that is reached whereby the largest block in a group decides, even if a majority is not achieved.
- **Dictatorship.** In this method, one individual makes the decision for the group.

All of these decision methods can be applied to the group techniques used in the requirements gathering process.

5.2.2.6 Questionnaires and Surveys

Questionnaires and surveys are written sets of questions designed to quickly accumulate information from a large number of respondents. Questionnaires and/or surveys are most appropriate with varied audiences, when a quick turnaround is needed, and where statistical analysis is appropriate.

5.2.2.7 Observations

Observations provide a direct way of viewing individuals in their environment and how they

perform their jobs or tasks and carry out processes. It is particularly helpful for detailed processes when the people that use the product have difficulty or are reluctant to articulate their requirements. Observation is also known as "job shadowing." It is usually done externally by an observer viewing a business expert performing a job. It can also be done by a "participant observer" who actually performs a process or procedure to experience how it is done to uncover hidden requirements.

5.2.2.8 Prototypes

Prototyping is a method of obtaining early feedback on requirements by providing a working model of the expected product before actually building it. Since prototypes are tangible, it allows stakeholders to experiment with a model of their final product rather than only discussing abstract representations of their requirements. Prototypes support the concept of progressive elaboration in iterative cycles of mock-up creation, user experimentation, feedback generation, and prototype revision. When enough feedback cycles have been performed, the requirements obtained from the prototype are sufficiently complete to move to a design or build phase. Storyboarding is a prototyping technique showing sequence or navigation through a series of images or illustrations. In software development, storyboards use mock-ups to show navigation paths through web pages, screens, or other user interfaces.

5.2.2.9 Benchmarking

Benchmarking involves comparing actual or planned practices, such as processes and operations, to those of comparable organizations to identify best practices, generate ideas for improvement, and provide a basis for measuring performance. The organizations compared during benchmarking can be internal or external.

5.2.2.10 Context Diagrams

The context diagram is an example of a scope model. Context diagrams visually depict the product scope by showing a business system (process, equipment, computer system, etc.), and how people and other systems (actors) interact with it. Context diagrams show inputs to the business system, the actor(s) providing the input, the outputs from the business system, and the actor(s) receiving the output.

5.2.2.11 Document Analysis

Document analysis is used to elicit requirements by analyzing existing documentation and identifying information relevant to the requirements. Examples of documents that can be analyzed include, but are not limited to: business plans, marketing literature, agreements, requests for proposal, current process flows, logical data models, business rules repositories, application software documentation, requirements documentation, problem/issue logs, etc.

5.2.3 Collect Requirements: Outputs

5.2.3.1 Requirements Documentation

Requirements documentation describes how individual requirements meet the business need for the project. Requirements may start out at a high level and become progressively more detailed as more is known. Before being baselined, requirements need to be unambiguous (measurable and testable), traceable, complete, consistent, and acceptable to key stakeholders. The format of a requirements document may range from a simple document listing all the requirements categorized by stakeholder and priority, to more elaborate forms containing executive summary, detailed descriptions, and attachments.

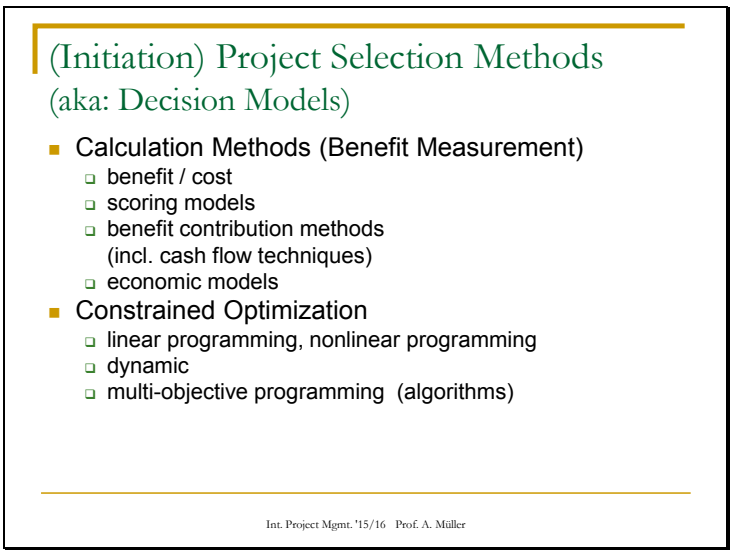
Components of requirements documentation can include, but are not limited to:

- Business requirements;
- Business and project objectives for traceability;
- Stakeholder requirements;
- Solution requirements, including functional and nonfunctional requirements.

Solution requirements can be documented textually, in models, or both;

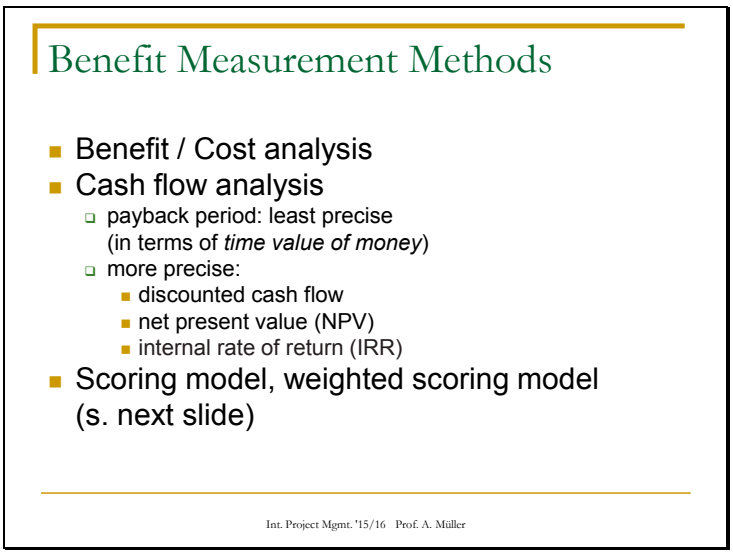
- Project requirements, such as levels of service, performance, safety, compliance, supportability, reporting, etc.;
- Quality requirements;
- Transition requirements;
- Acceptance criteria;
- Business rules stating the guiding principles of the organization;
- Impacts to other organizational areas, such as the call center, sales force, technology groups;
- Impacts to other entities inside or outside the performing organization;
- Support and training requirements; and
- Requirements assumptions and constraints.

Folie 6



* Decision models (decision trees, forced choice, and others) examine different criteria used in making decisions regarding project selection while calculations methods provide a way to calculate the value (benefit) of the project which is then used in project selection decision making.
*Constrained Optimization Methods For the purposes of the exam, all you need to understand about constrained optimization methods is they are mathematical models

Folie 7



- benefi / cost analysis. This compares the financial benefits to the company of performing the project to the costs of implementing the project. Obviously, a sound project choice is one where the costs to implement or produce the product of the project are less than the financial benefits. How much less is the organization's decision. Some companies are comfortable with a small margin, while others are comfortable with a much larger margin between the two figures. Give an example: Total cost vs revenue

---

score: compare projects by (Profit potential,Marketability, Ease to produce/support) * Weighted score

---

Payback period is the least precise of all the cash flow calculations. That's because payback period does not consider the value of the cash inflows made in later years, commonly called the *time value of money.* For example, if you have a project with a five-year payback period, the cash inflows in year 5 are worth less than they are if you received them today. The next section will explain this idea more fully.

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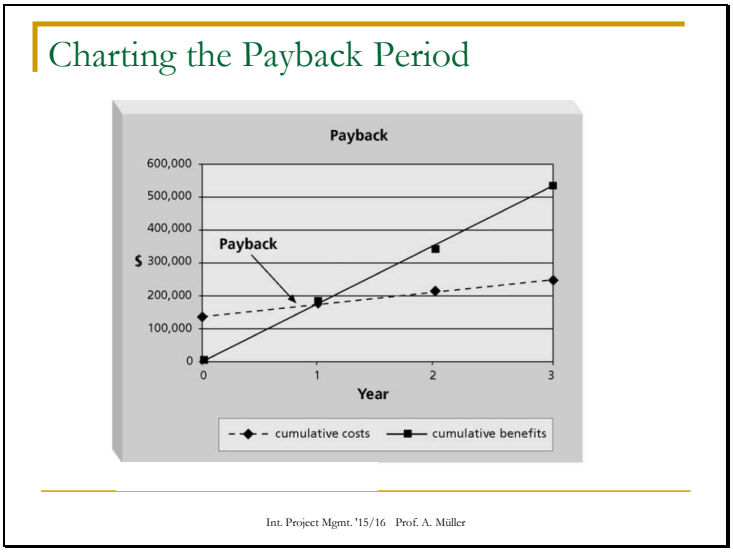
Sample Weighted Scoring Model for Project Selection

	A	B	C	D	E	F
1	**Criteria**	**Weight**	**Project 1**	**Project 2**	**Project 3**	**Project 4**
2	Supports key business objectives	25%	90	90	50	20
3	Has strong internal sponsor	15%	70	90	50	20
4	Has strong customer support	15%	50	90	50	20
5	Realistic level of technology	10%	25	90	50	70
6	Can be implemented in one year or less	5%	20	20	50	90
7	Provides positive NPV	20%	50	70	50	50
8	Has low risk in meeting scope, time, and cost goals	10%	20	50	50	90
9	**Weighted Project Scores**	**100%**	**56**	**78.5**	**50**	**41.5**

Folie 9



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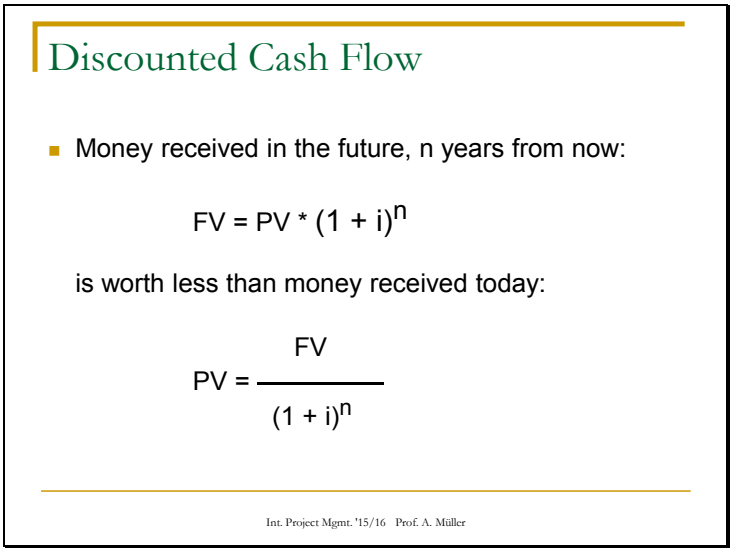
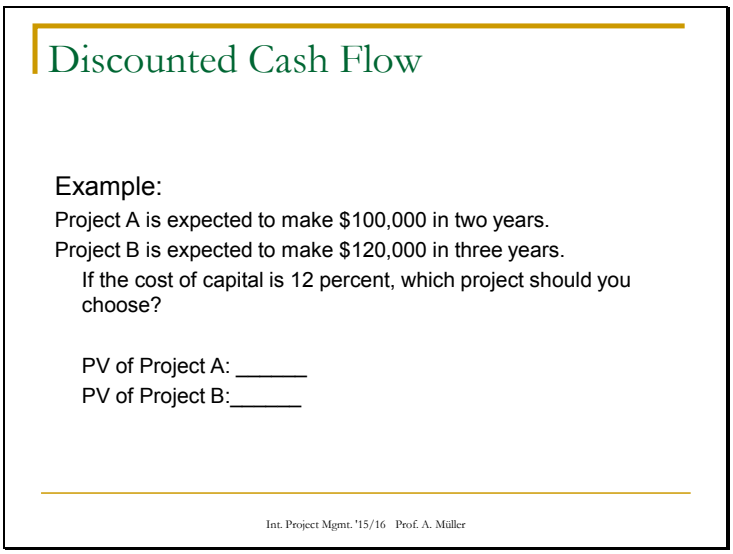
Folie 10



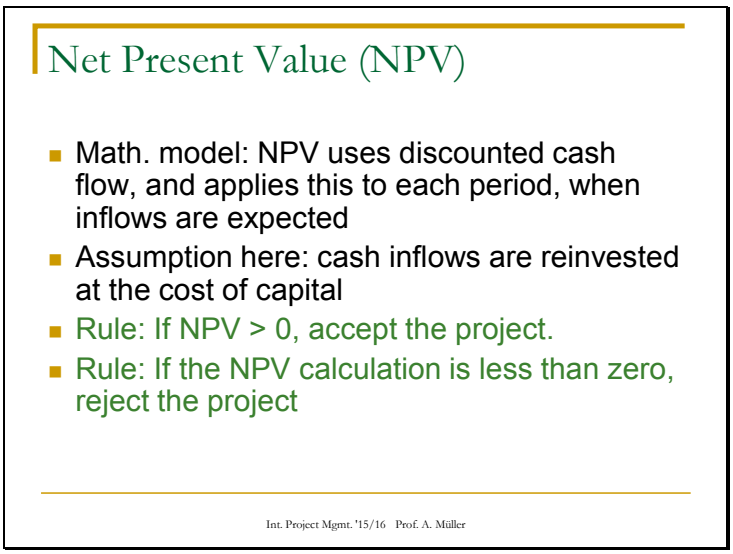
(FV) of the investment equals the present value (PV) times (1 plus the interest rate) times the number of time periods the interest is paid. Let's
plug in the numbers:
FV = 2000 (1.05)3
FV = 2000 (1.157625)
FV = $2315.25

Folie 11



(FV) of the investment equals the present value
(PV) times (1 plus the interest rate) times the number of time periods the interest is paid. Let's plug in the numbers:
h----------
1.12 UPS 2 = 1.254
1.12 UPS 3 = 1.404
The PV of Project A = $79,719.
The PV of Project B = $85,414.
Project B is the project that will return the highest investment to the company and should be chosen over Project A.

Folie 12



Net present value works like discounted cash flows in that you bring the value of future monies received into today's dollars. With NPV, you evaluate the cash inflows using the discounted cash flow technique applied to each period the inflows are expected, instead of in one sum. The total present value of the cash flows is then deducted from your initial investment to determine NPV. NPV assumes that cash inflows are reinvested at the cost of capital.
`**Achtung Schreibweise Negative Werte: <10> oder auch (10) – I'ye seen both!**

+ When you get a positive value for NPV, it means that the project will earn a return at least equal to or greater than the cost of capital. Another note on NPV calculations: Projects with high returns early in the project are better projects than projects with lower returns early in the project. In the preceding examples, Project A fits this criteria also. --
* NPV is the most conservative cash flow technique,

Net Present Value Example

	A	B	C	D	E	F	G
1	Discount rate	10%					
2							
3	PROJECT 1	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
4	Benefits	$0	$2,000	$3,000	$4,000	$5,000	$14,000
5	Costs	$5,000	$1,000	$1,000	$1,000	$1,000	$9,000
6	Cash flow	($5,000)	$1,000	$2,000	$3,000	$4,000	$5,000
7	NPV →	$2,316					
8		Formula =npv(b1,b6:f6)					
9							
10	PROJECT 2	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
11	Benefits	$1,000	$2,000	$4,000	$4,000	$4,000	$15,000
12	Costs	$2,000	$2,000	$2,000	$2,000	$2,000	$10,000
13	Cash flow	($1,000)	$0	$2,000	$2,000	$2,000	$5,000
14	NPV →	$3,201					
15		Formula =npv(b1,b13:f13)					
16							
17	RECOMMEND PROJECT 2 BECAUSE IT HAS THE HIGHER NPV.						

* Note that totals are equal, but NPVs are not.
* Uses Excel's npv function
* -> recommend project 2 , because it has a higher npv

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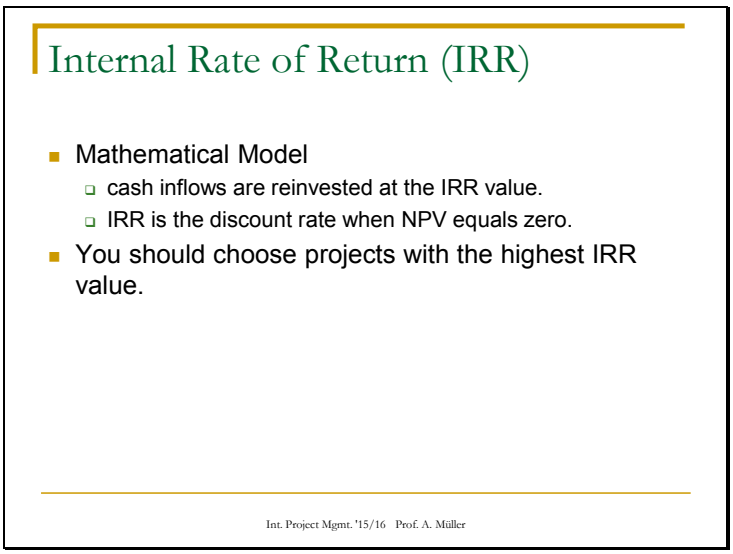
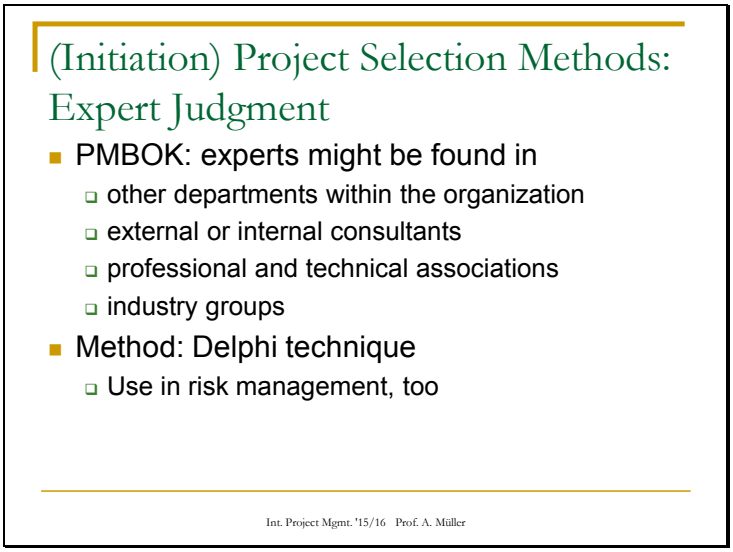


→ Übungsaufgabe !

The internal rate of return (IRR) is the most difficult equation of all the cash flow techniques to calculate that we've discussed. It is a complicated formula and should be performed on a financial calculator or computer. **IRR can be figured manually, but it's a trial-and-error approach to get to the answer**. Technically speaking, IRR is the discount rate when the present value of the cash inflows equals the original investment. When choosing between projects or when choosing alternative methods of doing the project, projects with higher IRR values are generally considered better than projects with low IRR values.

Folie 15



* Expert judgment is the last tool and technique in the Initiation process. The concept behind expert judgment is to rely on individuals, or groups of people, who have **training, specialized knowledge, or skills in the areas** you're assessing. In the case of project Initiation, expert judgment would be helpful in assessing the inputs to the Initiation process- i.e., product descriptions, strategic plan, project selection criteria, and historical information.

* EXPLAIN Delphi technique (as: Expert opinion)

(Initiation) Budget Estimates

- Project costs: human resource costs, resource (or project costs), administrative costs.

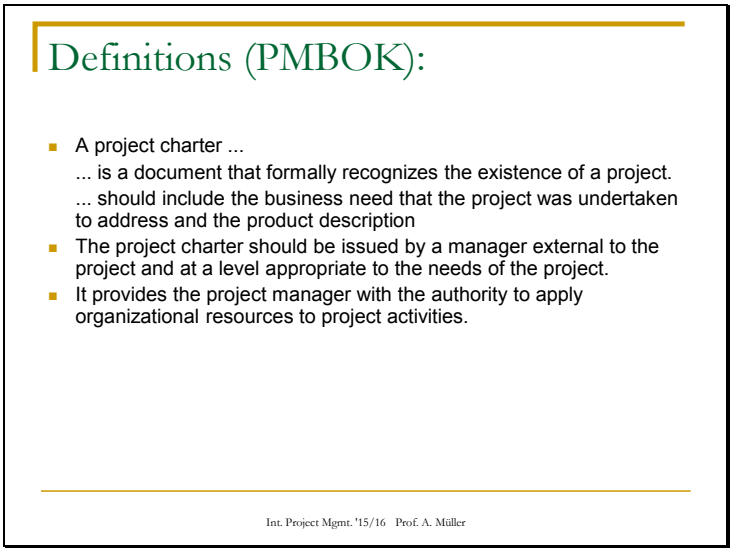
REMEMBER: Accuracy of Estimates

(Initiating) Order of Magnitude:
-25% to + 75%
(Planning) Budget Estimate:
-10% to +25%
(Planning) Definitive Estimate:
-5% to +10%

Output from Initiation:

- Project charter
- Project manager identified/assigned
- Constraints
- Assumptions

Folie 18



It should include, either directly or by reference to other documents:

When a project is performed under contract, the signed contract will generally serve as the project charter for the seller.

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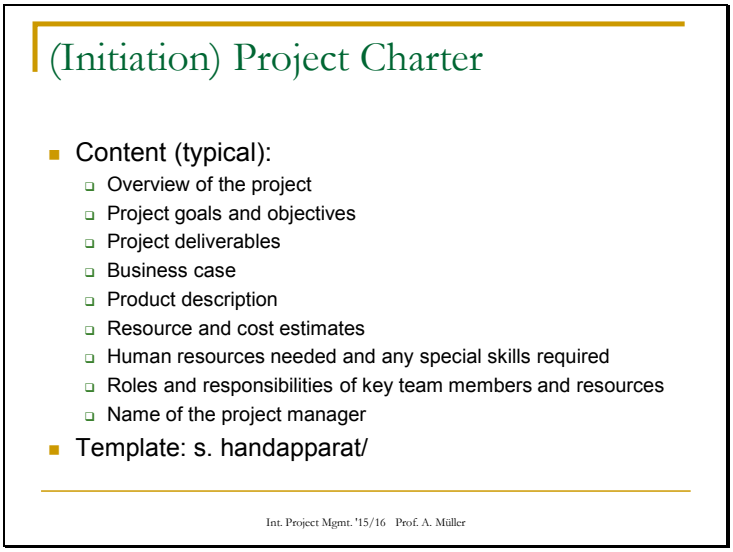


The project charter is the official, written acknowledgment and recognition that a project exists. It's issued by senior management and **gives the project manager the authority to assign organizational resources** to the work of the project. It describes the business need or demand that the project was initiated to address and includes a description of the product or service of the project. It is usually **the first official document** of the project once acceptance of the project has been granted. Good project charters that are well documented will address many of the questions your stakeholders are likely to have up front. If your charter is good, you'll avoid a lot of issues early on. If **your project is performed under contract**, the contract itself can serve as the project charter for the seller.

Folie 20

Project Charter

- Discussion: how does the typical project charter (or a set of equivalent documents), you have worked with, look like ?

→ Map the information of your most recent project to the template provided.

s.a.: PMBOK project charter

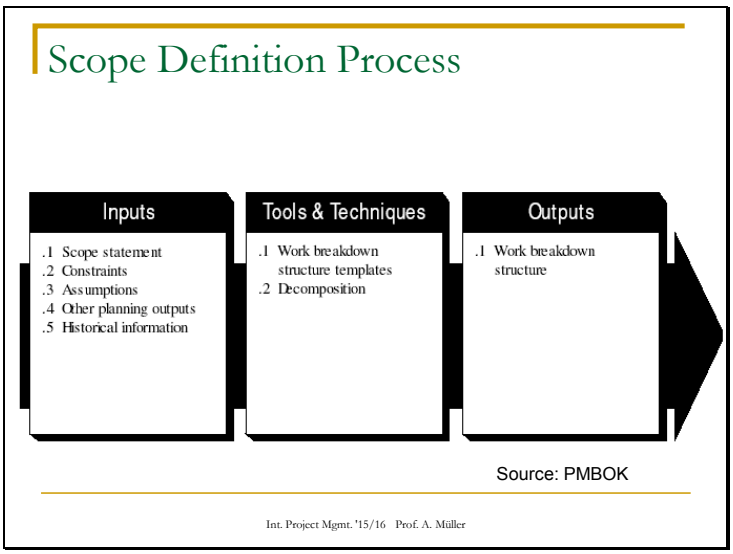
Folie 21

Definitions (PMBOK):

- Definitions (PMBOK): The Scope Management Plan ...
  …describes how scope changes will be managed and incorporated into the project. It should also include an assessment of the expected stability of the project scope ... [and] may be formal or informal, highly detailed or broadly framed, based on the needs of the project..

note: what is mandatory, what is fixed

Folie 22



tools .2: The subdividing of deliverables into smaller components is the purpose of the Scope Definition process. A Guide to the PMBOK calls this **decomposition**.

LATER:
A *Guide to the PMBOK,* pages *59* and 60, describes a WBS this way: "A WBS is a **deliverable-oriented grouping** of project com- ponents that organizes and defines the total scope of the project; **work not included in the WBS is outside the scope of the project."**

Folie 23

Definitions (PMBOK):

- A Work Breakdown Structure ...
  ... is a deliverable-oriented grouping of project components that organizes and defines the total scope of the project; work not included in the WBS is outside the scope of the project.

Decomposition is one of the tools you'll use when preparing your WBS. This process involves breaking down the deliverables into components distinct enough to support all the project man- agement process groups (with the exception of Initiation). The idea here is to break down the deliverables to a point where you can easily plan, execute, control, and close out the project deliverables. It is not an org-chart: Each descending level [of the WBS] represents an increasingly detailed description of the project deliverables.„

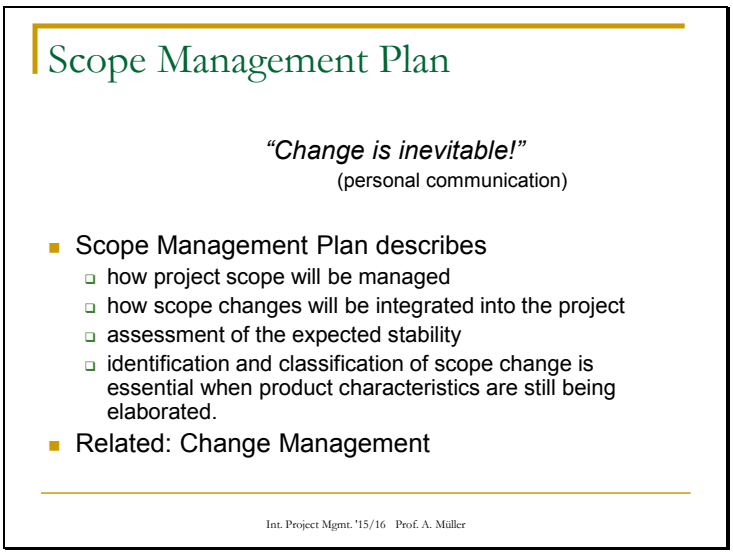
paint picure top: project name / lev1: project life cycle / lev2 smaller pieces / lev 3 work packes

Definitions (PMBOK):

- A WBS Dictionary ...
  ... documents work component descriptions (alternative name: task description)

task description:.....
objectives: .....
activity descriptions
    acceptance criteria:.....
    deliverables:.....
    interdependencies: .....
costs, budgets, schedule:.....
dates, resource assignments:.....

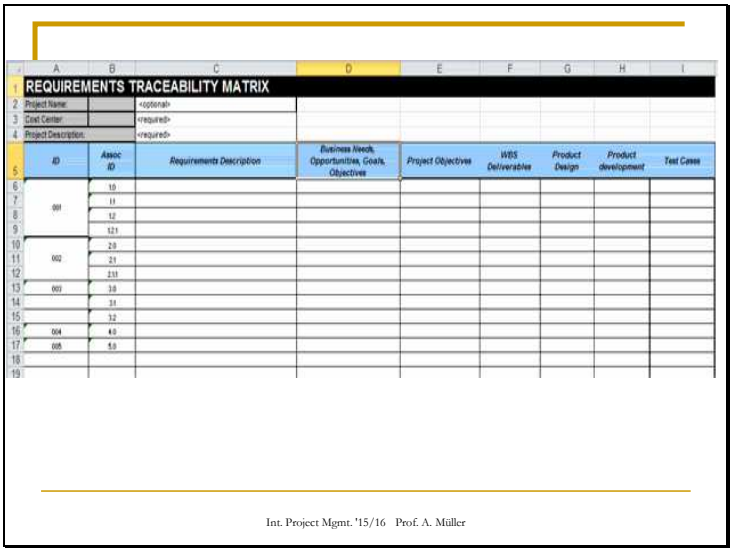
Folie 25



•See Chapter 5. The scope management plan " (PMBOK Guide: 5.2.3.3) This pattern asks for the definition.
Scope management plan. This document describes how project scope will be managed and how scope changes will be integrated into the project. It should also include an assessment of the expected stability of the project scope (i.e., how likely is it to change, how frequently, and by how much).

*** scope change control (prevent scope creep : use change requests and the like**

Folie 26

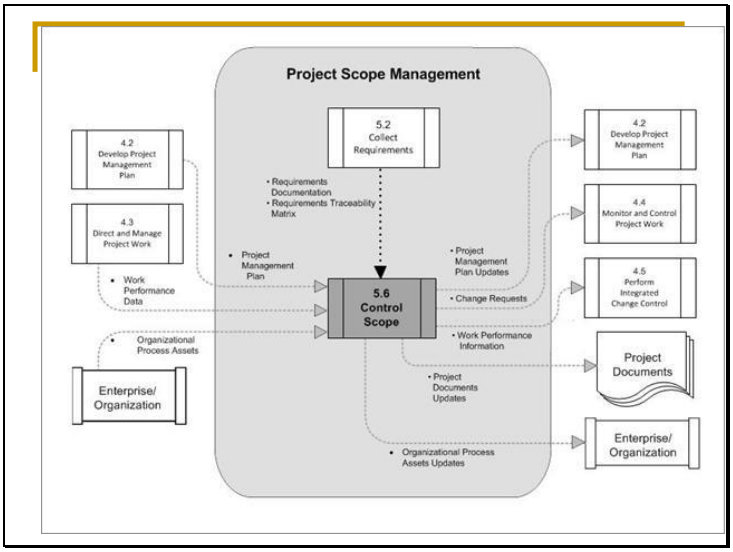


The requirements traceability matrix is a grid that links product requirements from their origin to the deliverables that satisfy them. The implementation of a requirements traceability matrix helps ensure that each requirement adds business value by linking it to the business and project objectives. It provides a means to track requirements throughout the project life cycle, helping to ensure that requirements approved in the requirements documentation are delivered at the end of the project. Finally, it provides a structure for managing changes to the product scope.
This process includes, but is not limited to, tracing:

- Requirements to business needs, opportunities, goals, and objectives;
- Requirements to project objectives;
- Requirements to project scope/WBS deliverables;
- Requirements to product design;
- Requirements to product development;
- Requirements to test strategy and test scenarios; and
- High-level requirements to more detailed requirements.

Attributes associated with each requirement can be recorded in the requirements traceability matrix. These attributes help to define key information about the requirement. Typical attributes used in the requirements traceability matrix may include: a unique identifier, a textual description of the requirement, the rationale for inclusion, owner, source, priority, version, current status (such as active, cancelled, deferred, added, approved), and date completed. Additional attributes to ensure that the requirement has met stakeholders' satisfaction may include stability, complexity, and acceptance criteria. Figure 5-6 provides an example of a requirements traceability matrix with its associated attributes.

Folie 27


Project Scope Management
5.2
Collect
Requirements
• Requirements
Documentation
• Requirements Traceability
Matrix
4.2
Develop Project
Management
Plan
4.3
Direct and Manage
Project Work
• Project
Management
Plan
• Work
Performance
Data
• Organizational
Process Assets
Enterprise/
Organization
5.6
Control
Scope
• Project
Management
Plan Updates
• Change Requests
• Work Performance
Information
• Project
Documents
Updates
• Organizational Process
Assets Updates
4.2
Develop Project
Management
Plan
4.4
Monitor and Control
Project Work
4.5
Perform
Integrated
Change Control
Project
Documents
Enterprise/
Organization

Milestones

- Milestones are significant events on a project that normally have zero duration
- You can follow the SMART criteria in developing milestones that are:
  - Specific
  - Measurable
  - Assignable
  - Realistic
  - Time-framed

Key Messages of this Module

- Benefit Measurement Methods
  - Payback period
  - Net present value (NPV)
  - Internal rate of return (IRR)
- Project Charter
- WBS
  - Rules for setting up a WBS

Addtional Slides

- Refresher: WBS

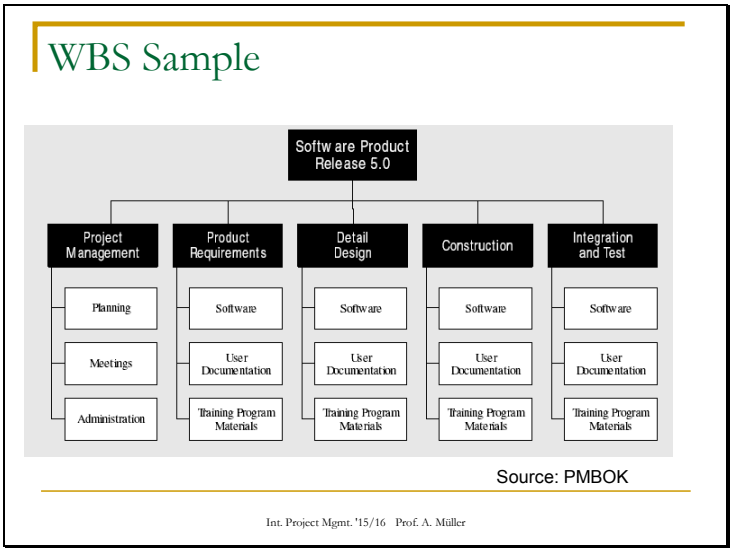
Properties of the WBS

The WBS is …

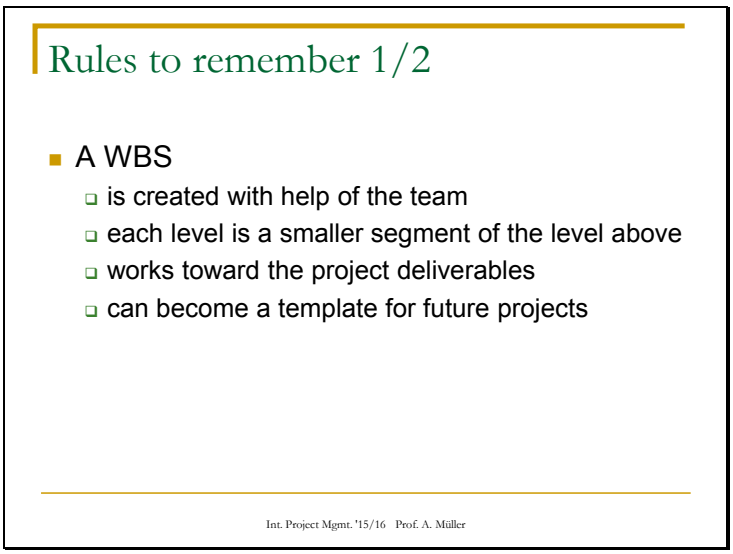
- input to Activity definition,
  Risk management planning,
  Scope verification
- subject to change request management
- is not a BOM
- is not a code of accounts

bom: bill of material
code of accounts: kostenplan

Folie 32

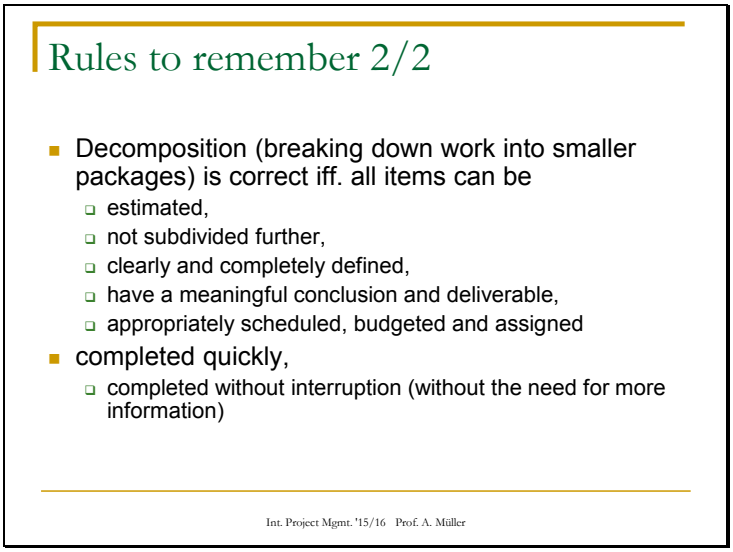


- See Chapter 9. The criteria for verifying the correctness of the decomposition are: 1) are the lower-level items both necessary and sufficient for completion of the decomposed item, 2) is each item clearly and completely defined, and 3) can each item be appropriately scheduled, budgeted and assigned to a specific organizational unit who will accept responsibility for satisfactory completion. (PMBOK: PMBOK GUIDE: 5.3.2.2)
- This is an exception pattern – if something does not match, it's probably wrong
- lowest level == work packages



rules from pmp exam prep , rita
ask for rules:
is created with help of the team -> team buy in
each level is a smaller segment of the level above work toward the project deliverables
can be become a template for future projects
breaking down into work packages that can be
estimated,
not subdivided further,
completed quickly,
have a meaningful conclusion and deliverable,
can be completed without interruption (need for more information)

Folie 34



See Chapter 9. The criteria for verifying the correctness of the decomposition are: 1) are the lower-level items both necessary and sufficient for completion of the decomposed item, 2) is each item clearly and completely defined, and 3) can each item be appropriately scheduled, budgeted and assigned to a specific organizational unit who will accept responsibility for satisfactory completion. (PMBOK: PMBOK GUIDE: 5.3.2.2) This is the exception pattern.

Related Concepts: How to develop the WBS

- Creativity Techniques
  - Mind Maps
  - Method 6-3-5
  - Brainstorming
- Expert Judgement
  - Oracle of Delphi
  - Structured Interviews
  - Lessons Learned