2. Scope Management

2. 1. Introduction

„Scope” = what the project should do

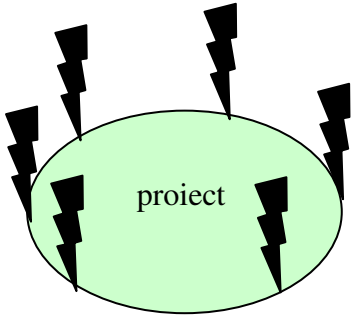
>> where the responsibilities of the team start and end

>> what results must be obtained?

Project „Scope”	≠	Product „Scope”
what the project must do untill its end		features and functionalities of the product

ATTENTION

- if the scope is unknown/fuzzy, then the project in not understood
- initially, the boundaries of the scope are more generally defined; then, during project development, the boundaries should be more precisely outlined and documented



Objective => indicates what the project should obtain

It should be:

Specific, precise, clear

Measurable, verifiable

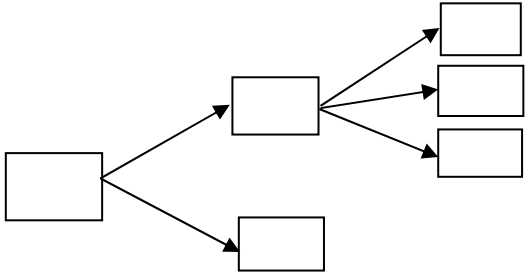
Agreed, achievable

Resourced, realistic

Timed / to allow the estimation of project duration

- unclear, fuzzy objectives are dangerous!!!

„Drill" Method – decomposes the main objective in secondary objectives



- the objectives on the same hierarchical level should be disjoint
- the objectives from a lower level should completely indicate the decomposed (parent) objective

Recommendations:

- start from the results of the projects
  - each objective should be associated to an important result (output)
- use, if possible quantifiable criteria

	attribute	**+**	**metric**	**+**	**value**
Ex	profit		EUR		1 mil.

- do not include costs and time requirements in the secondary objectives

„Work breakdown structure”- WBS

>> defines the deliverables of the project

>> illustrates the main components of the major deliverables (products/services)

It results by DESCOMPOSITION

Step 1: Define the major deliverables (the main outputs of phases)

Step 2. Allocate human and material resources

Can you estimate costs, duration? (Optionally)Is the duration < 2 weeks?
Yes: go to step 4. No , continue (with step 3).

Step 3. Add supplementary details by separating the available packages in verifiable sub-packages . Go to step 2.

Step 4. Is the decomposition correct?

- the packages on a lower level describe sufficiently and necessarily the parent package?
  - No: ADD, DEL, REDEFINE

- - the packages are clearly described?
  No: Reformulate

Step 5. Associate an identifier to each block of WBS

Step. 6. Document all blocks (Glossary of WBS)

leaves = work packages

!!!! could be decomposed additionally – see the activities list, outsourcing, etc.

useful for project monitoring and control

Attention: Avoid excessive details

Rule 8/80 (optional):

a (leaf) workpakage involves between 8h and 80h of work

Recommendations:

- Do not use more than 7-8 blocks on a level (3 bits memory)
- Do not use many levels
- Make WBS clear, easy to read
- Be attentive to not miss important blocks!!!
- Use templates, be compliant with all the standards adopted within the company
- **Cooperate with your team and other stakeholders**
  >> good correlation with the other projects of the company,
  >> where outsourcing is needed
  >> WBS accepted, stable !!
- **Obtain WBS approval**

Remarks

- !!!what is not in WBS, it is not in the project
- any change of WBS should be discusses and approved by the „stakeholders”

Advantages:

- it gives an overview general>>>detail concerning the expected results
- it allows hierarchical summation of costs, resources, time
- it allows better estimation of costs, time
- it is helpful for monitoring: insightful view on the current state and expected results

Methods for WBS development

Top down □□ Bottom up

Analogy <> Brainstorming

„Rolling wave" (smaller number of levels at the begin of the project + iterative detailing)

Other hierarchical structures used in MP

- *Contractual WBS* – general WBS used for the client
- *Organizational BS (OBS)* – structure indicating the allocation of work packages to the departments of the company
- *Resource BS (RBS)* – structure indicating the allocation of resources on work packages
- *Bill of material (BOM)* – hierarchical structure of product components (ensemble >> sub-ensembles >> units etc)

Examples

Software Project- WBS configured I relation to project phases (PMBOK)

1. Project Management
2. Requirements
    2. 1. Software
        2.1.1, 2.1.2, etc
    2. 2. User guide
    2. 3. Training documentation/ tutorial
3. Design
    3. 1. Software
        3.1.1, 3.1.2, etc
    3. 2. User guide
    3. 3. Training documentation/ tutorial
4. Implementation
    4. 1 Software
        4.1.1, 4.1.2, etc
    4. 2. User guide
    4. 3. Training documentation/ tutorial
5. Testing
    5. 1. Software

5.1.1, 5.1.2, etc

5. 2. User guide

5. 3. Training documentation/ tutorial

6. Deployment to client/user

Suggestion: decompose the packages„software” in sub-blocks GUI, DB, backend software etc, and then detail each module such that to illustrate the main particularities of the application (e.g., until „use case” level in computational modules)

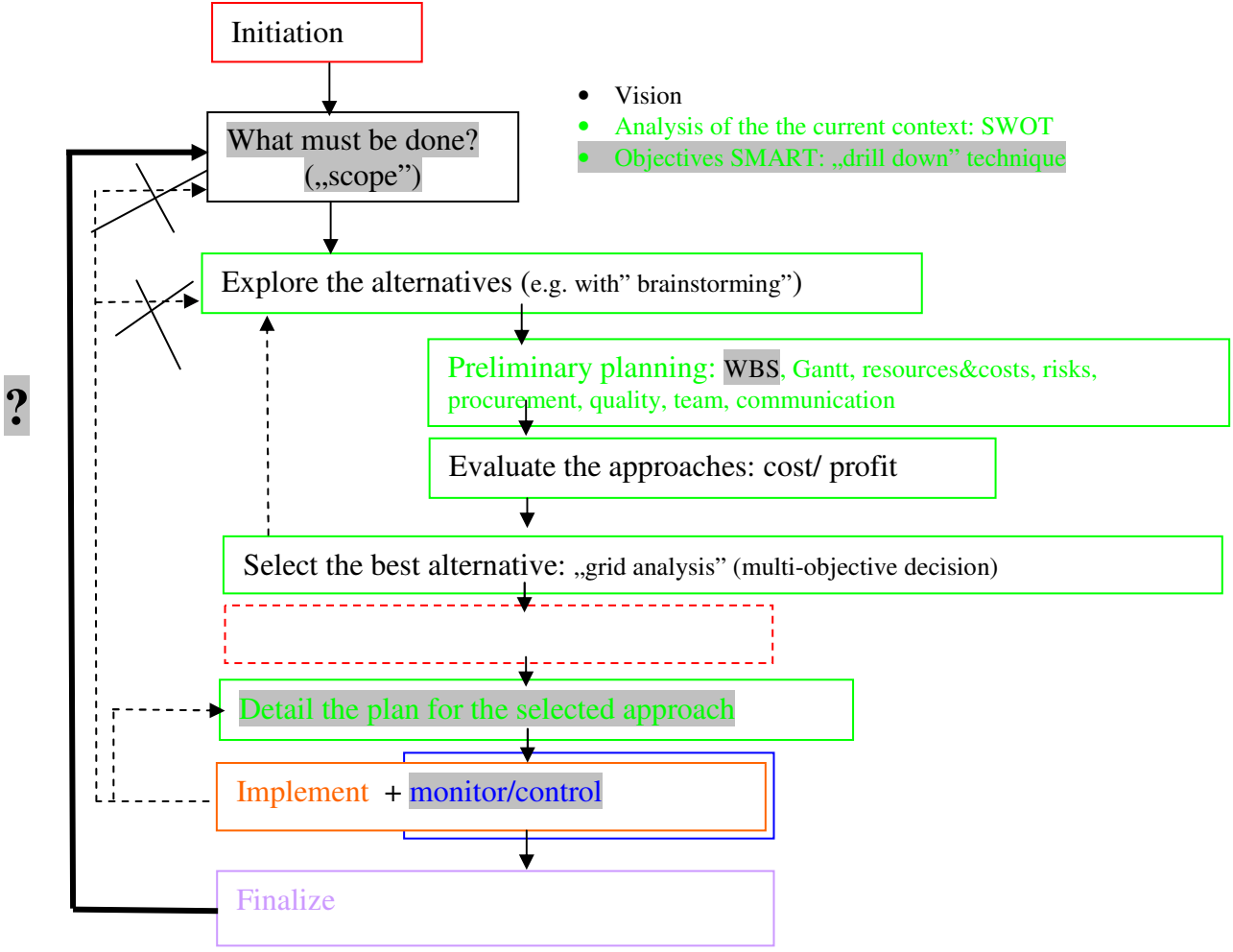
Installing a new software on a huge number of workstations

1. Project Management
2. Software Installation
    2. 1.Test the software in a laboratory environment + document the errors
        2. 2. 1. Windows Vista
        2. 2. 2. Windows 2000
        2. 2. 3. WinXP , etc.
    2. 2. Elaborate the tools for automatic installation
    2. 3. Test the tools for automatic installation + document the method
    2. 4. Install the software on reduced number of workstations and correct the tool
    2. 5. Finalize the software installation
3. Training
    3. 1. Prepare the training material (concerning the use of the newly installed application)
        3. 1. 1. instructor-based training
        3. 1. 2. web training
    3. 2. Training for a pilot group of users
    3. 3. Improve the training documentation
    3. 4. Train the rest of the users
    3. 5. Create a help-desk

2. 2. Scope Management Processes

= the processes that ensure the project includes **only** what needed for its successful finalization

initiation (I)	authorize the beginning of a phase/project (I)
scope planning (PN)	describe the scope
scope definition (PN)	decompose the main deliverables in sub-blocks(WBS)
scope control (C)	manage the changes of scope
scope verification (C)	formalize the acceptance of a phase/project


Initiation
What must be done? („scope")
Explore the alternatives (e.g. with" brainstorming")
Preliminary planning: WBS, Gantt, resources&costs, risks, procurement, quality, team, communication
Evaluate the approaches: cost/ profit
Select the best alternative: „grid analysis" (multi-objective decision)
Detail the plan for the selected approach
Implement + monitor/control
Finalize
?
Vision
Analysis of the the current context: SWOT
Objectives SMART: „drill down" technique

2. 2. 1 Project Initiation (I)

= formal authorization of a **new** project/phase

THE PROJECT IS MOTIVATED?

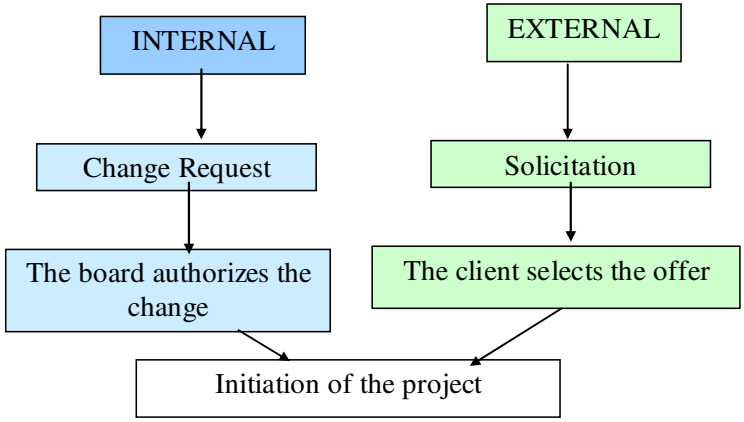
Remark:

- A project could be initiated

  - **formally** based on a preliminary analysis of requirements/ a feasibility study/ /preliminary plan

  - **informally** (internal projects)

- The innovative projects are usually initiated based on a feasibility study



- **Business Cases /opportunities** >> ignition of a project
  - Client request
  - Legal updates
  - Technology progress
  - New requests on the market, etc.

Feasibility study

= a document which indicates if the projects is motivated + recommends an approach for its successful finalization

Recommendations:

>>> Ask, ask, ask what is expected, why, how?

- Find the desired results?
  intranet forms, focus group, Delphi technique
- **Involve your team** + other stakeholders
- Adopt multiple standpoints: optimistic, pessimistic, realistic
- Do not embrace a single **solution** (technology!!!!)
- For innovative projects: propose a prototype model, small steps, iterative development, earlier testing, etc.

How to organize the research stage?

- Key issue – good management

- define the objectives of research
- find the best sources + set priorities of access
  magazines/ journals, books, web, experience
- divide the need of research on stages/subfields
- indicate the leaders + deadlines + working procedures
- coordinate the research: collect, analyze, improve
- aggregate the available information + organize the information + evaluate

ready? Yes: write the feasibility study
No: continue

Structure:

Name of the project

Objectives

Motivation

Abstract

- brief description of the product/service
- overview of the proposed approach
- overview of the proposed plan

Details regarding the suggested approach

- SWOT analysis
- is anybody else doing the same thing?
- comparison with other approaches (advantages + disadvantages)
- if procurement is necessary: remarks about the provider (its main clients, maintenance /integration support)
- involved technologies: compatibility with existing hardware/software, need of training

- recommended standards
- if the project should be integrated with other projects/operations of the company
- risks: identification, qualitative/quantitative analysis, plans for risk responses

Project impact

- positive and negative effects produced within the company
- what changes are requested within the company (e.g., activity interruptions)

Costs

- main categories of costs + estimations

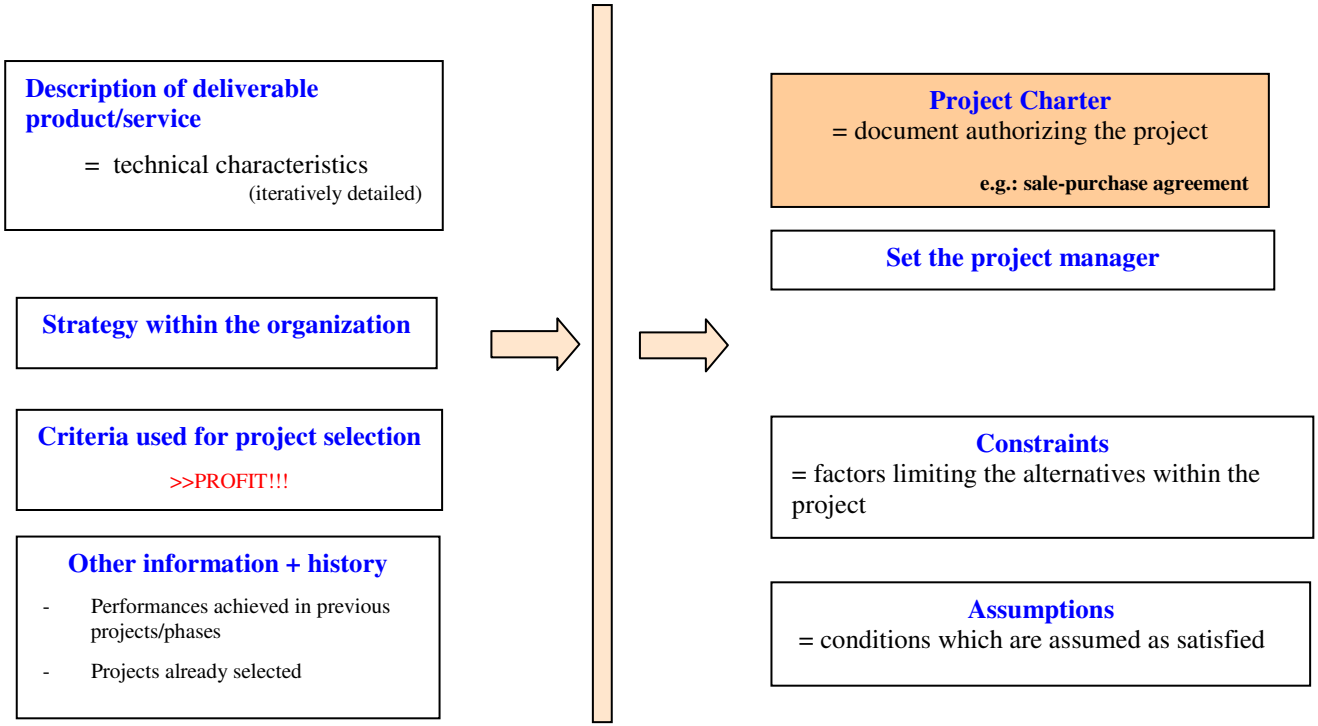
  Pay attention to:

  - procurement costs - installation (fix cost or cost per hour) + monthly payments for consultancy /maintenance
  - costs for consultancy, training

- analysis cost/profit (ROI, „payback period")

Recommendations

Sources used for research


Description of deliverable product/service
= technical characteristics
(iteratively detailed)
Strategy within the organization
Criteria used for project selection
>>PROFIT!!!
Other information + history
- Performances achieved in previous projects/phases
- Projects already selected
Project Charter
= document authorizing the project
e.g.: sale-purchase agreement
Set the project manager
Constraints
= factors limiting the alternatives within the project
Assumptions
= conditions which are assumed as satisfied

Project Charter

= document which formally authorizes the project

Structure (recommended)

Name of the project
Sponsor
Project manager
Team
Objectives
Business case (motivation)
Overview
- overview of main deliverable products/services
- overview of the approach proposed for project accomplishment

Preliminary plan
Required resources
Budget

Project selection is a multi-criteria **decision requiring internal or external expertise**

Attention: Minimum requests for initiating a project:

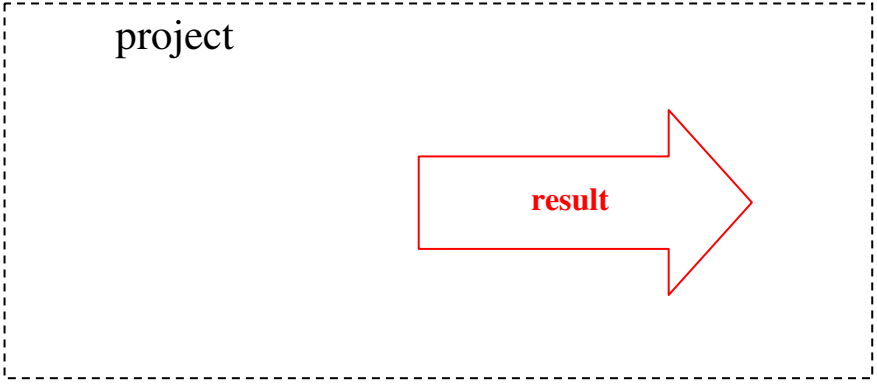
- well known result (deliverable product/service)
- common vision about project road (same vision for all the stakeholders)

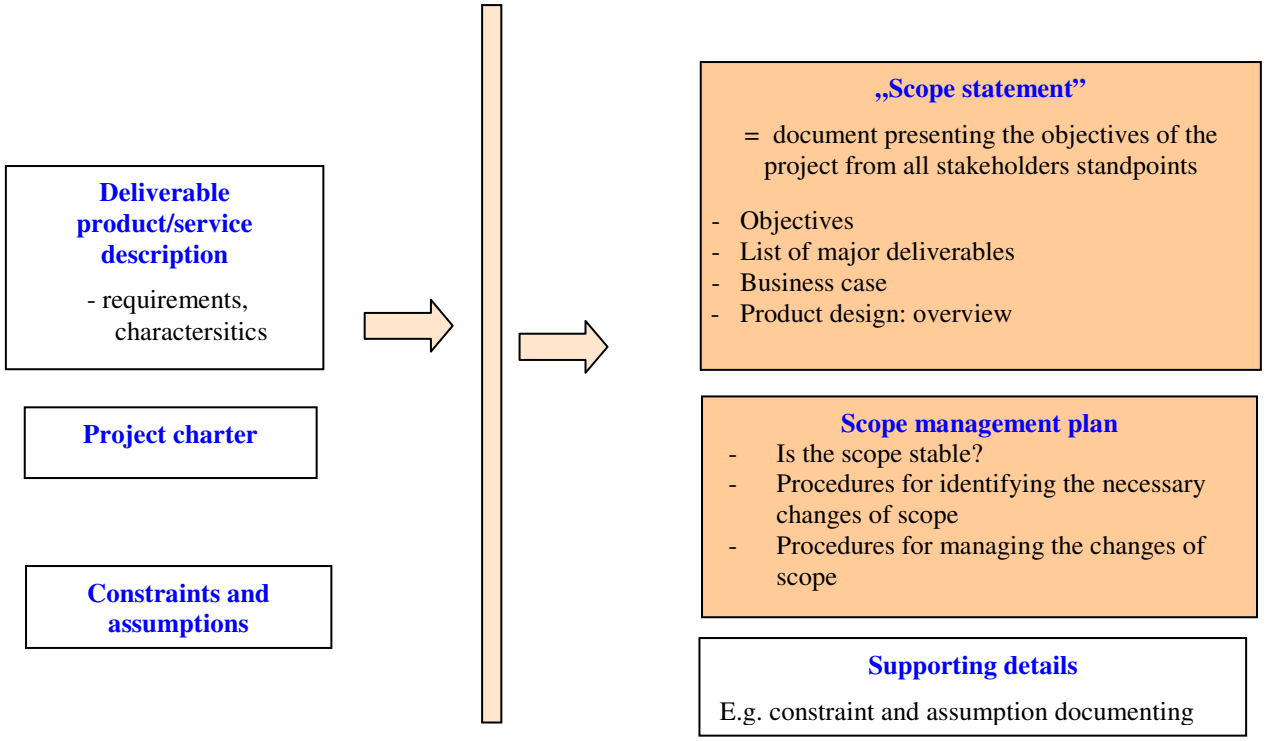
2. 2. 2 Scope Planning (PN)

= scope identification + documenting

WHAT SHOULD BE DONE?

Indicate the objectives (main + secondary)
SMART + „drill" technique




Deliverable product/service description
- requirements, charactersitics
Project charter
Constraints and assumptions
„Scope statement"
= document presenting the objectives of the project from all stakeholders standpoints
- Objectives
- List of major deliverables
- Business case
- Product design: overview
Scope management plan
- Is the scope stable?
- Procedures for identifying the necessary changes of scope
- Procedures for managing the changes of scope
Supporting details
E.g. constraint and assumption documenting

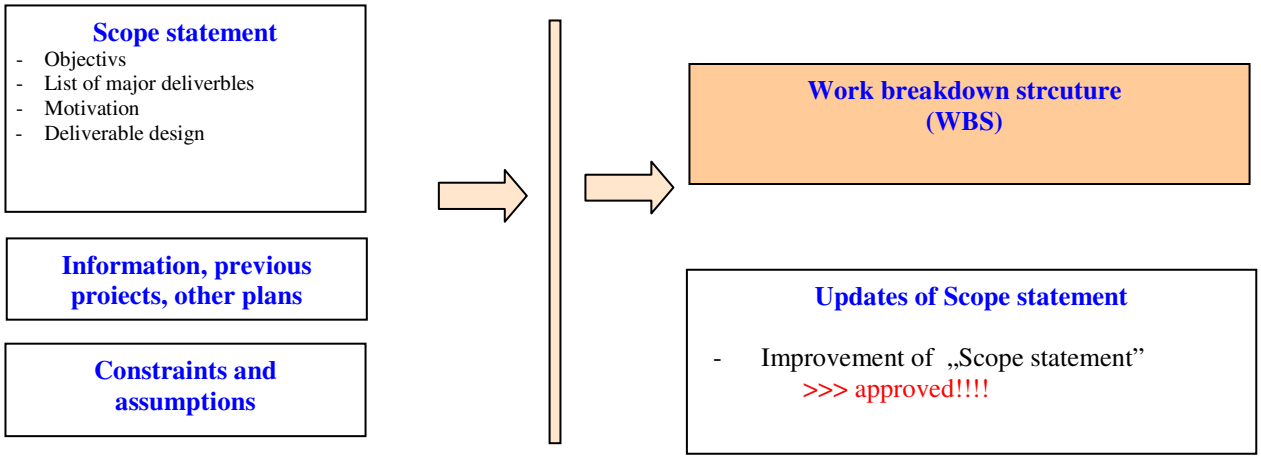
Recommendations:

- Analyze attentively the deliverables: decomposition + functional analysis
- Identify all the potential alternatives for project development („brainstorming”)
- Compare the potential alternatives (multi-criteria decision)
- Use available expertise /experience

2. 2. 3 Scope Definition (PN)

= build the hierarchical structure of deliverable work packages -WBS

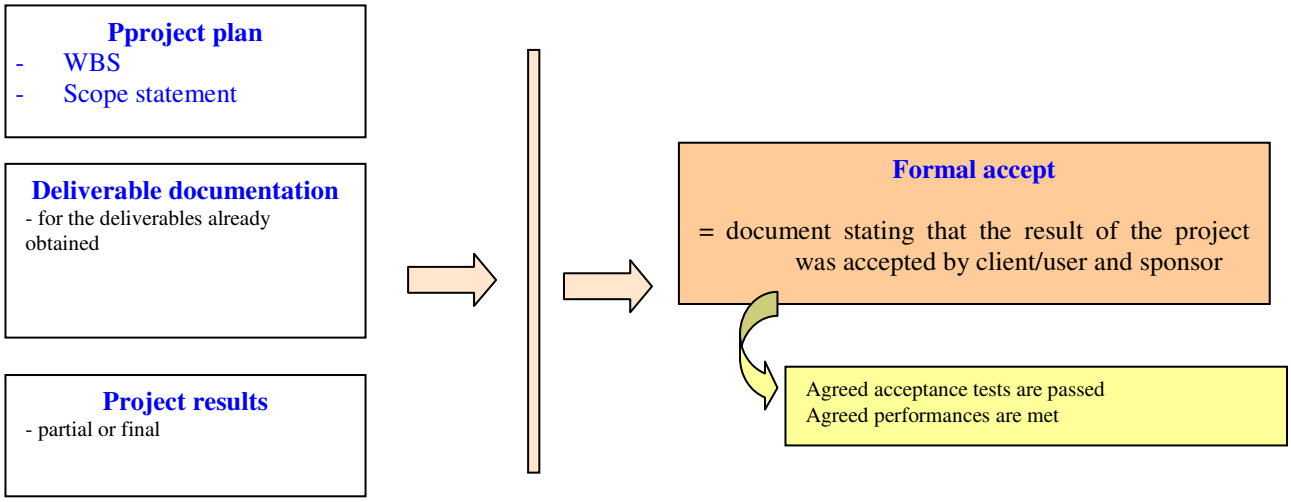
GIVE DETAILS ABOUT THE MAIN DELIVERABLES



2. 2. 4 Scope Verification (C)

= obtain the formal accept for project results

HAVE YOU DONE WHAT EXPECTED?



Remarks:

- Usually, formal accept is given after an **audit** which verify if
  - acceptance tests were passed
  - performance criteria are met

  Audit = the process which measures, evaluates, tests in order to decide if the results of the projects are compliant with the requirements

- !!! Corect ≠ Accepted

- Each delivery is accompanied by Delivery Sheet:

  Project identifier, project manager
  Date of delivery, version and link to deliverable description
  Distribution list
  Information regarding authorized changes occurred during project development
  Information regarding the errors corrected – with link corresponding acceptance testing report
  Main problems solved during project development
  Supplementary remarks: minimal requirements for installation/exploitation, etc
  Changes occurred after delivery

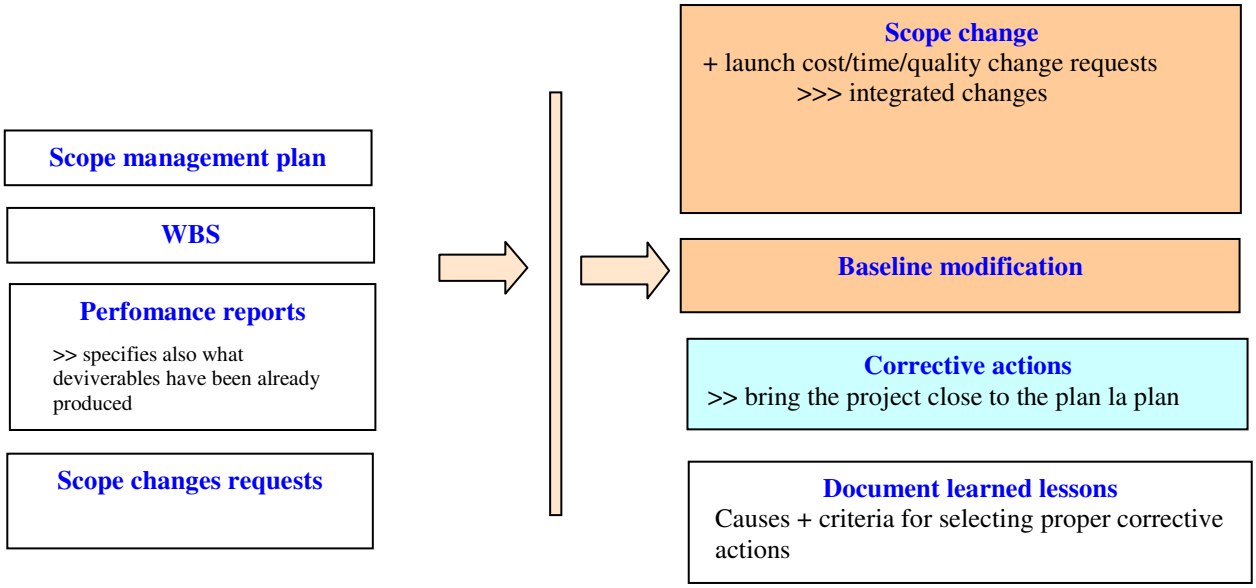
2. 2. 5 Scope Control (C)

= identify necessary scope changes
+ verify if the change is desired/ agreed
+ manage the change

THE RESULT SHOULD BE CHANGED?
ARE YOU DOING WHAT EXPECTED?

Scope changes could be demanded by

- External events (updated laws, etc)
- Errors/omissions in scope definition
- The necessity of improving/adding something to the project
- Response to a risk (switching to another plan)


Scope management plan
WBS
Perfomance reports
>> specifies also what deviverables have been already produced
Scope changes requests
Scope change
+ launch cost/time/quality change requests
>>> integrated changes
Baseline modification
Corrective actions
>> bring the project close to the plan la plan
Document learned lessons
Causes + criteria for selecting proper corrective actions

Recommendations:

- Use agreed procedures for changing the objectives of the project
- Notify the stakeholders about any change
- Evaluate the performances of project for an early detection of faults (is the project doing what expected?)
- A scope change involves important plan changes

Revision

Definitions, taxonomy: „scope”, objective (SMART), WBS, drill, audit

Processes - scope management: initiation, scope planning, scope definition, scope verification, scope control

Documents

Feasibility study

Project Charter

Scope statement

Scope management plan

WBS

Formal accept + Delivery sheet