EASITRAIN Training
Project Management – Part 1

Minutes

March 19-20 2018

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enable2change

Contents Part 1

- Project, Project Management:
  - Definitions
  - Different approaches in Project Management
- Project Initiation:
  - Definition of project boundaries & context
  - Project stakeholder analysis: Stakeholder orientation as success factor
- Project Start:
  - List of Deliverables // Objects of consideration plan
  - Project objectives plan
  - Work breakdown structure

Contents Part 2 by Martina Huemann (Outlook)

- Project scheduling methods
- Resource and cost planning: overview
- Design of project organisations
  - The role of the project manager, project owner, project team members
  - Specific challenges and potentials of research projects
  - Project leadership in research projects
- Examples of research projects
- Summary and assignment for Vienna module

Working Approach

- Inputs, case studies
- Group works
- Feedback, reflections, discussions
- „Training on the Project“
  - Working situations as in real projects
  - Benefit for own practice
- Cyclic learning approach
  - Theoretical inputs
  - Application on „real“ cases
  - Common reflection
  - Further inputs
- Documentation: additional slides, flip charts

„Rules of Cooperation“

- Acting in a respectful manner during co-operation between students, between students and lecturer (including being in time, etc.)
- Accepting different “Englishes”
- Applying active listening rules
- Accepting feedback as learning chance
- Addressing each other with family name (students and lecturer)
- **NOT using electronic devices** (students will have dedicated time to document the results of the group works, respectively will do this as part of the homework)

…accepting co-responsibility for the „learning success“

Context Project

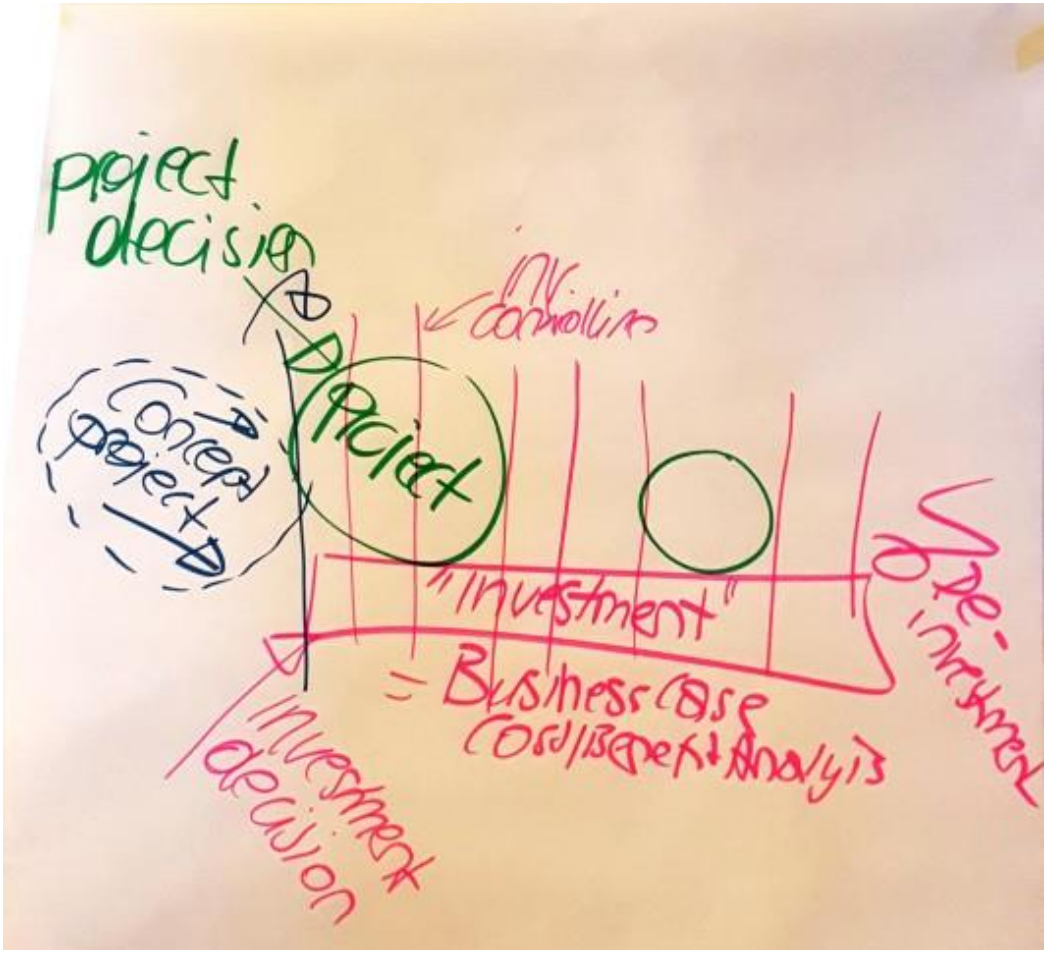
What makes a project a project ? (characteristics)

Project

- “A project is a temporary endeavor undertaken to create a unique product, service, or result” (*PMBOK*® Guide, 2017:13)

- ”A temporary organization that is created for the purpose of delivering one or more business products according to an agreed Business Case.“ (PRINCE2, 2017:8)

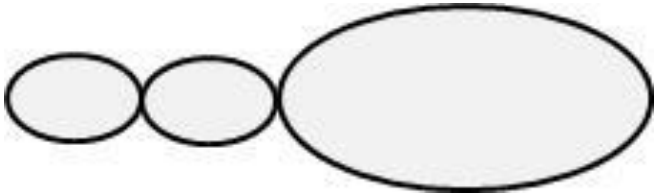
- “A project consists of a unique set of processes consisting of coordinated and controlled activities, with start and end dates, performed to achieve project objectives.” (ISO 21500)


project decision
Concept project
Project
"Investment"
= Business case
Cost/Benefit Analysis
Investment decision

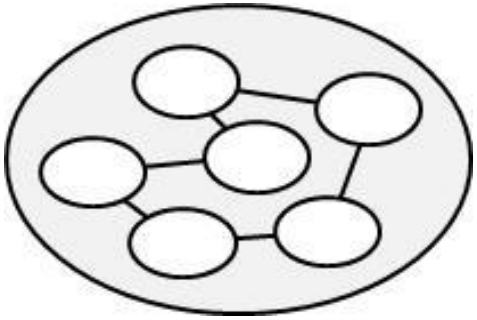
Project definition depending on the context: example

criteria	small project	project	programme
strategic relevance	low	average-high	high
duration	at least 2 months	4-18 months	at least 12 months
organizations (- units)	at least 2	at least 4	at least 7
internal ressources	at least 100 person days	at least 200 person days	at least 500 person days
costs	at least € 50.000	at least € 200.000	at least € 1.000.000

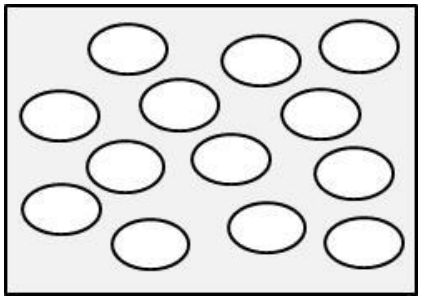
Possibilties to cluster projects and programmes



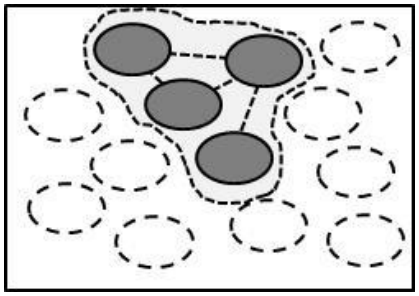
„A project chain is a set of sequential projects“



“A programme is a temporary organisation for the execution of a unique, medium to long term process of large scope that involves many organisational units”



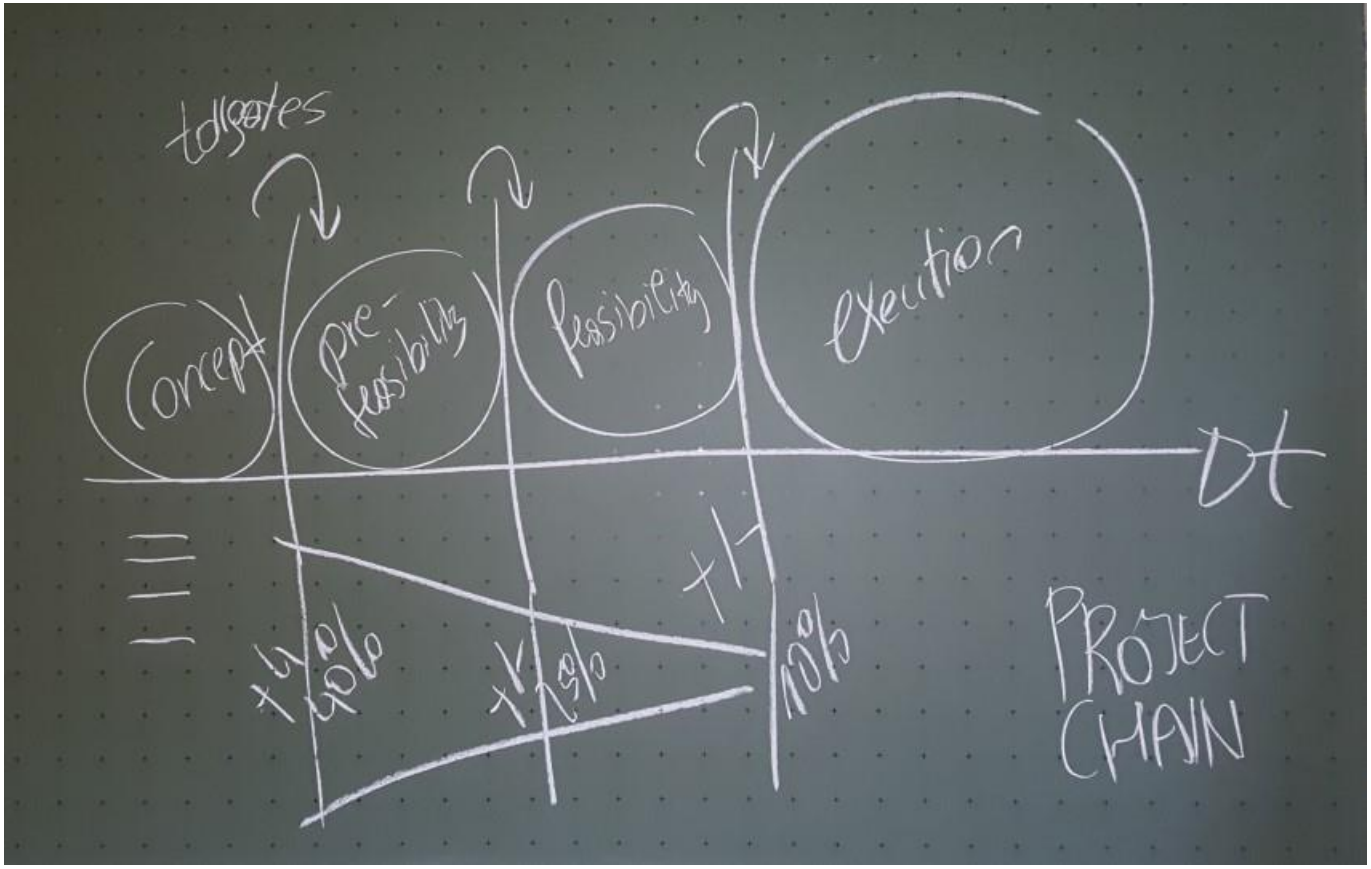
“A project portfolio is a set of all projects and programmes in a project-oriented organisation at a given point in time“



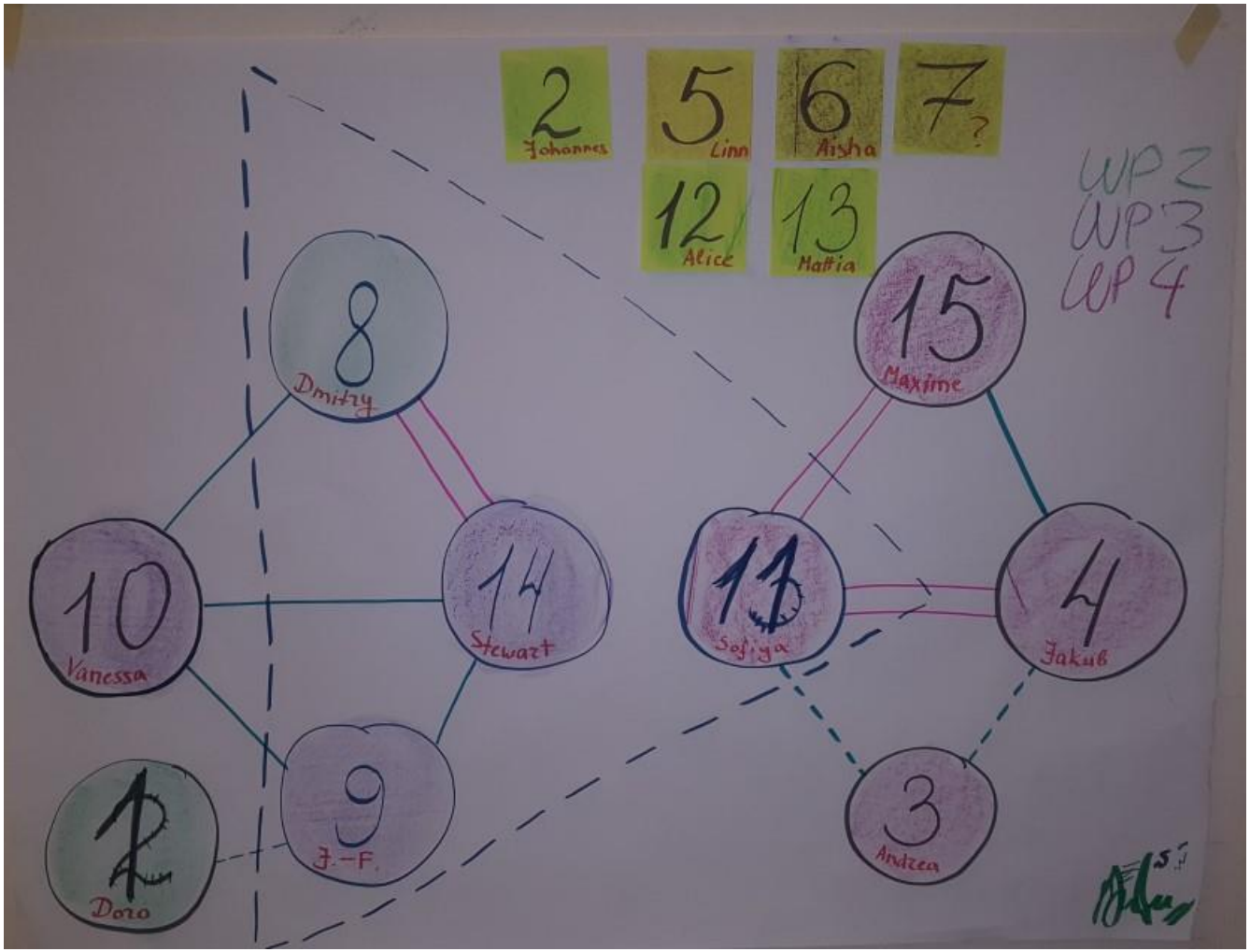
“A project network is a subset of closely linked projects and programmes of the project portfolio“

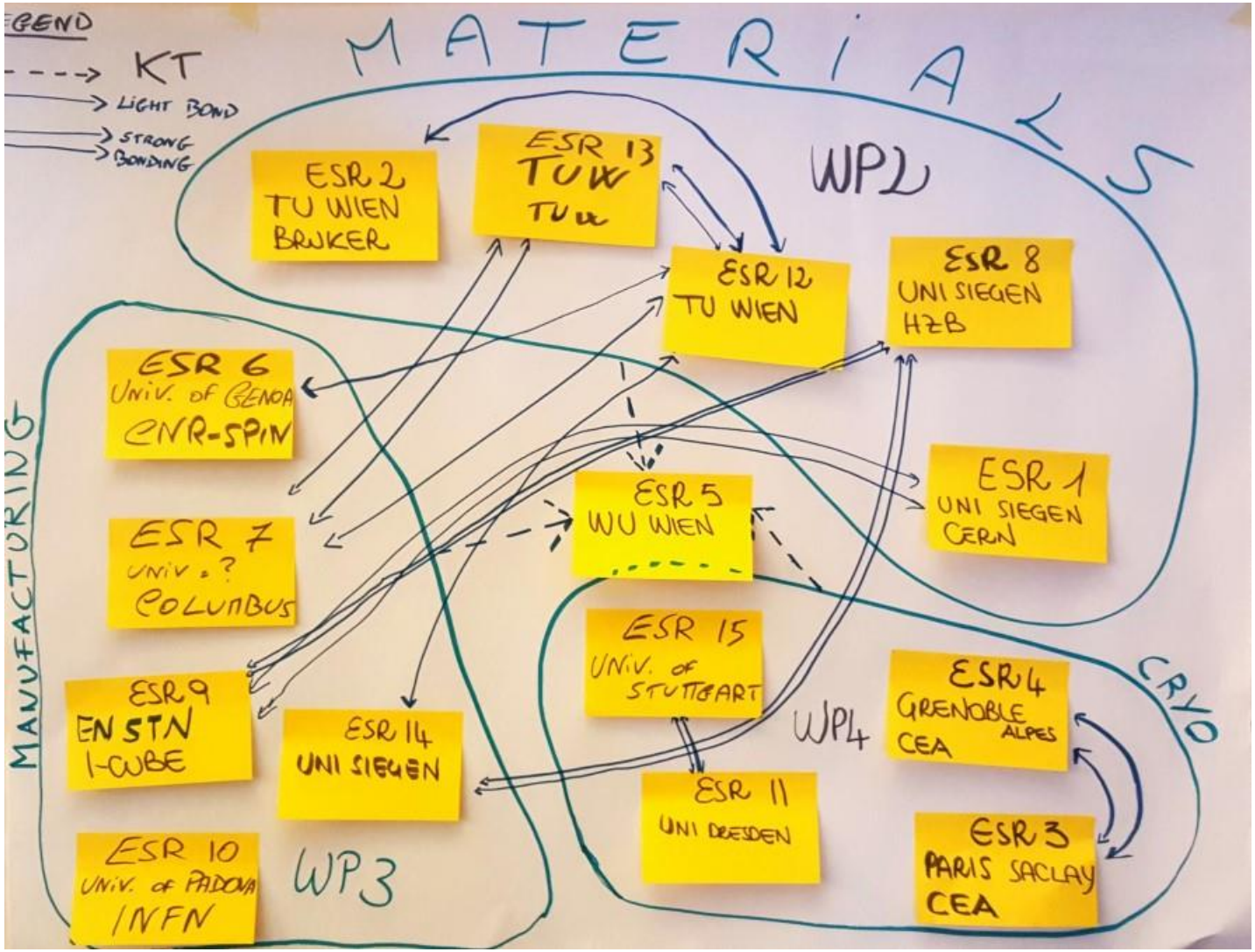
(pm baseline, 2009:7-10)

Project Chain



Results Group Work „Project Network“


2
Johannes
5
Linn
6
Aisha
7?
12
Alice
13
Mattia
WP 2
WP 3
WP 4
8
Dmitry
15
Maxime
10
Vanessa
14
Stewart
11
Sofiya
4
Jakub
1
Dora
9
J.-F.
3
Andrea


LEGEND
KT
LIGHT BOND
STRONG BONDING
MATERIALS
WP2
ESR 2
TU WIEN
BRUKER
ESR 13
TUW
ESR 12
TU WIEN
ESR 8
UNI SIEGEN
HZB
ESR 6
UNIV. OF GENOA
CNR-SPIN
ESR 1
UNI SIEGEN
CERN
ESR 5
WU WIEN
ESR 7
UNIV. ?
COLUMBUS
MANUFACTURING
ESR 15
UNIV. OF STUTTGART
CRYO
ESR 4
GRENOBLE ALPES
CEA
WP4
ESR 9
ENSTN
I-CUBE
ESR 14
UNI SIEGEN
ESR 11
UNI DRESDEN
ESR 3
PARIS SACLAY
CEA
ESR 10
UNIV. OF PADOVA
INFN
WP3

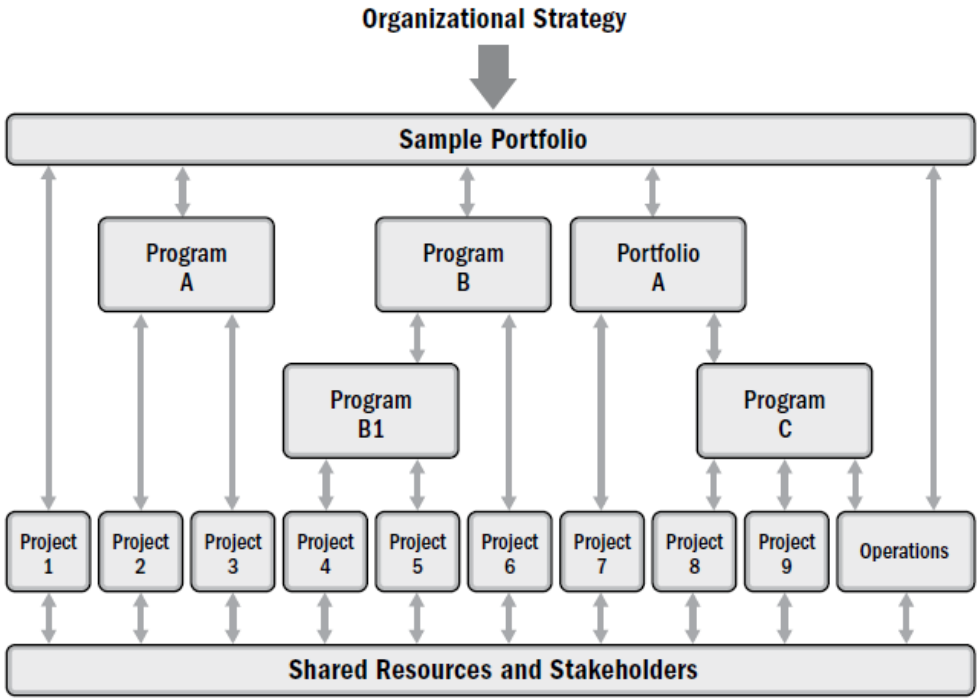
Project, Program & Portfolio

- **Project** – A project is a temporary endeavor undertaken to create a unique product, service, or result

- **Program** – A program is a group of related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.
- **Portfolio** – A portfolio is a collection of projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives.

Definitions taken from Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Page 13

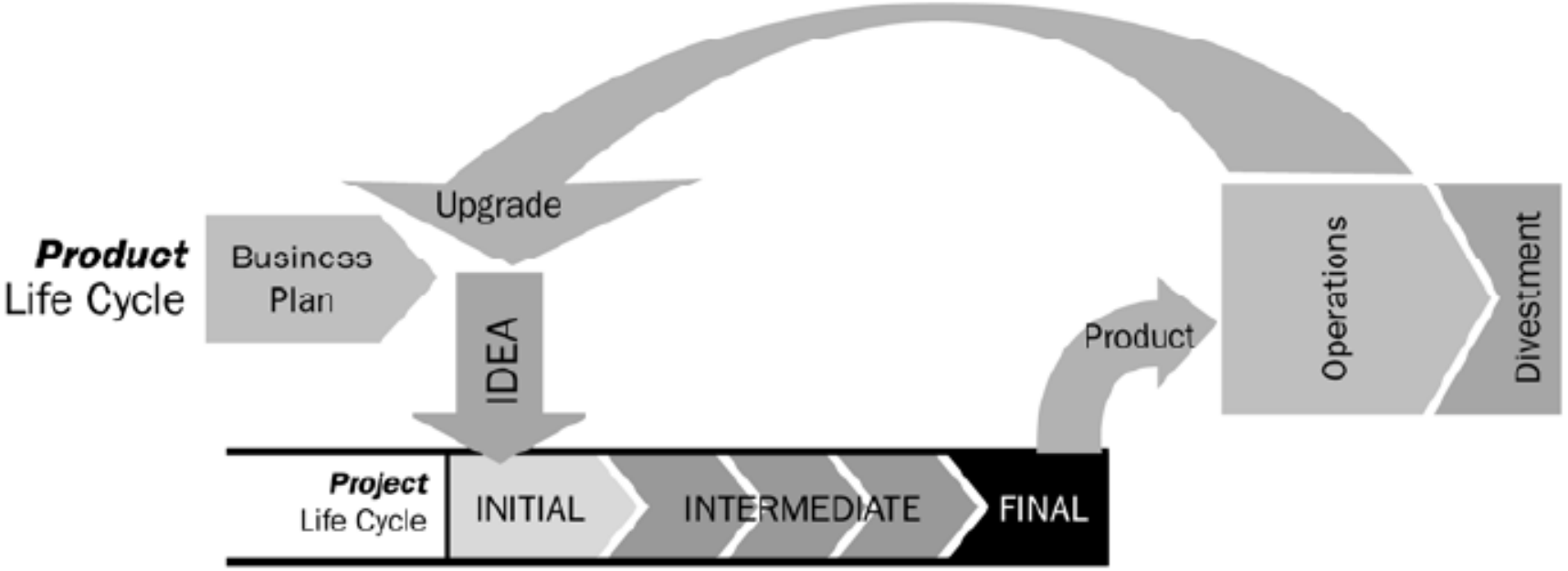
Project, Program & Portfolio



„Program and project management focus on doing programs and projects the „right" way; and portfolio management focuses on doing the „right" programs and projects."

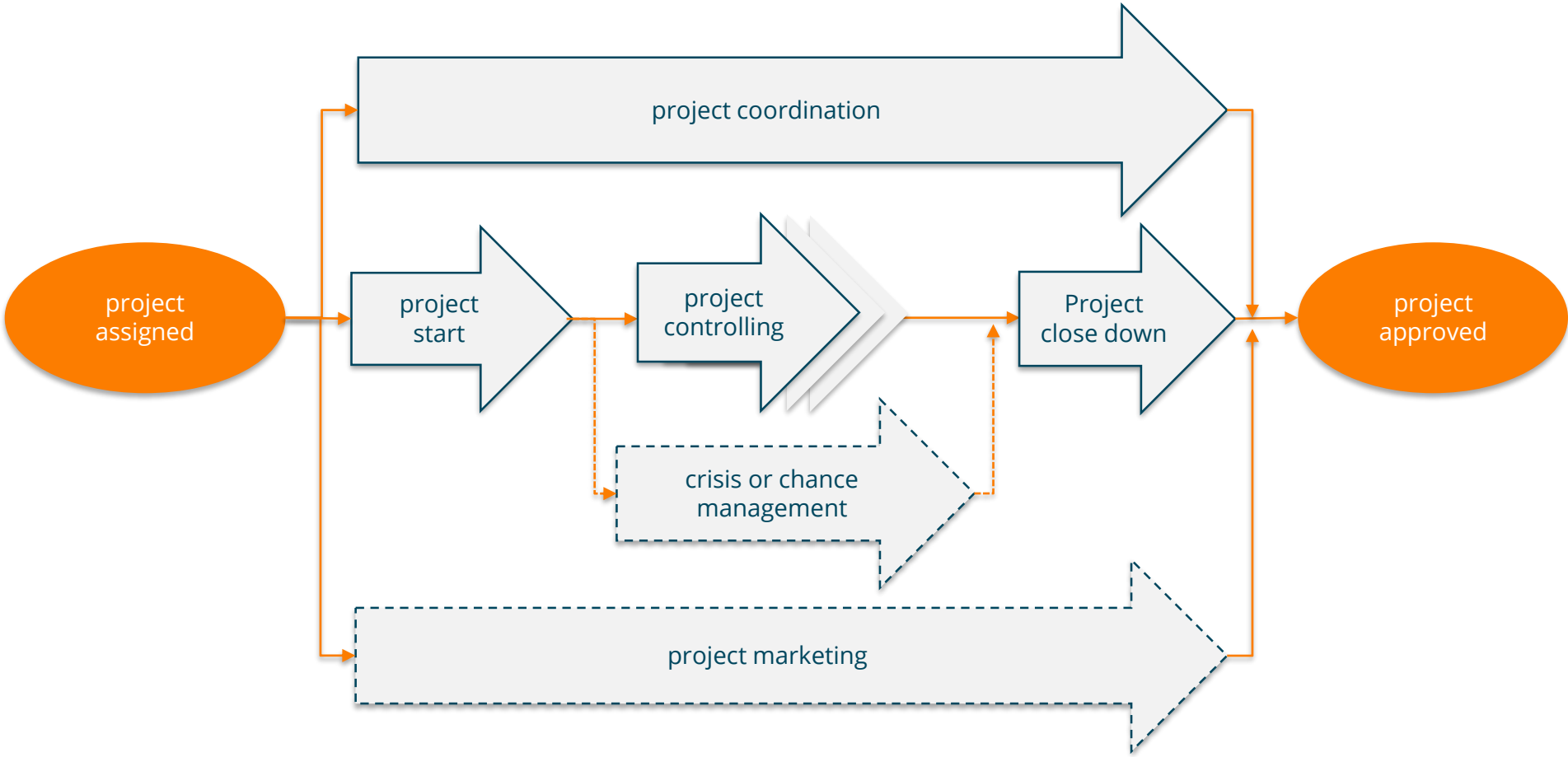
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-3, Page 12

Product Life Cycle and Project Life Cycle



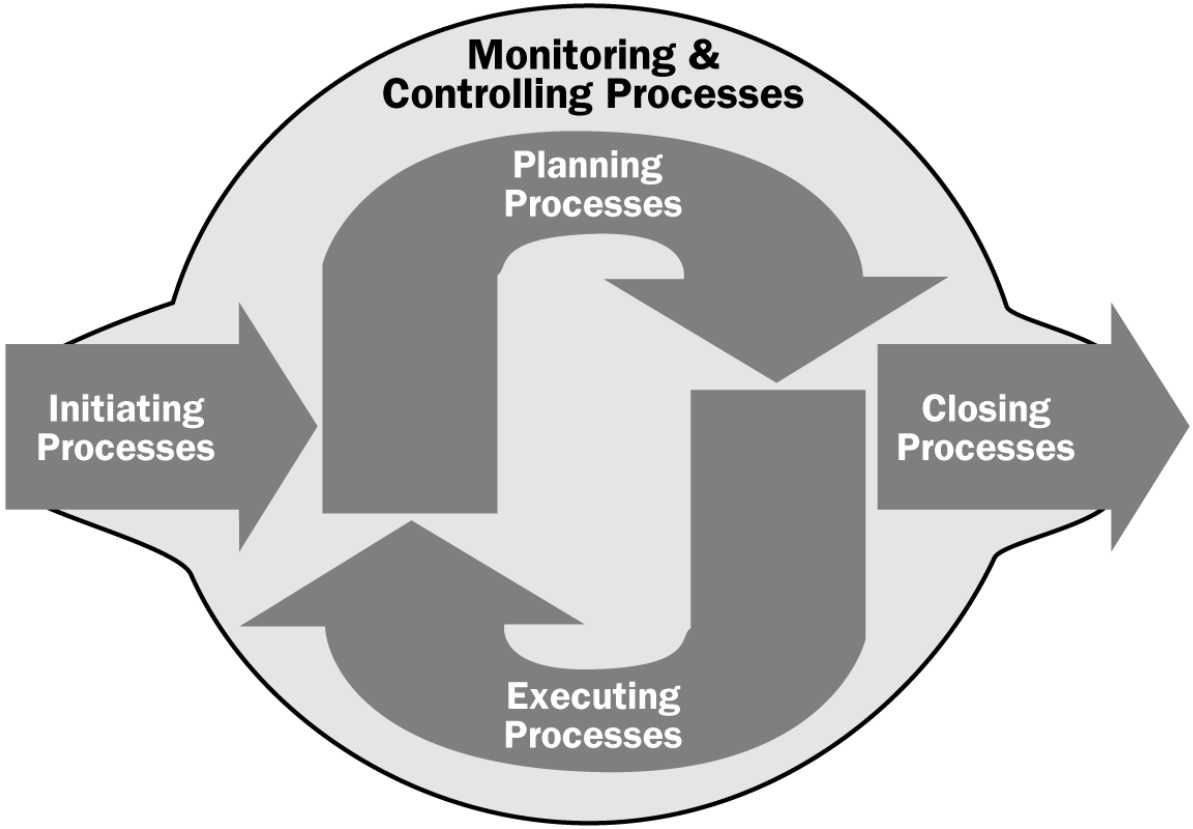
Project Management Institute, A Guide to the Project Management Body of Knowledge, (*PMBOK*® Guide) – Fourth Edition, Project Management Institute, Inc., 2008, Figure 2-6, Page 24

Project Management



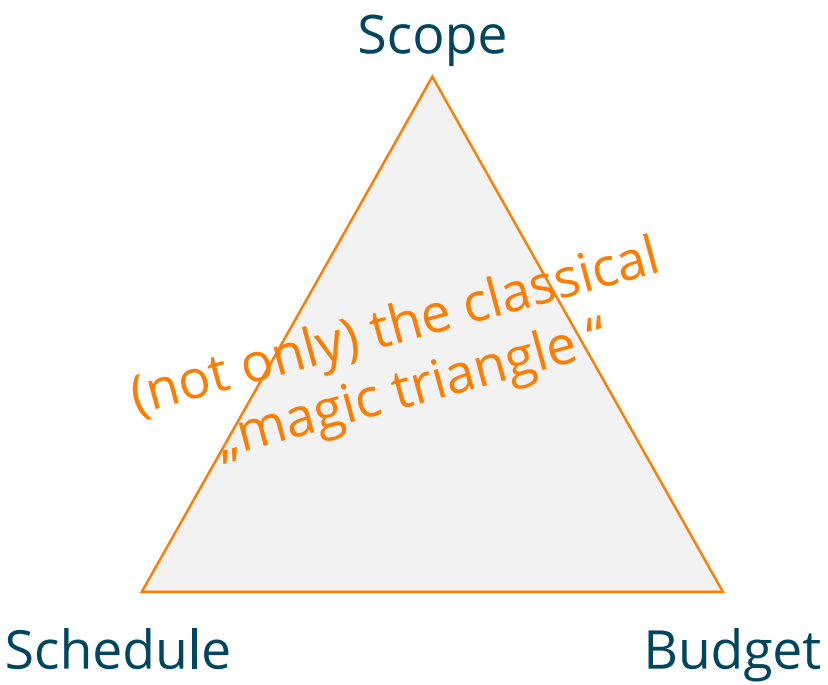
(cp. pm baseline, 2009:13)

Process Groups in a Project



Project Management Institute, A Guide to the Project Management Body of Knowledge, (*PMBOK*® Guide) – Fifth Edition, Project Management Institute, Inc., 2013, Figure 3-1, Page 50

Project Management: Objects of Consideration

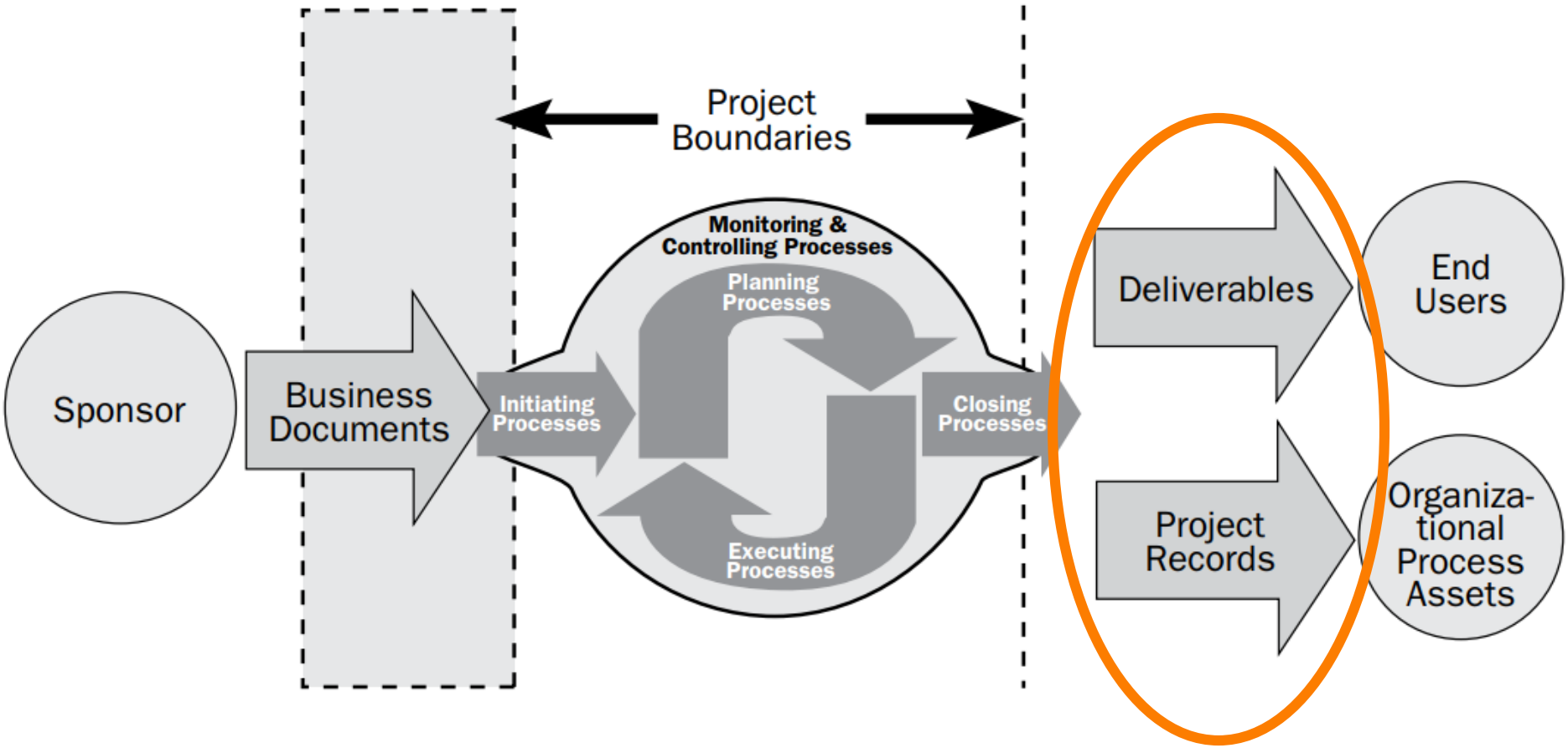


- Project structures
  - Objectives, scope, schedule
  - Resources, budget
  - Risks
  - Organization, culture
  - Personell
  - Infrastructure
- Project Context
  - Pre- and post project phase
  - Stakeholder
  - Other projects
  - Company strategies
  - Investment, Business Case

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
Project Integration Management	○ Develop Project Charter	○ Develop Project Management Plan	○ Direct and Manage Project Work ○ Manage Project Knowledge	○ Monitor and Control Project Work ○ Perform Integrated Change Control	○ Close Project or Phase
Project Scope Management		○ Plan Scope Management ○ Collect Requirements ○ Define Scope ○ Create WBS		○ Validate Scope ○ Control Scope	
Project Schedule Management		○ Plan Schedule Management ○ Define Activities ○ Sequence Activities ○ Estimate Activity Durations ○ Develop Schedule		○ Control Schedule	
Project Cost Management		○ Plan Cost Management ○ Estimate Costs ○ Determine Budget		○ Control Costs	
Project Quality Management		○ Plan Quality Management	○ Manage Quality	○ Control Quality	
Project Resources Management		○ Plan Resource Management ○ Estimate Activity Resources	○ Acquire Resources ○ Develop Team ○ Manage Team	○ Control Resources	
Project Communications Management		○ Plan Communications Management	○ Manage Communications	○ Monitor Communications	
Project Risk Management		○ Plan Risk Management ○ Identify Risks ○ Perform Qualitative Risk Analysis ○ Perform Quantitative Risk Analysis ○ Plan Risk Responses	○ Implement Risk Responses	○ Monitor Risks	
Project Procurement Management		○ Plan Procurement Management	○ Conduct Procurements	○ Control Procurements	
Project Stakeholder Management	○ Identify Stakeholders	○ Plan Stakeholder Management	○ Manage Stakeholder Engagement	○ Monitor Stakeholder Engagement	

Project Initiation

PMI: Project Boundaries



Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Part 2 - The Standard for Project Management – Figure 2-1, Page 562

Project initiation

- Required decisions
  - Investment: yes/no (fex via a business case analysis)
  - In case of „yes“: adequate organization type (permanent organization, working group, small project, project, project network, programme)

- In case of a small project/project
  - Nomination of a project sponsor, project manager
  - Description via a definition of the project boundaries and context (project proposal)
  - Formal assignment via signature (project assignment)


PROJECT BOUNDARY DEFINITION & CONTEXT ANALYSIS
time-related
Start-date
end-date
PRE PROJECT-PHASE
POST PROJECT PHASE
t
content related
non-objectives:
x
x
objectives:
x
x
phases/main steps:
x
x
budget: x
BC objectives
contribution to the strategy
contribution to other projects
social-related
authorities
line mgmt
PO? PM? experts?

Project Assignment

- Analysis of the project boundaries and the project context for the common development of the „big project picture“
  - Time related
    - Boundaries: project start date, project end date
    - Context: pre- and post-project phase
  - Scope related
    - Boundaries: project objectives, non objectives, deliverables, project budget
    - Context: relations to company strategies, relation to other projects, business case objectives
  - Social related
    - Boundaries: project roles
    - Context: project stakeholders

- Project proposals and assignments are adapted to company standards

Project Assignment: Example

PROJECT ASSIGNMENT „concept and first implementations in a transformation“	
Project start date	Project end date
15.01.2014	12.12.2014
Objectives of the project	

- Potentials for a re-structuring of the organisation (respectively organisational units) analysed
- An implementable concept for the re-structuring of the organisation developed and decided, in alternatives and with the following foci:
  - Strategies
  - Clients and marks
  - Services, products and technologies
  - Organisational structure (organisation chart, processes)
  - Personell structure
  - Infrastructure (facilities, IT, telecommunication)
  - Finances, budget
- Coordination of the concept with managers and relevant stakeholders performed, decisions concerning the concept induced
- Acceptance by relevant stakeholders via appropriate communication and stakeholder engagement measures supported
- First implementation measures for the new organisation performed
- The next steps for the transformation of the organisation planned and agreed on
- ....

(example taken from Zuchi, 2014:51-52)

Non-objectives of the project	
• Recruitment and lay-offs in the concept considered • New legal form designed • Detailed process description of the new or adapted processes made • ….	
Relationship to the company strategies	
• speed, growth	
Expected deliverables	
• Analysis document about the optimization potentials within the organisation • Concept for the new designed organisation • Decision for the next steps • Initial implementation successes • Communication events	
Project sponsor	Project manager
• CEO	• Head of the department „organisational development“
Project team	
• Project team member production • Project team member sales • Project team member marketing • Project team member finance/controlling • Project team member HR • Project team member employees representant	

(example taken from Zuchi, 2014:51-52)

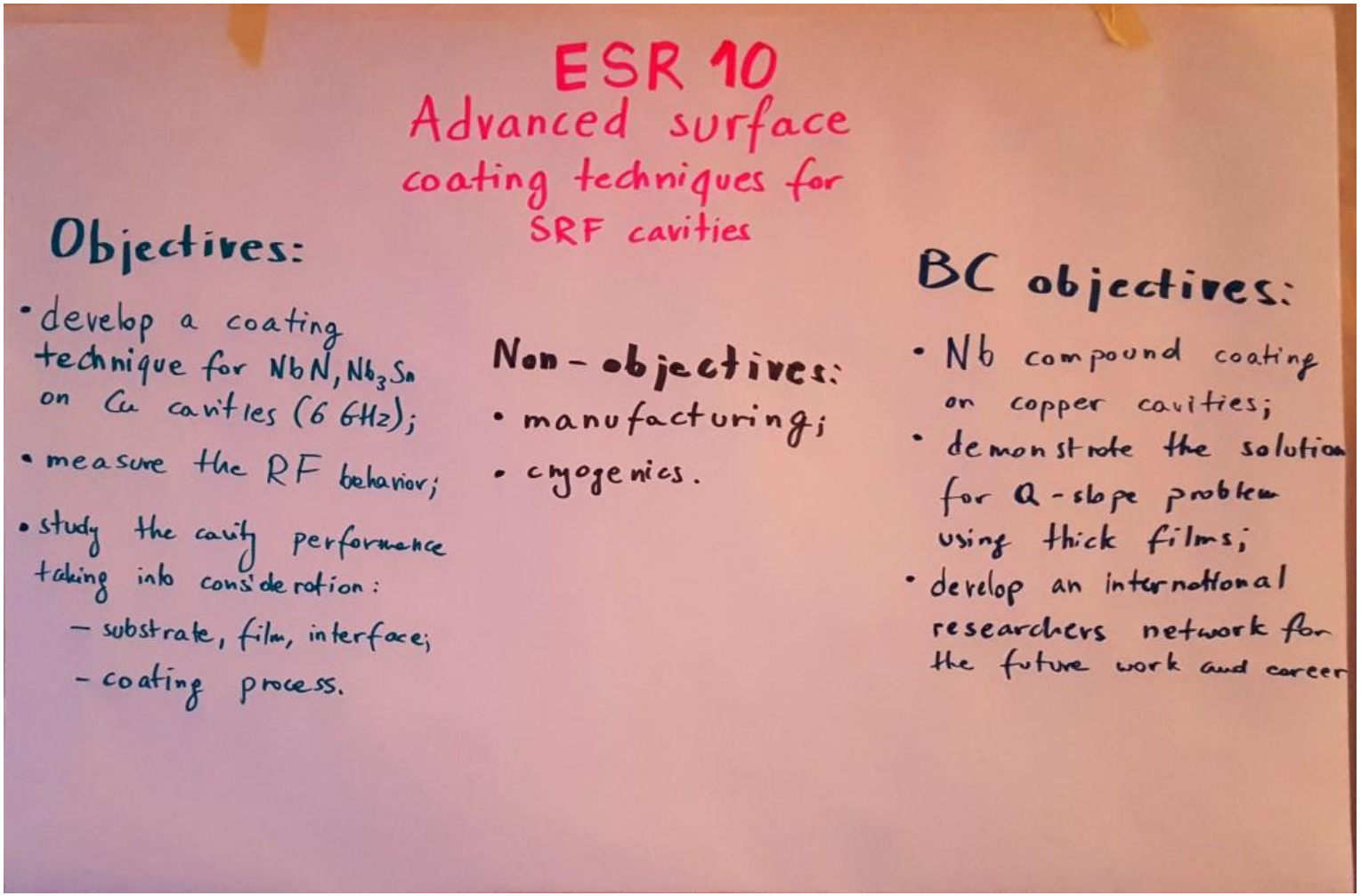
Project Initiation: Sustainable Development

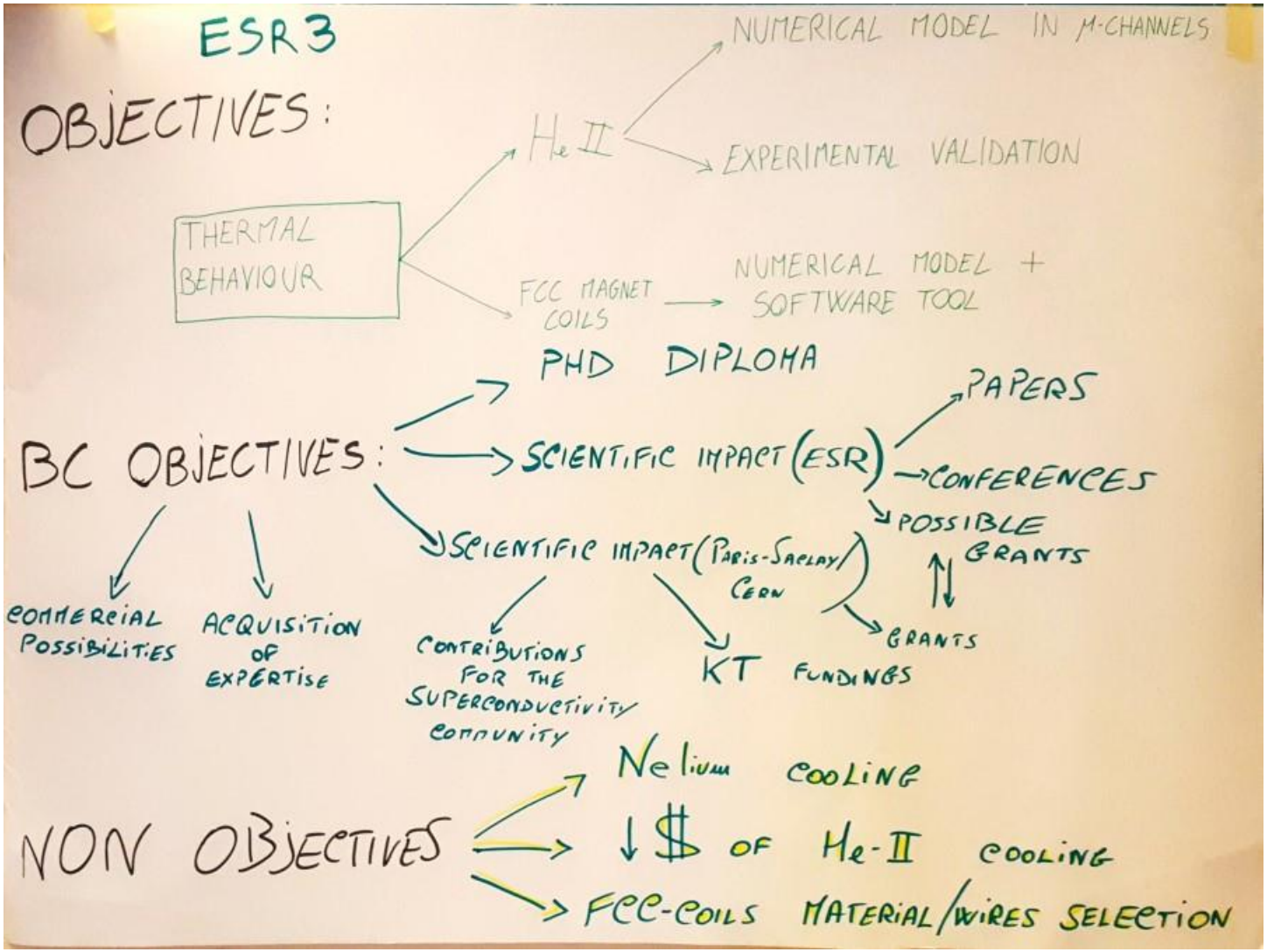
- Consideration of sustainable development aspects in the formulation of the investment proposal and the project proposal
- Sustainable development „... a development that meets the needs of the present without compromising the ability of future generations to meet their own needs.." (Our Common Future, 1987)
- Sustainable development principles
  - values-based
  - economic, ecologic, and social orientations
  - short-, mid-, and long-term orientations
  - local, regional, and global orientations
  - (Gareis/Huemann/Martinuzzi, 2013:39)

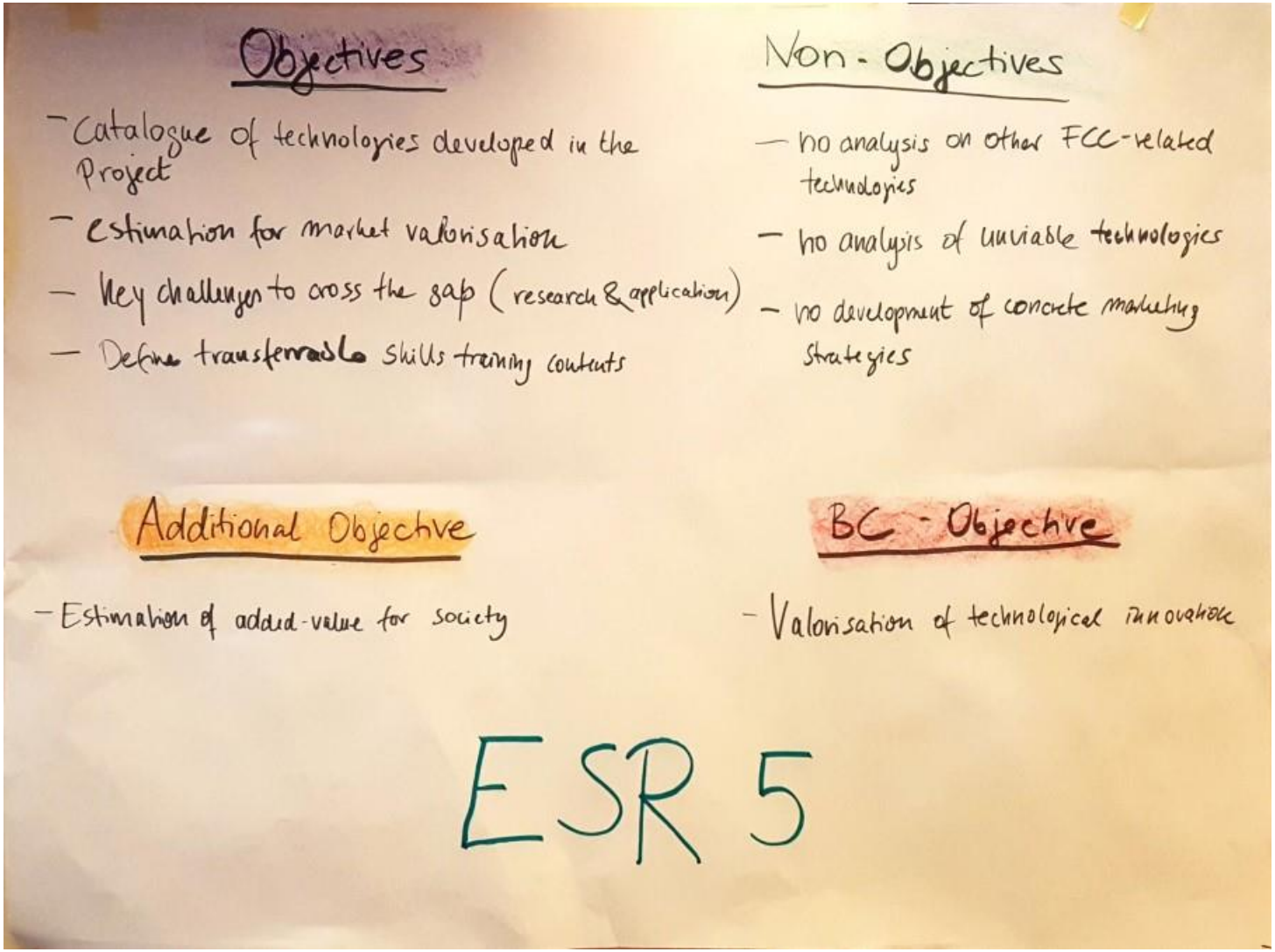
Project Initiation: Best Practice

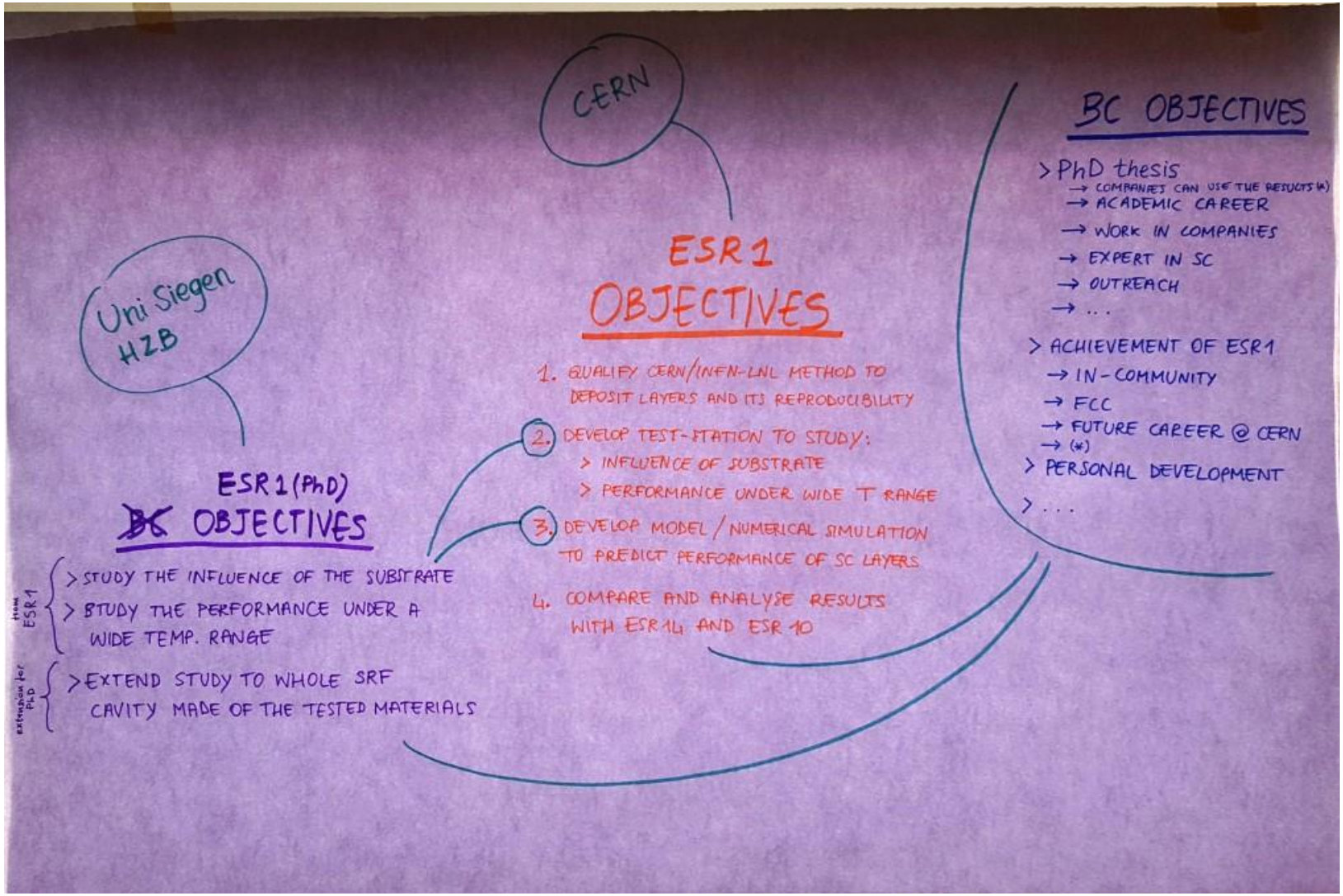
- Clear differentiation between investment and project
- According to the complexity and level of knowledge: considering an own project for the initiation of a project (see the concept of project chains)
- Integration of relevant stakeholders in the project initiation
- Signature of the project assignment as symbolic act

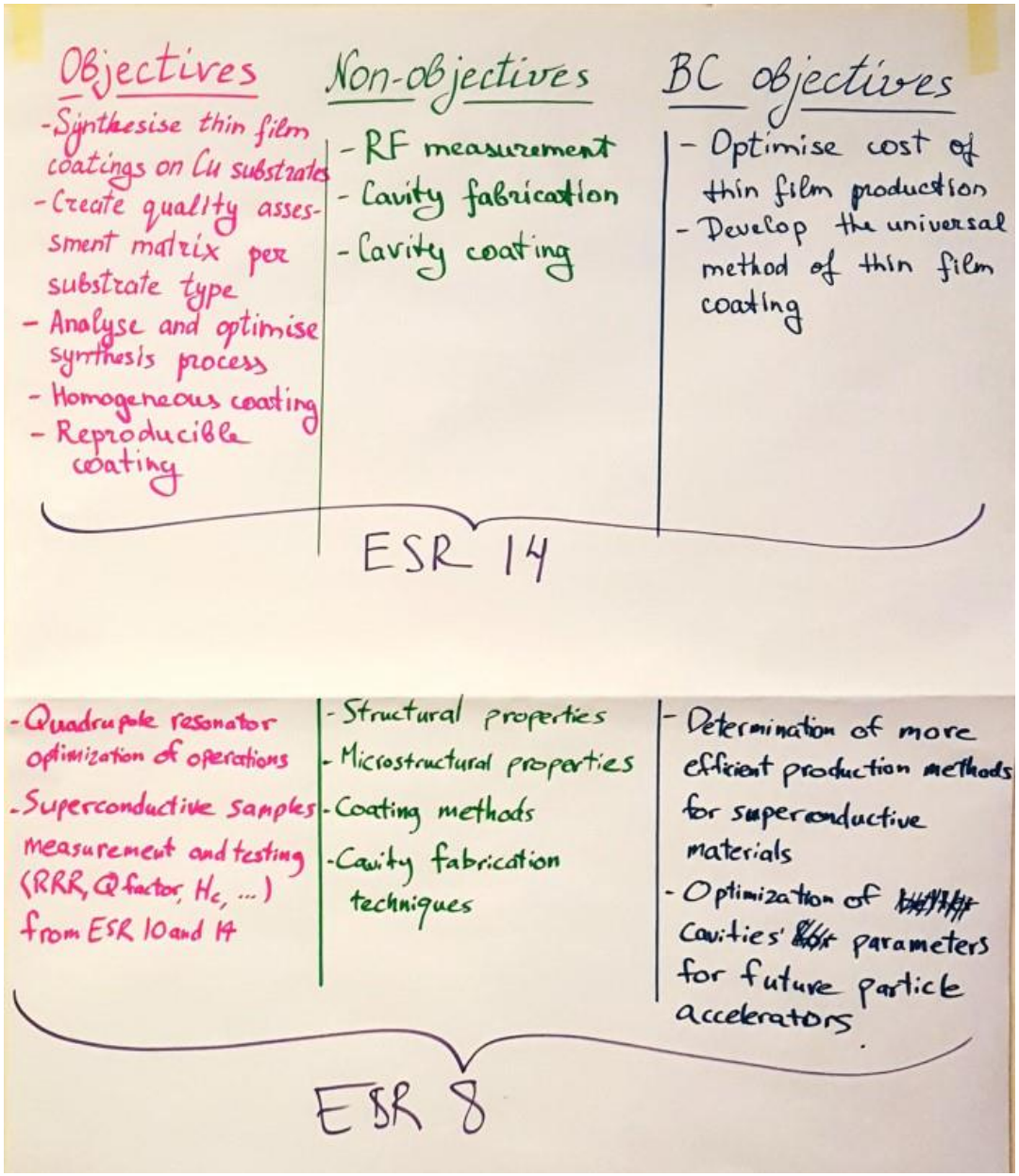
Results Group Work




ESR3
OBJECTIVES:
He II
NUMERICAL MODEL IN M-CHANNELS
EXPERIMENTAL VALIDATION
THERMAL BEHAVIOUR
FCC MAGNET COILS
NUMERICAL MODEL + SOFTWARE TOOL
PHD DIPLOMA
BC OBJECTIVES:
SCIENTIFIC IMPACT (ESR)
PAPERS
CONFERENCES
POSSIBLE GRANTS
SCIENTIFIC IMPACT (Paris-Saclay/ CERN)
GRANTS
COMMERCIAL POSSIBILITIES
ACQUISITION OF EXPERTISE
CONTRIBUTIONS FOR THE SUPERCONDUCTIVITY COMMUNITY
KT FUNDINGS
NON OBJECTIVES
Nelium COOLING
↓$ OF He-II COOLING
FCC-COILS MATERIAL/WIRES SELECTION


Objectives
- Catalogue of technologies developed in the Project
- estimation for market valorisation
- key challenges to cross the gap (research & application)
- Define transferrable skills training contents
Non - Objectives
- no analysis on other FCC-related technologies
- no analysis of unviable technologies
- no development of concrete marketing strategies
Additional Objective
- Estimation of added-value for society
BC - Objective
- Valorisation of technological innovation
ESR 5


CERN
ESR 1
OBJECTIVES
1. QUALIFY CERN/INFN-LNL METHOD TO DEPOSIT LAYERS AND ITS REPRODUCIBILITY
2. DEVELOP TEST-STATION TO STUDY:
> INFLUENCE OF SUBSTRATE
> PERFORMANCE UNDER WIDE T RANGE
3. DEVELOP MODEL / NUMERICAL SIMULATION TO PREDICT PERFORMANCE OF SC LAYERS
4. COMPARE AND ANALYSE RESULTS WITH ESR 14 AND ESR 10
Uni Siegen
HZB
ESR 1 (PhD)
~~BC~~ OBJECTIVES
from ESR 1
> STUDY THE INFLUENCE OF THE SUBSTRATE
> STUDY THE PERFORMANCE UNDER A WIDE TEMP. RANGE
extension for PhD
> EXTEND STUDY TO WHOLE SRF CAVITY MADE OF THE TESTED MATERIALS
BC OBJECTIVES
> PhD thesis
→ COMPANIES CAN USE THE RESULTS (*)
→ ACADEMIC CAREER
→ WORK IN COMPANIES
→ EXPERT IN SC
→ OUTREACH
→ ...
> ACHIEVEMENT OF ESR 1
→ IN-COMMUNITY
→ FCC
→ FUTURE CAREER @ CERN
→ (*)
> PERSONAL DEVELOPMENT
> ...


Objectives
-Synthesise thin film coatings on Cu substrate
-Create quality assessment matrix per substrate type
- Analyse and optimise synthesis process
- Homogeneous coating
- Reproducible coating
Non-objectives
- RF measurement
- Cavity fabrication
- Cavity coating
BC objectives
- Optimise cost of thin film production
- Develop the universal method of thin film coating
ESR 14
-Quadruple resonator optimization of operations
-Superconductive samples measurement and testing (RRR, Q factor, Hc, ...) from ESR 10 and 14
- Structural properties
- Microstructural properties
-Coating methods
-Cavity fabrication techniques
- Determination of more efficient production methods for superconductive materials
- Optimization of Cavities' parameters for future particle accelerators
ESR 8

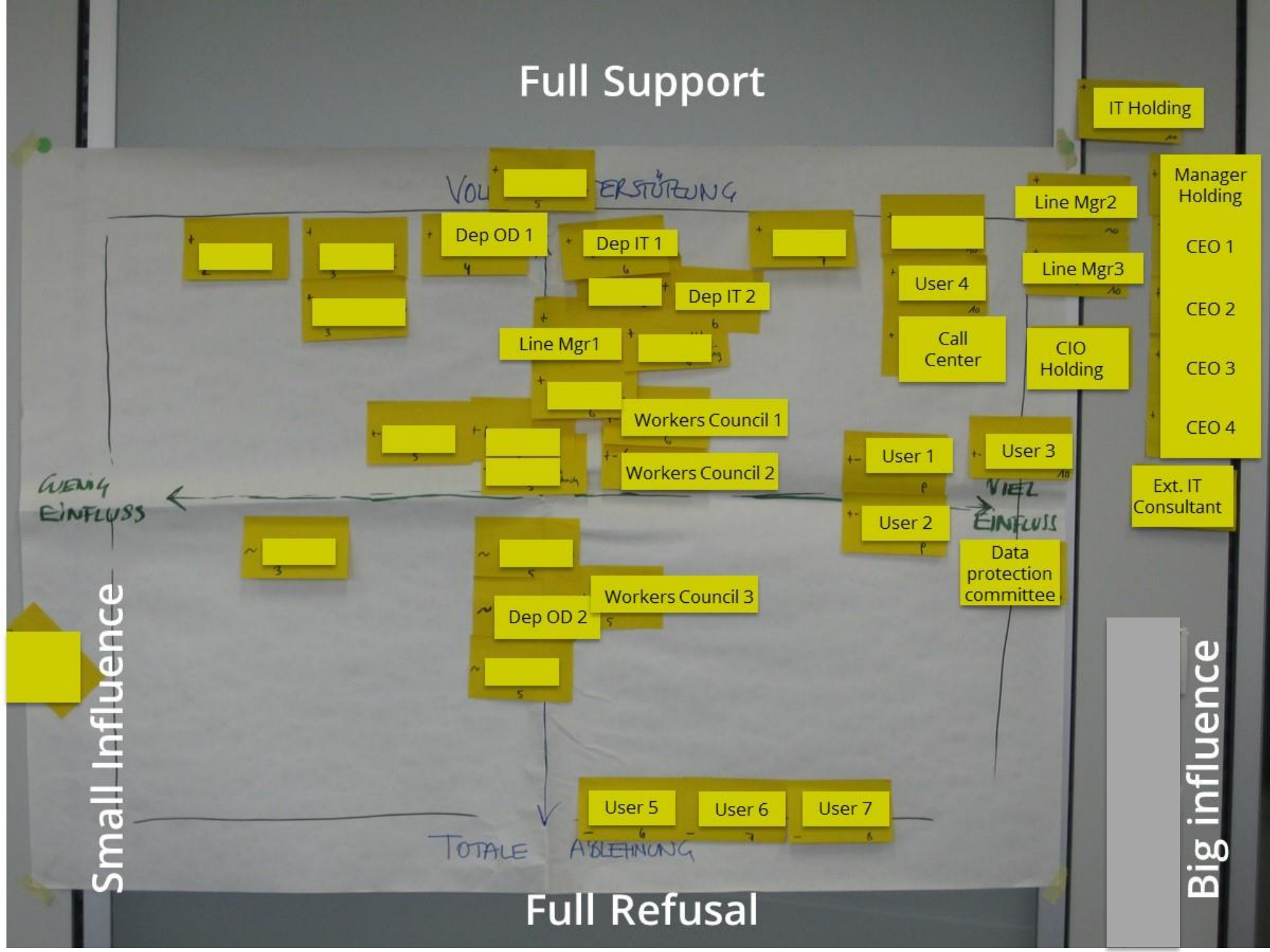
Project Stakeholder Analysis

why shall we consider stakeholders in projects?

why shall we consider stakeholders in projects?

„Success means different things to different people“

(Freeman and Beale)


Full Support
IT Holding
Manager Holding
CEO 1
CEO 2
CEO 3
CEO 4
Line Mgr2
Line Mgr3
Dep OD 1
Dep IT 1
Dep IT 2
Line Mgr1
User 4
Call Center
CIO Holding
Workers Council 1
Workers Council 2
User 1
User 2
User 3
Ext. IT Consultant
Data protection committee
Workers Council 3
Dep OD 2
User 5
User 6
User 7
Small Influence
Big influence
Full Refusal

Project Stakeholders

- No project is an island, the interior processes of a project are influenced by its historical and organizational context (Engwall, 2003:789)

- "Person, group or organization that has interests in, or can affect, be affected by, or perceive itself to be affected by, any aspect of the project" (Guidance on project management, ISO 21500:2012, First Edition 2012-09-01, page 2 & 7)

- Main Attitude (Freeman)
  - Management OF Stakeholder versus Management FOR Stakeholder
  - Stakeholder Management versus Stakeholder Engagement

Project Stakeholder: Management

(Guidance on project management, ISO 21500:2012, First Edition 2012-09-01, page 10).

Table 1 — Project management processes cross-referenced to process and subject groups

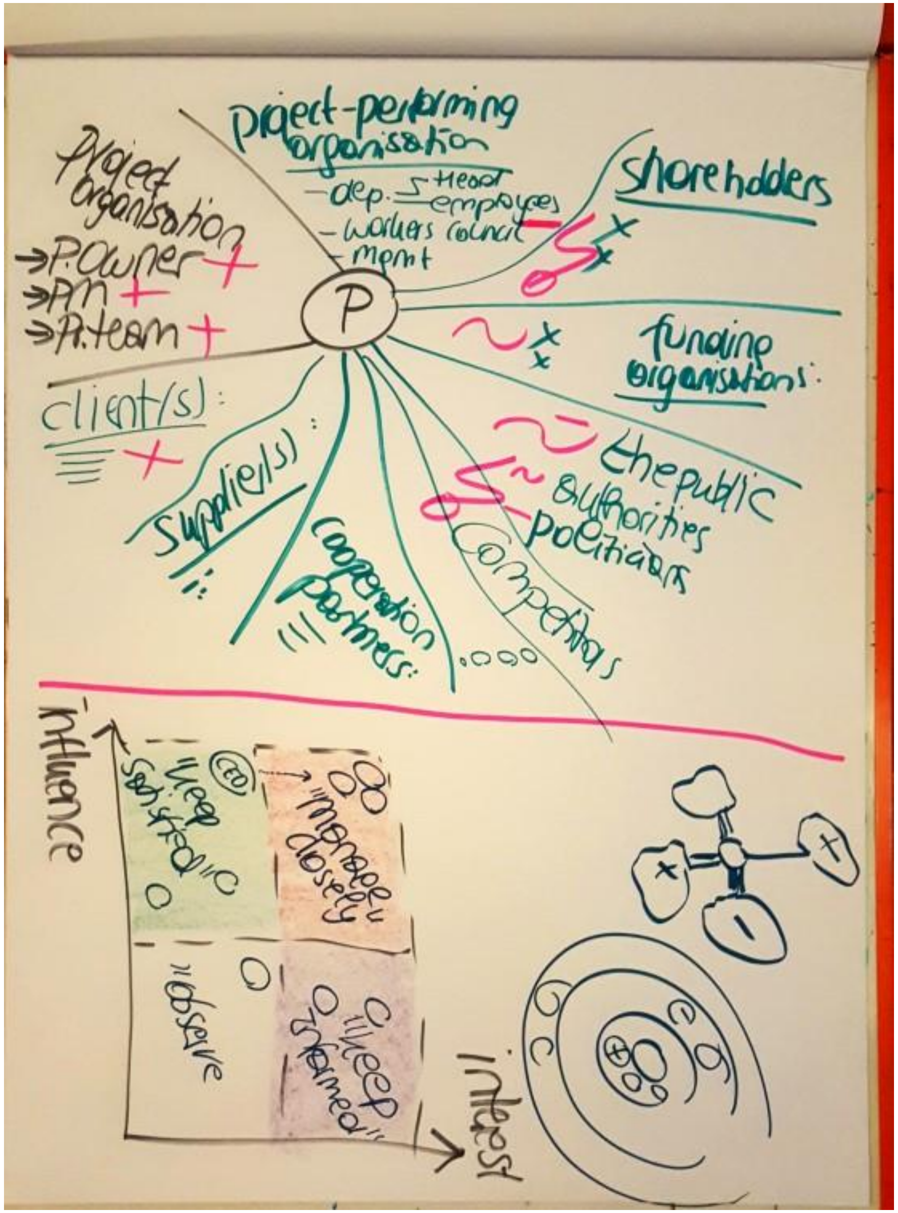
Subject groups	Process groups				
	Initiating	Planning	Implementing	Controlling	Closing
Integration	4.3.2 Develop project charter	4.3.3 Develop project plans	4.3.4 Direct project work	4.3.5 Control project work 4.3.6 Control changes	4.3.7 Close project phase or project 4.3.8 Collect lessons learned
Stakeholder	4.3.9 Identify stakeholders		4.3.10 Manage stakeholders		
Scope		4.3.11 Define scope 4.3.12 Create work breakdown structure 4.3.13 Define activities		4.3.14 Control scope	
Resource	4.3.15 Establish project team	4.3.16 Estimate resources 4.3.17 Define project organization	4.3.18 Develop project team	4.3.19 Control resources 4.3.20 Manage project team	
Time		4.3.21 Sequence activities 4.3.22 Estimate activity durations 4.3.23 Develop schedule		4.3.24 Control schedule	
Cost		4.3.25 Estimate costs 4.3.26 Develop budget		4.3.27 Control costs	
Risk		4.3.28 Identify risks 4.3.29 Assess risks	4.3.30 Treat risks	4.3.31 Control risks	
Quality		4.3.32 Plan quality	4.3.33 Perform quality assurance	4.3.34 Perform quality control	
Procurement		4.3.35 Plan procurements	4.3.36 Select suppliers	4.3.37 Administer procurements	
Communication		4.3.38 Plan communications	4.3.39 Distribute information	4.3.40 Manage communications	

NOTE The purpose of this table is not to specify a chronological order for carrying out the activities. Its purpose is to map subject groups and process groups.

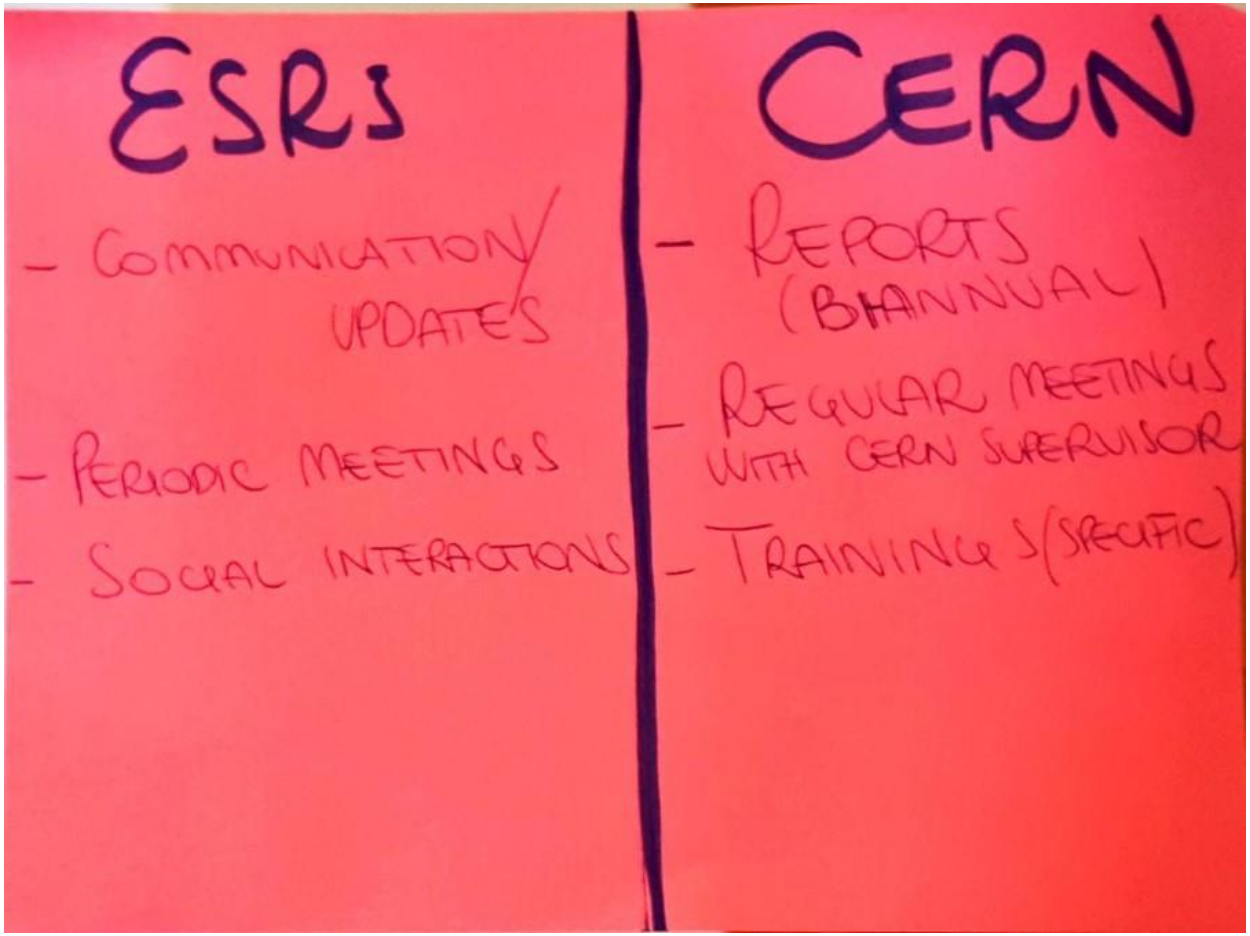
Project Stakeholder Analysis: Process

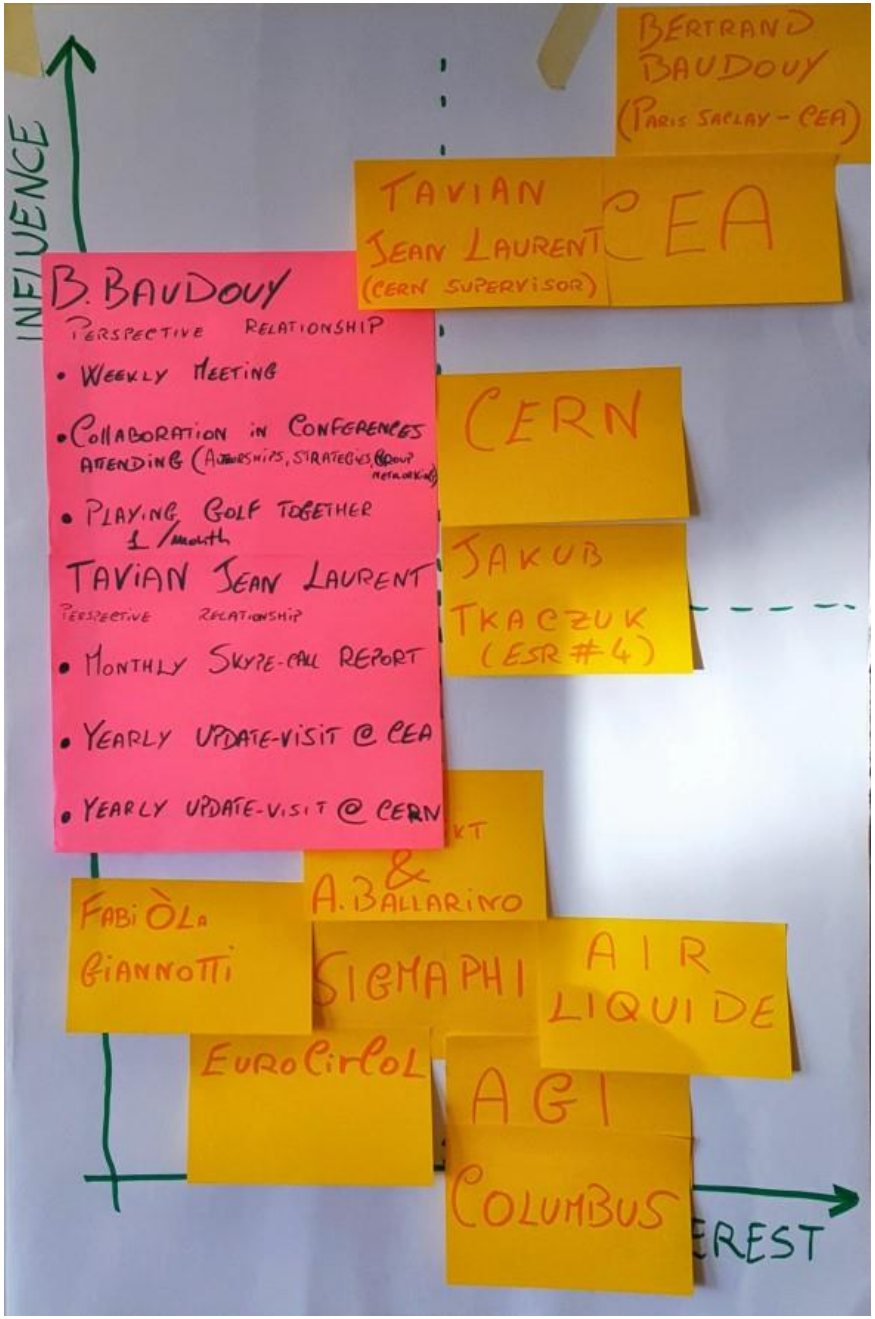
1. Identification and „understanding“ of all relevant stakeholders
2. Evaluation of the attitude or relationship of particular stakeholders
3. Development of measures to design the relationships (project communication / project marketing, organisational involvement)

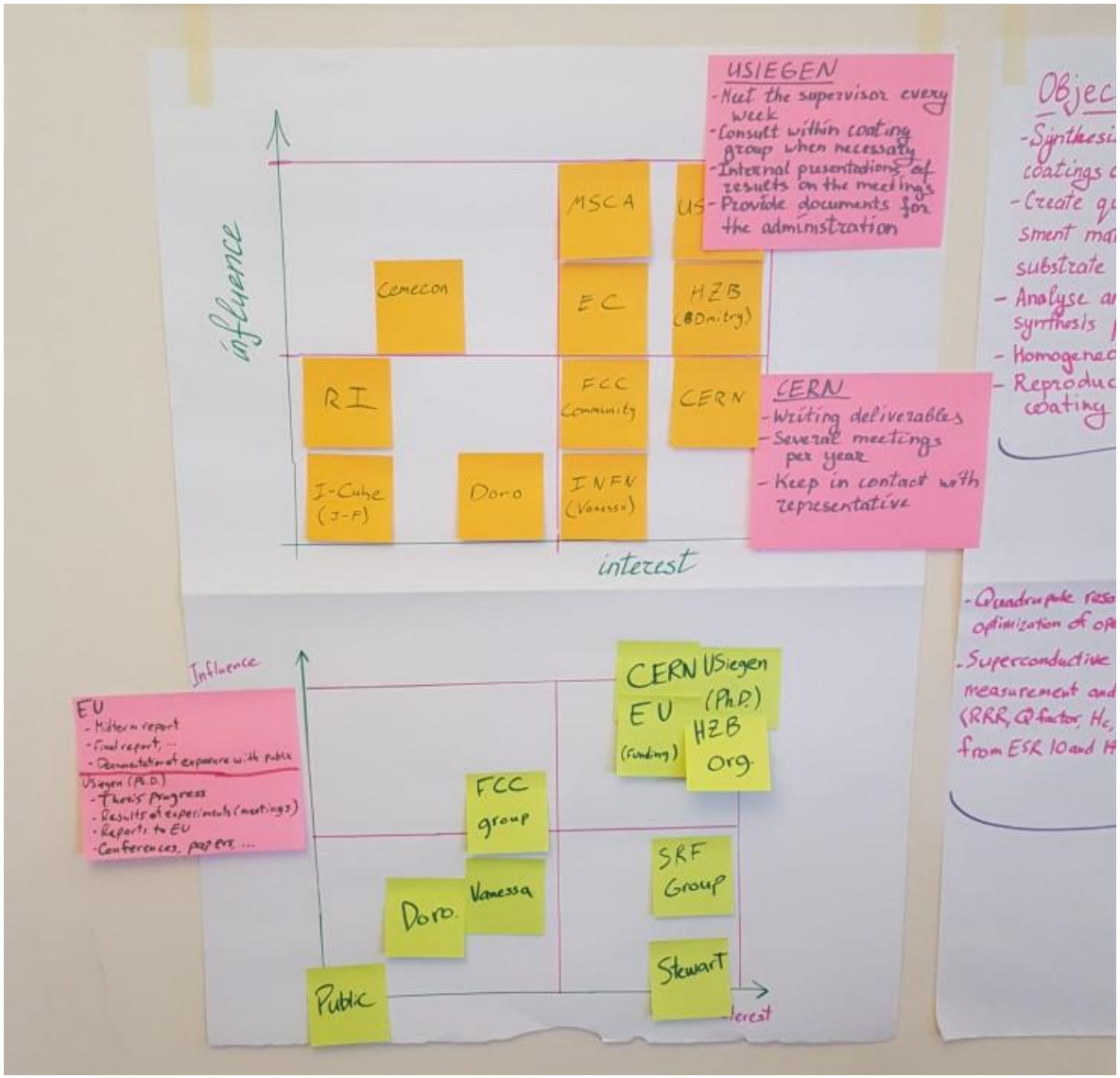
- Basis for strategic project management and social project controlling
- Related terms: relevant environment, interested parties

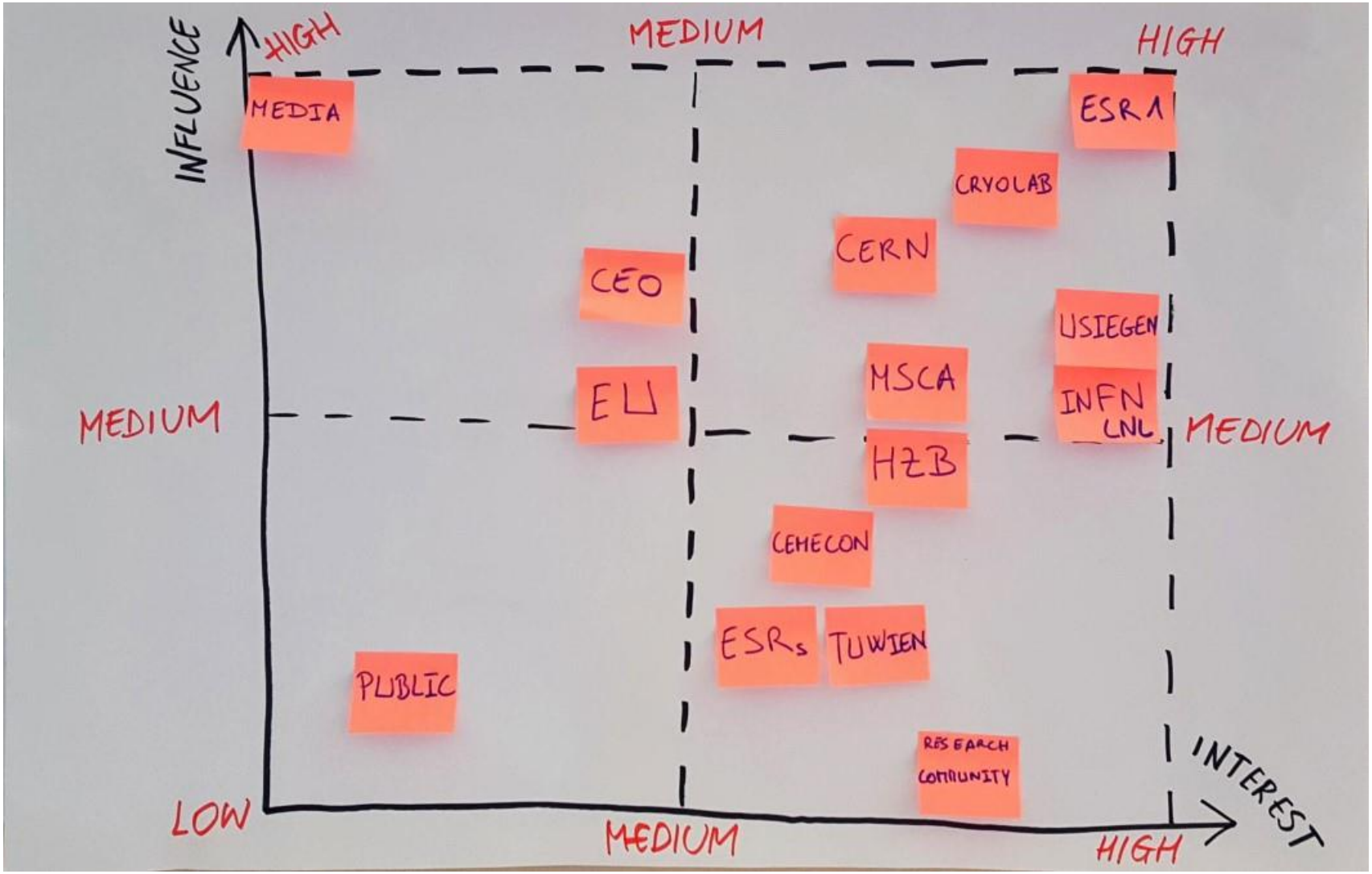

project-performing organisation
-dep. Head employees
-workers council
-mgmt
Project organisation
P. Owner
PM
P. team
shareholders
P
funding organisations:
client(s):
supplier(s):
cooperation partners:
competitors
the public
authorities
politicians
influence
"keep satisfied"
"manage closely"
"observe"
"keep informed"
interest

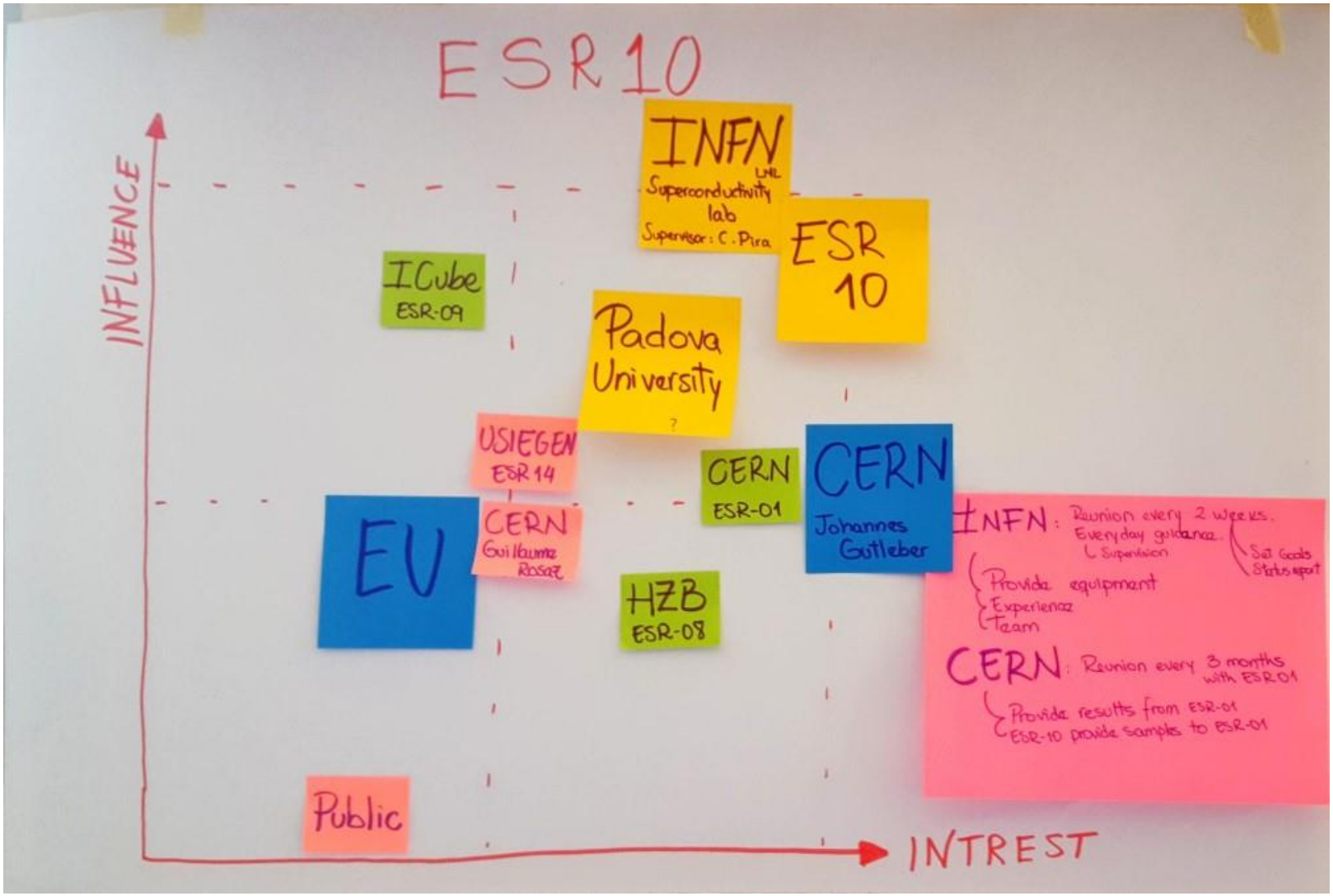
Results Group Work

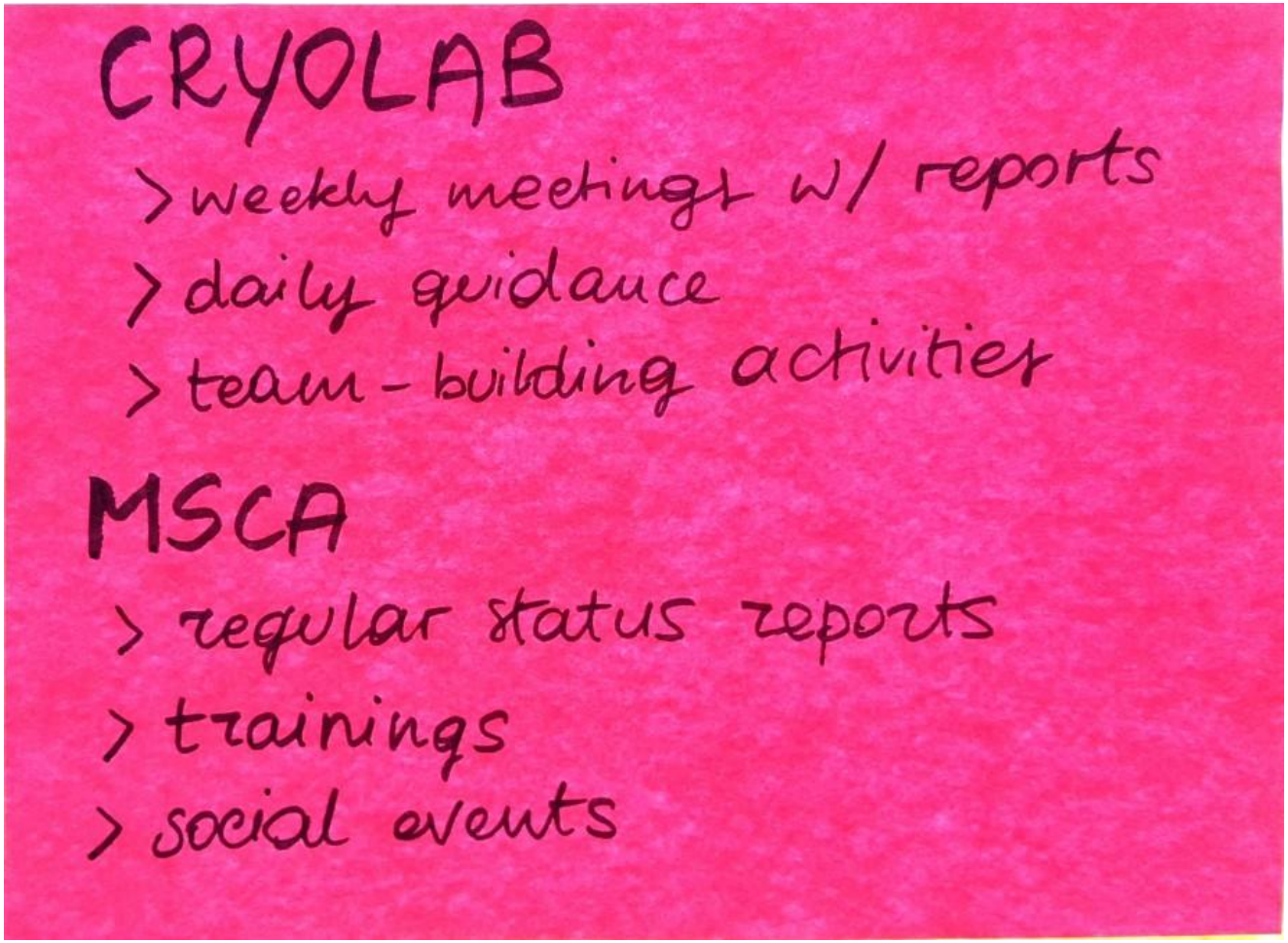

ESRs
- COMMUNICATION/ UPDATES
- PERIODIC MEETINGS
- SOCIAL INTERACTIONS
CERN
- REPORTS (BIANNUAL)
- REGULAR MEETINGS WITH CERN SUPERVISOR
- TRAININGS (SPECIFIC)


INFLUENCE
BERTRAND BAUDOUY
(PARIS SACLAY – CEA)
TAVIAN JEAN LAURENT
(CERN SUPERVISOR)
CEA
B. BAUDOUY
PERSPECTIVE RELATIONSHIP
• WEEKLY MEETING
• COLLABORATION IN CONFERENCES ATTENDING (
• PLAYING GOLF TOGETHER 1 / month
TAVIAN JEAN LAURENT
PERSPECTIVE RELATIONSHIP
• MONTHLY SKYPE-CALL REPORT
• YEARLY UPDATE-VISIT @ CEA
• YEARLY UPDATE-VISIT @ CERN
CERN
JAKUB TKACZUK
(ESR #4)
KT
&
A. BALLARINO
FABIOLA GIANNOTTI
SIGMAPHI
AIR LIQUIDE
EUROCIRCOL
AGI
COLUMBUS
EREST


USIEGEN
- Met the supervisor every week
- Consult within coating group when necessary
- Internal presentations of results on the meetings
- Provide documents for the administration
influence
MSCA
US
Cemecon
EC
HZB (Dmitry)
RI
FCC Community
CERN
I-Cube (J-F)
Doro
INFN (Vanessa)
interest
CERN
- Writing deliverables
- Several meetings per year
- Keep in contact with representative
Objec
-Synthesi
coatings
-Create
sment ma
substrate
- Analyse
synthesis
- Homogene
- Reproduc
coating
-Quadrupole
optimization
-Superconductive
measurement
(RRR, Q-factor, Hc,
from ESR 10 and
Influence
EU
- Midterm report
- Final report, ...
- Dissemination of exposure with public
Usiegen (Ph.D.)
- Thesis Progress
- Results of experiments (meetings)
- Reports to EU
- Conferences, papers ...
CERN USiegen
EU (Ph.D.)
(Funding)
HZB
Org.
FCC group
Vanessa
Doro.
SRF Group
Public
Stewart
terest


INFLUENCE
HIGH
MEDIUM
HIGH
MEDIA
ESRA
CRYOLAB
CERN
CEO
USIEGEN
MSCA
EU
INFN
LNL
MEDIUM
MEDIUM
HZB
CEMECON
ESRs
TUWIEN
PUBLIC
RESEARCH
COMMUNITY
INTEREST
LOW
MEDIUM
HIGH

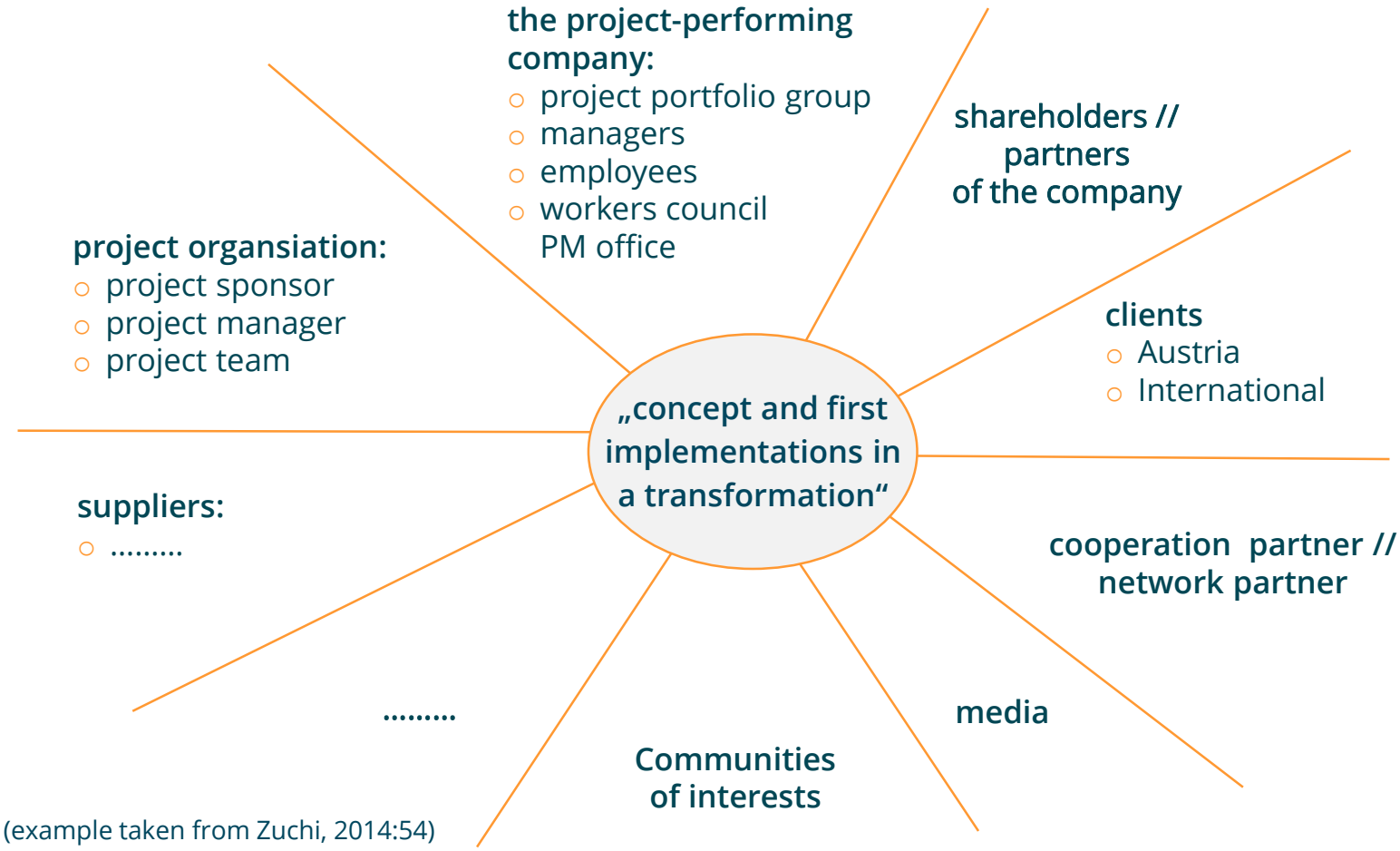

ESR 10
INFN
Superconductivity lab
Supervisor: C. Pira
ESR 10
ICube
ESR-09
Padova University
USIEGEN
ESR 14
CERN
ESR-01
CERN
Johannes Gutleber
EU
CERN
Guillaume Rosaz
HZB
ESR-08
INFN: Reunion every 2 weeks.
Everyday guidance
Supervision
Set Goals
Status report
Provide equipment
Experience
Team
CERN: Reunion every 3 months with ESR-01
Provide results from ESR-01
ESR-10 provide samples to ESR-01
Public
INFLUENCE
INTREST


CRYOLAB
> weekly meetings w/ reports
> daily guidance
> team-building activities
MSCA
> regular status reports
> trainings
> social events

Short Videos:
Stakeholder Management

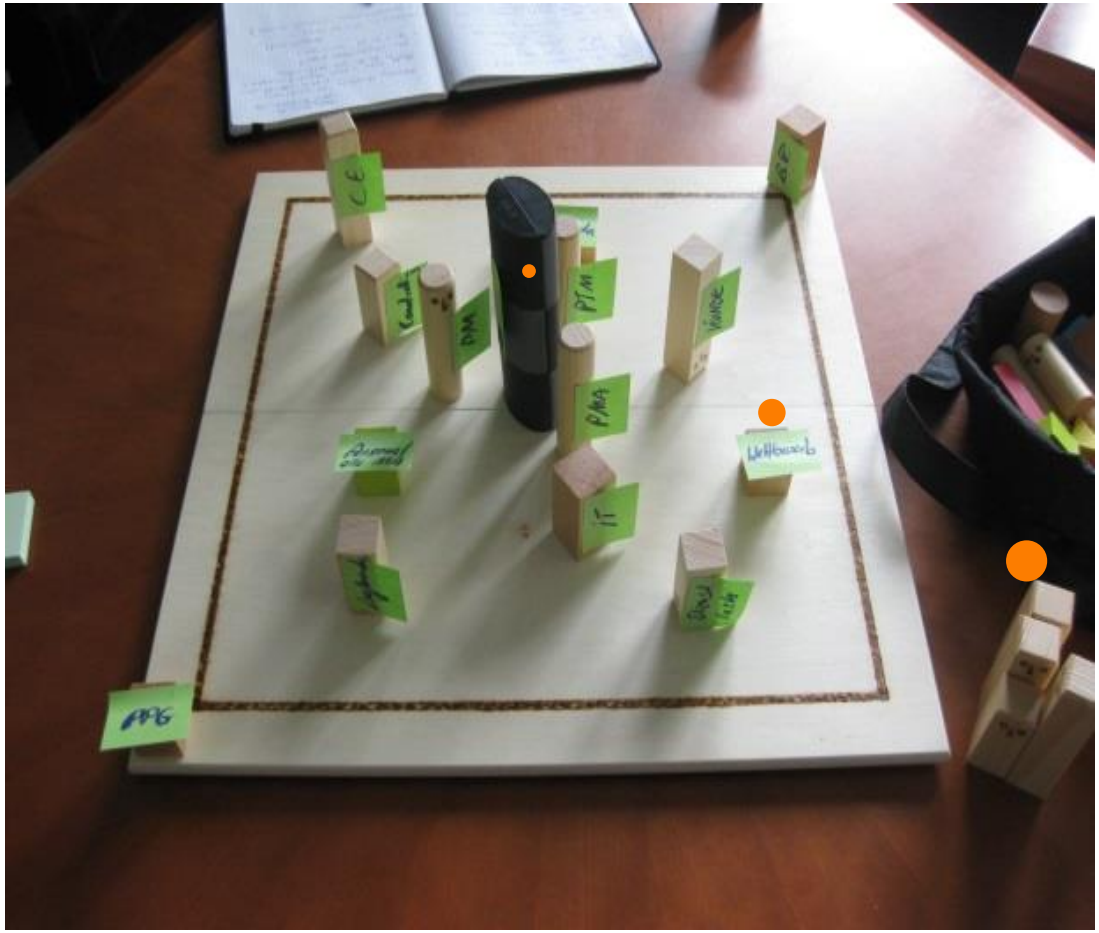
- What is stakeholder theory?
  https://www.youtube.com/watch?v=bIRUaLcvPe8
- Stakeholders are people
  https://www.youtube.com/watch?v=keED9l3zVi8
- What is stakeholder engagement?
  https://www.youtube.com/watch?v=VHGTsEwbOJY

Identification: Example (Depiction: Grid, “Bubbles”, Segments ……)

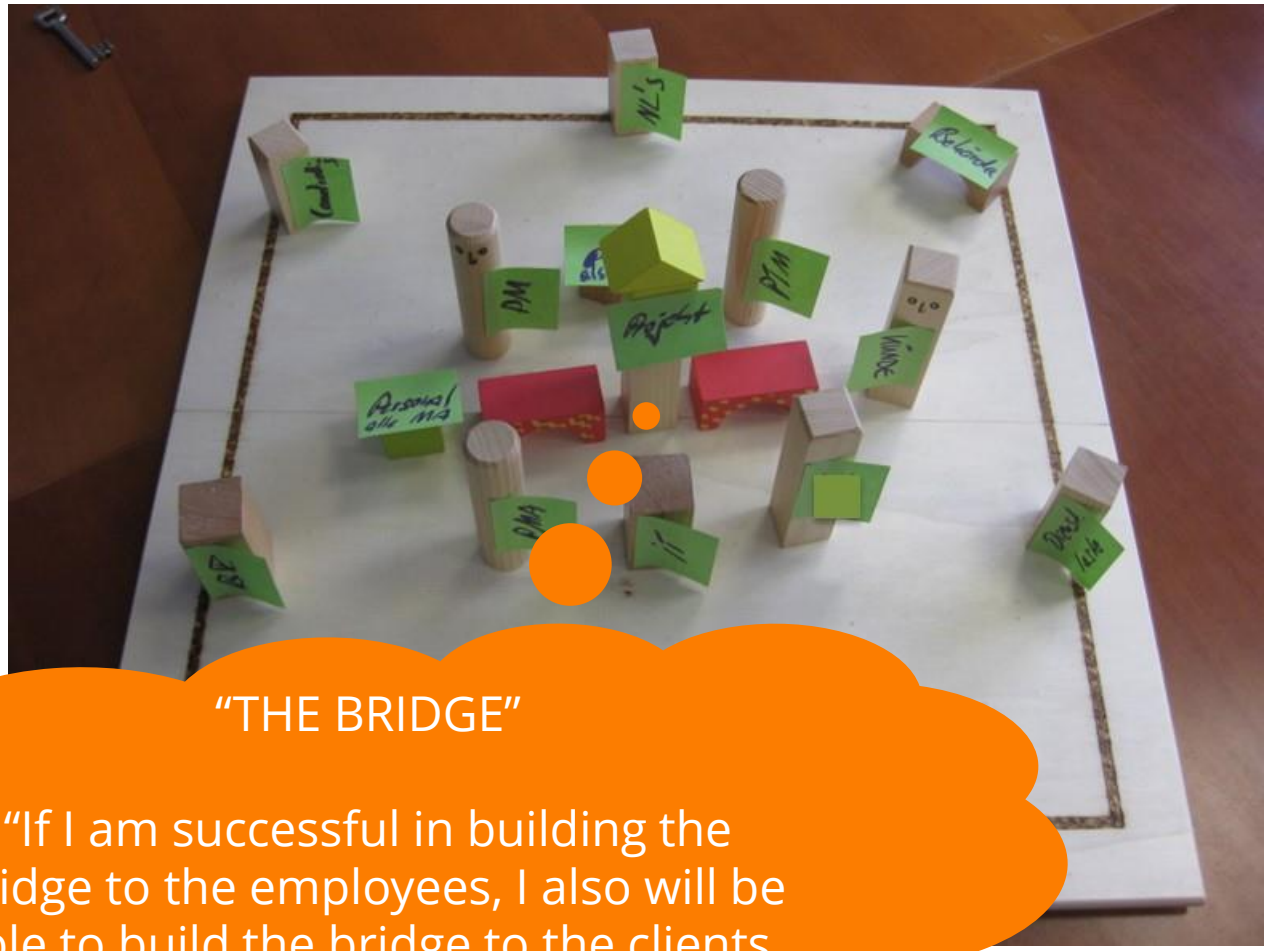


(example taken from Zuchi, 2014:54)

The stakeholder analysis with a systemic board



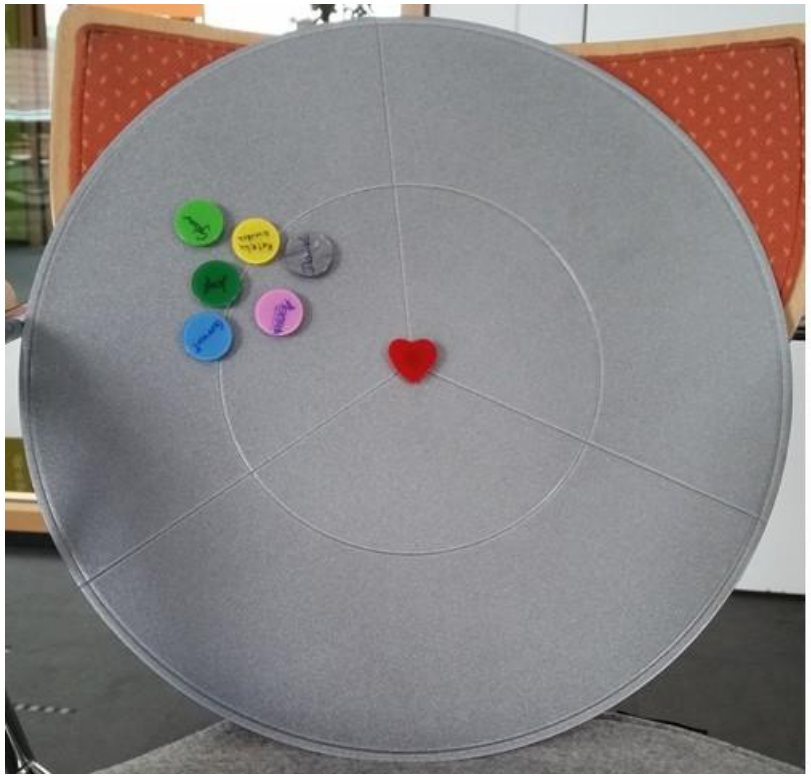
„This (the project) is something BIG“

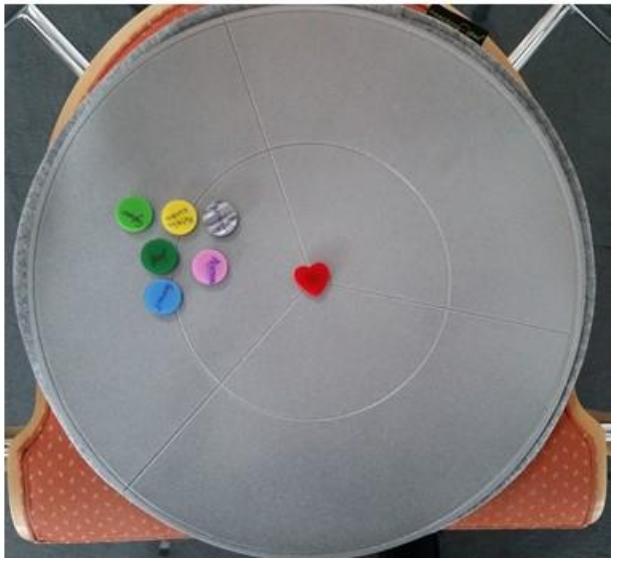


"THE BRIDGE"

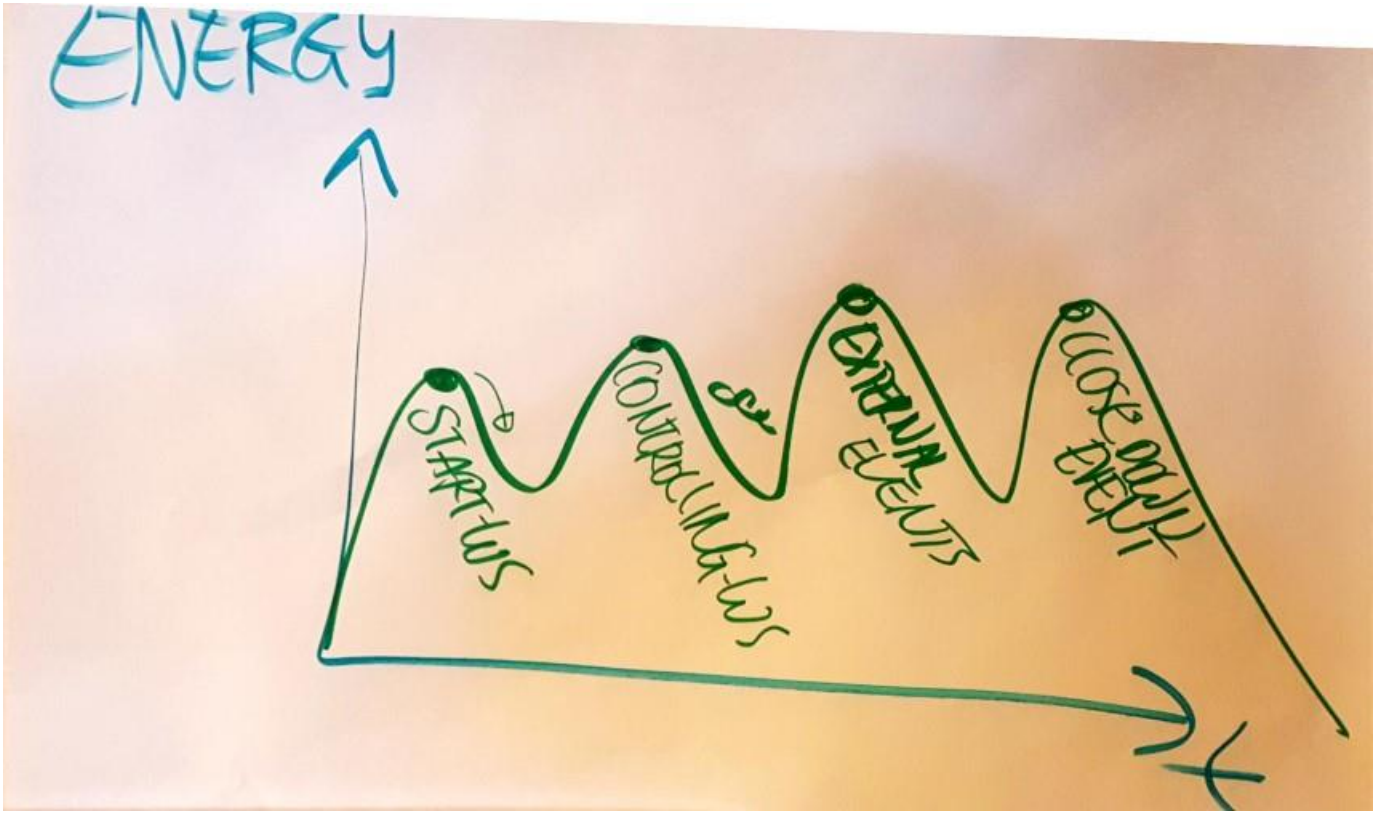
"If I am successful in building the bridge to the employees, I also will be able to build the bridge to the clients. Then, the project will be successful".

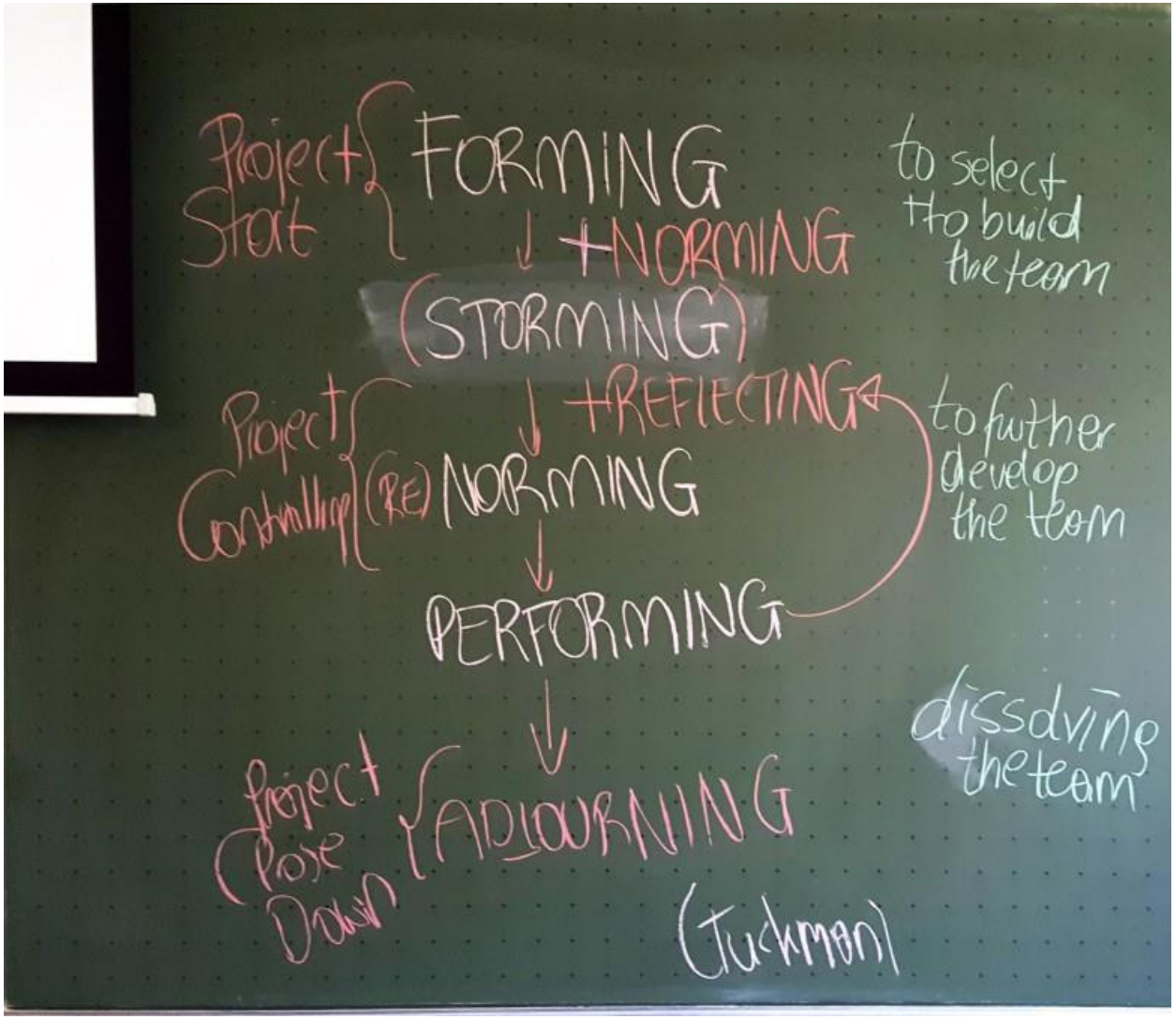
Coaching Disc
“The Project Team and its Context“





- red heart => the project sponsor,
  „the strategic orientation of the company“


ENERGY
STARTUP
COMPLAINTS
EXTERNAL EVENTS
CLOSE DOWN EVENT
TIME


Project Start
FORMING
+NORMING
(STORMING)
+REFLECTING
Project Controlling
(RE) NORMING
PERFORMING
ADJOURNING
Project Close Down
(Tuckman)
to select + to build the team
to further develop the team
dissolving the team

Development of Measures: Example

stakeholder	expectation towards the project	expectation towards the stakeholder	strategies	measures
employees	development of a common language and a common understanding about SCM (inter-divisional)	openness and interest (no constraints to ask questions or to contribute in the project work)	open communication and sufficient information spreading	as opening intervention: sending out an email to all employees of the company, and in parallel (for those not havening access to the internet/emails) a publication on the bill-boards of the company, by the CEO/project sponsor and the project manager
	alleviation of the future work, and at the same time uncertainness that in the future more or less work has to be taken over	openness towards changes (employees AND line managers)	in the general project communication, this target group has to be especially respected and the communication has to be altered according to the phase in the change	creation of a specific monthly project-newsletter (electronically in German and English, and as print out for the bill-boards and the canteen)
	negative consequences and implications for the individual workplace (especially by those employees that are not actively involved in the project work) (=> the project stands for expected change in/for the company)	positive attitude towards the project		
	....	....	....	....

(Huemann/Zuchi, 2014:409)

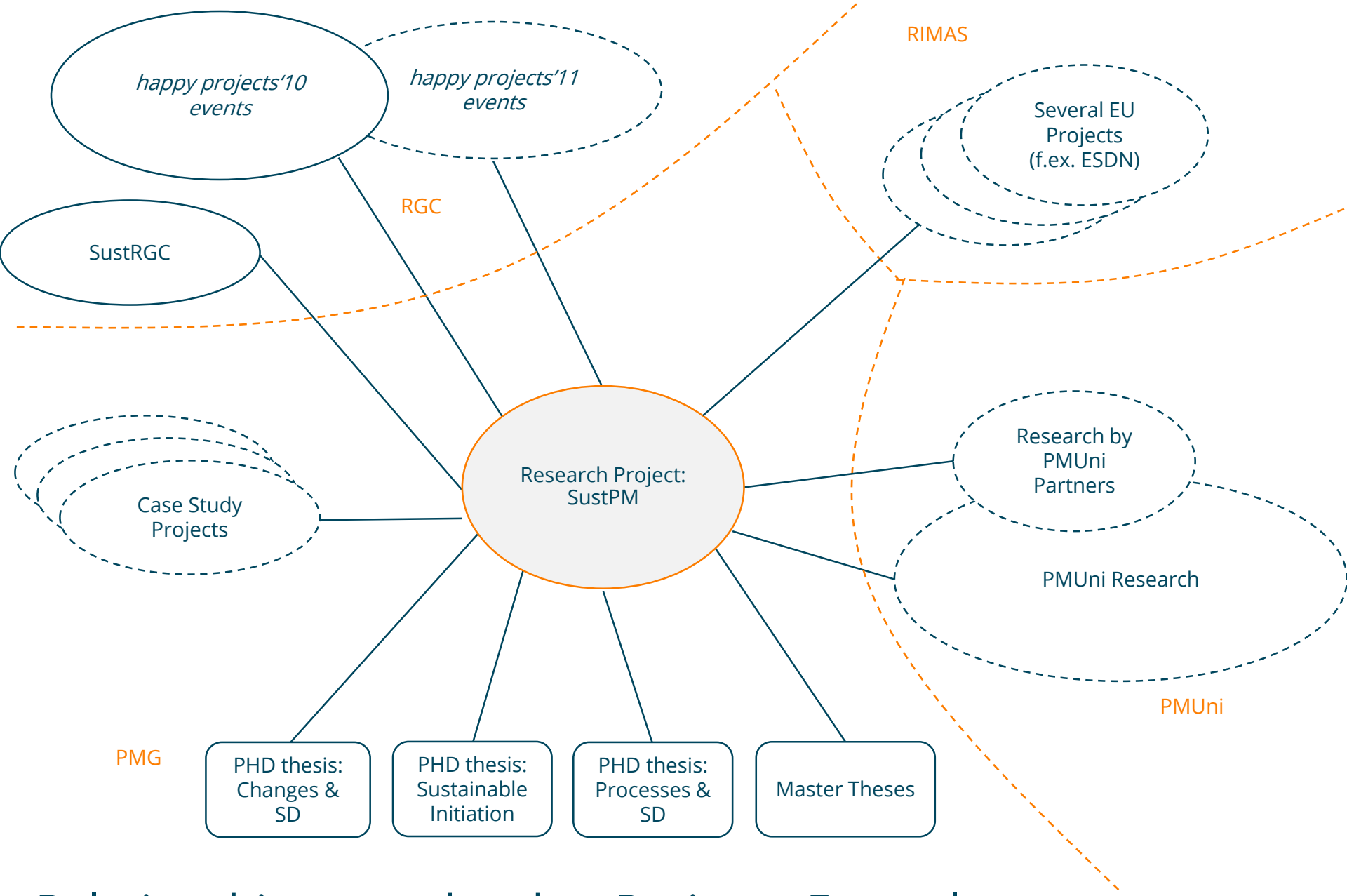
Communication Plan: Example

Medium	Contents	Participants	Responsibility	Schedule
december 2012				
christmas party of the company	short information about the project, briefing about the planned kick off in january	all employees	CEO/project sponsor, project manager	december 2012
january 2013				
project specific information event: kick off	information about the topic and the project (project chain, project team, duration, approach)	all employees (at least 2 events, considering shifts)	project manager	start of the year, the “xxx" year
flyer	information about the project (approach, schedule, the project team with short statements about "what does the project mean for you?", benefit arguments	all employees	marketing manager, project manager	shall be ready for the kick off meeting in january
...				
february				
...				

(Huemann/Zuchi, 2014:413)

Projektstakeholderanalyse: Best Practice

- Consideration of all relevant (project) internal and (project) external stakeholders
- Development of appropriate measures for the engagement of stakeholders and building of relationships
- Integration of the defined measures in all relevant project plans
  - Work breakdown structure, responsibility matrix
  - Project ressource, and –cost plan
  - Project organisation chart, project communication plan
  - Project risk analysis
- Application of alternativ working formats for the identification and decision for appropriate engagement measures
  - Systemic board
  - Systemic constellation
  - Reflecting Positions



Relationship towards other Projects: Example

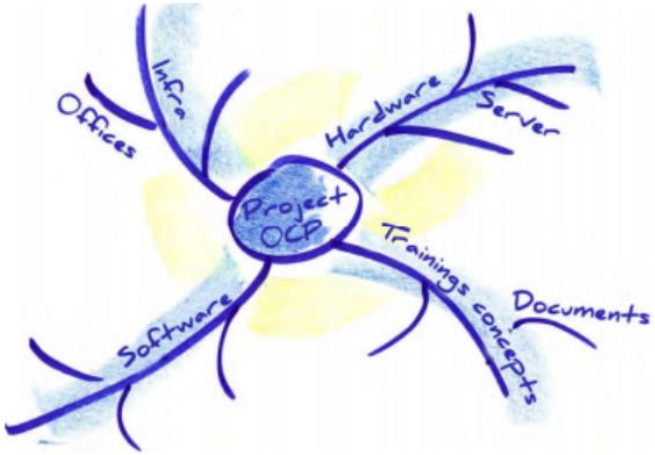
(Gareis/Huemann/Martinuzzi, 2013:180)

2

Project Objects of Consideration & Objectives

Project Objects of Consideration

- „... is a method that structures the material and immaterial objects of consideration (e.g. results, interim results) to be considered and created in a project into their components" (pm baseline, 2009:29)
- Shows all deliverables (final and intermediate)
- Is the basis for the specification of project objectives, the development of work packages, the definition of needed expertises in the project team
- Depiction: As mind map or as list



(pm baseline, 2009:29)

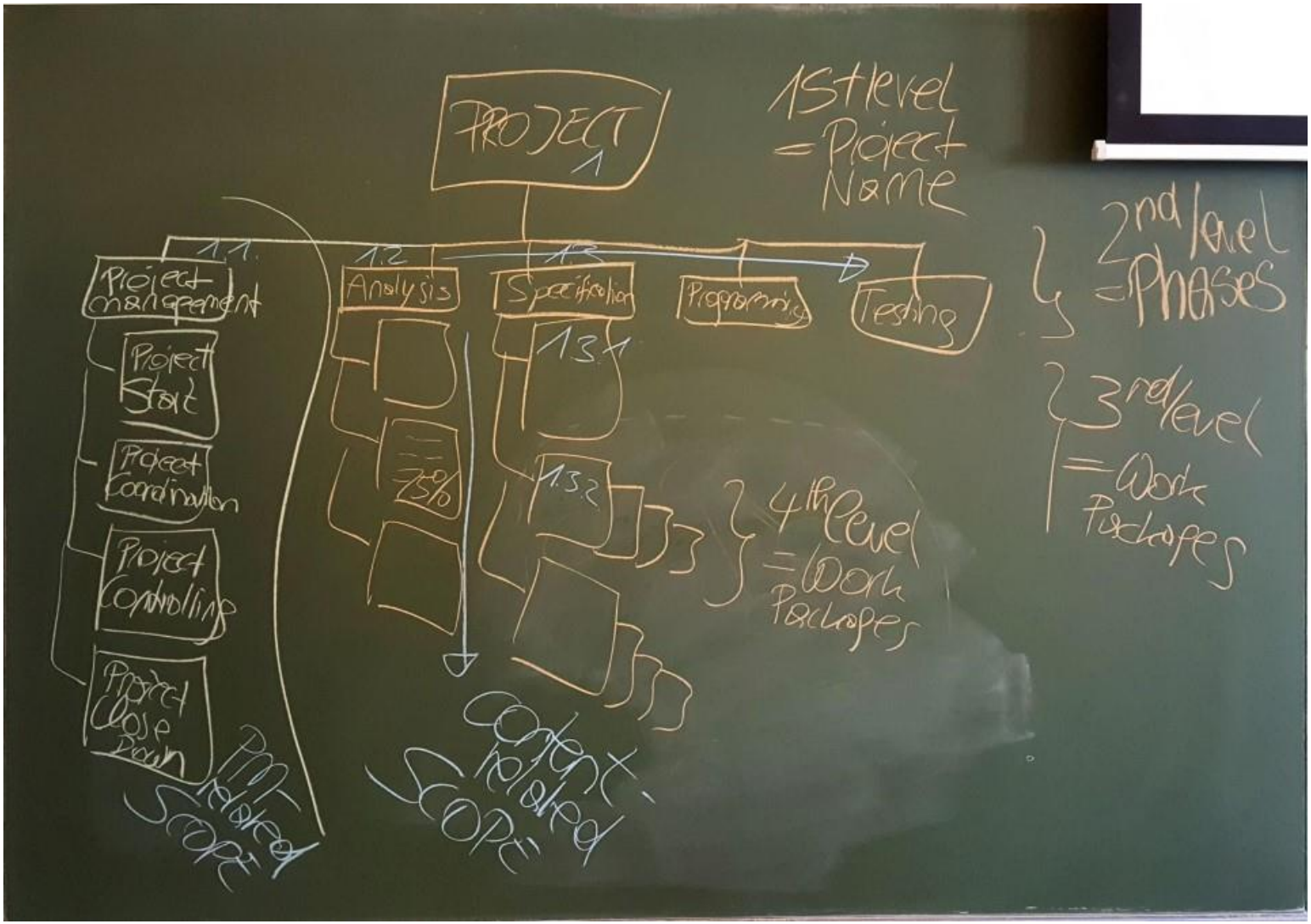
Project Objective Plan

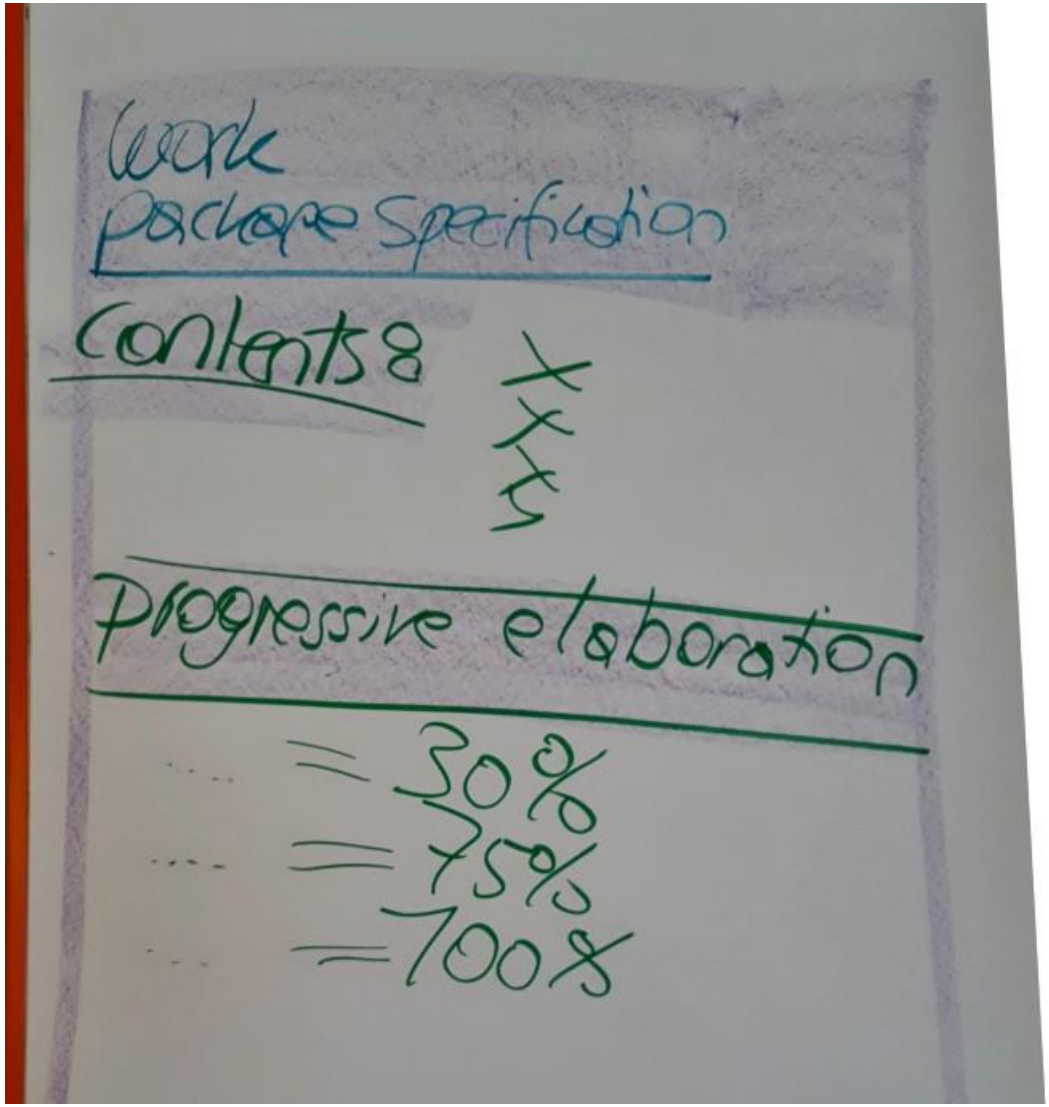
- Project Objectives describe the desired status at the end of the project
- Differentiation into
  - Main objectives: help for measuring the success of a project
  - Additional objectives: additional „nice to have“, as they are made visible they gain more attention
  - Non-objectives: help to clarify expectations
- Differentiation in project objectives and investment / business case objectives
- „SMART“ formulation
  - Helps to define the evaluation of success and create a common understanding
  - Specific, Measurable, Achievable, Realistic, Time-bounded

Project objects of Consideration and Objectives: Best Practice

- The terms used in the objects of consideration plan can be consistently used in all other project plans and supports thus the creation of a common language within the project team
- A common development of the objects of consideration plan and project objectives in the team supports a consistent understanding about the project
- SMART formulated project objectives supports the development and steering of expectations
- Supports a comprehensive look on the project
  - Technical objects, HR aspects, organisational aspects, Marketing ...
  - As Checklist, the identity modell of organisations can be used

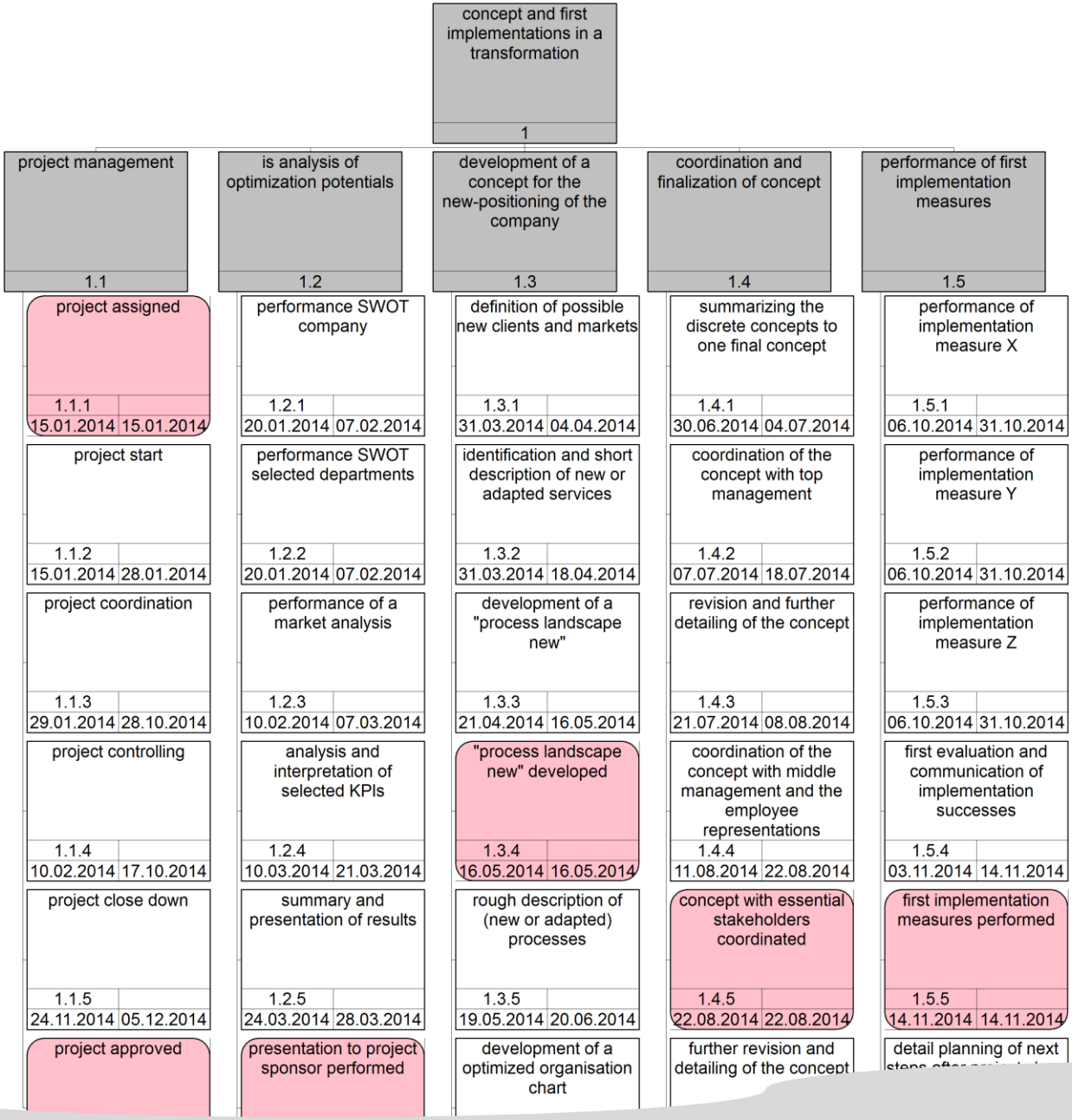
Work Breakdown Structure


PROJECT
1
1st level
= Project
Name
1.1
Project management
1.2
Analysis
1.3
Specification
Programming
Testing
2nd level
= Phases
Project
Start
Project
Coordination
Project
Controlling
Project
Close
Down
1.3.1
75%
1.3.2
3rd level
= Work
Packages
4th level
= Work
Packages
Project
related
SCOPE
content
related
SCOPE

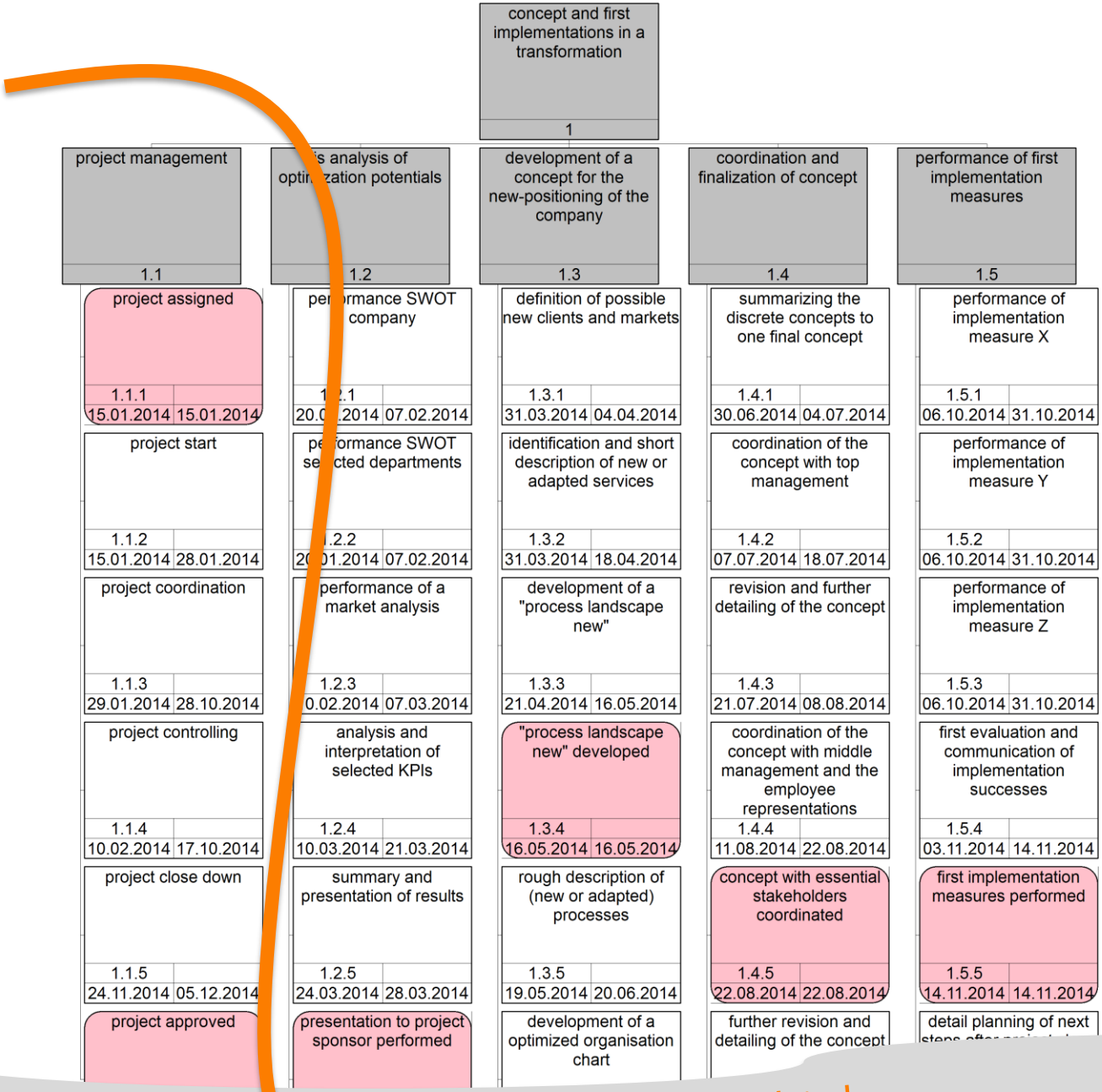

Work
package specification
contents &
progressive elaboration
... = 30%
... = 75%
... = 100%

Project Work Breakdown Structure

- One of the most important communication instruments
- Depicts all activities that have to be performed in a project
  - PM related activities, content related activities
  - Activities by the investor, activities by the supplier
- Is the basis for adequate target agreements in the project start and the evaluation of status quo in the project controlling
  - Basis for the estimation of schedule, resource, costs, and the agreement on responsibilities
  - Possibly further detailing of work packages by breaking down into a next level of work packages or by developing work package specifications
- Depiction
  - “Tree” structure (possibly in a list)
  - Structuring according to phases or deliverables



(example taken from Zuchi, 2014:56)



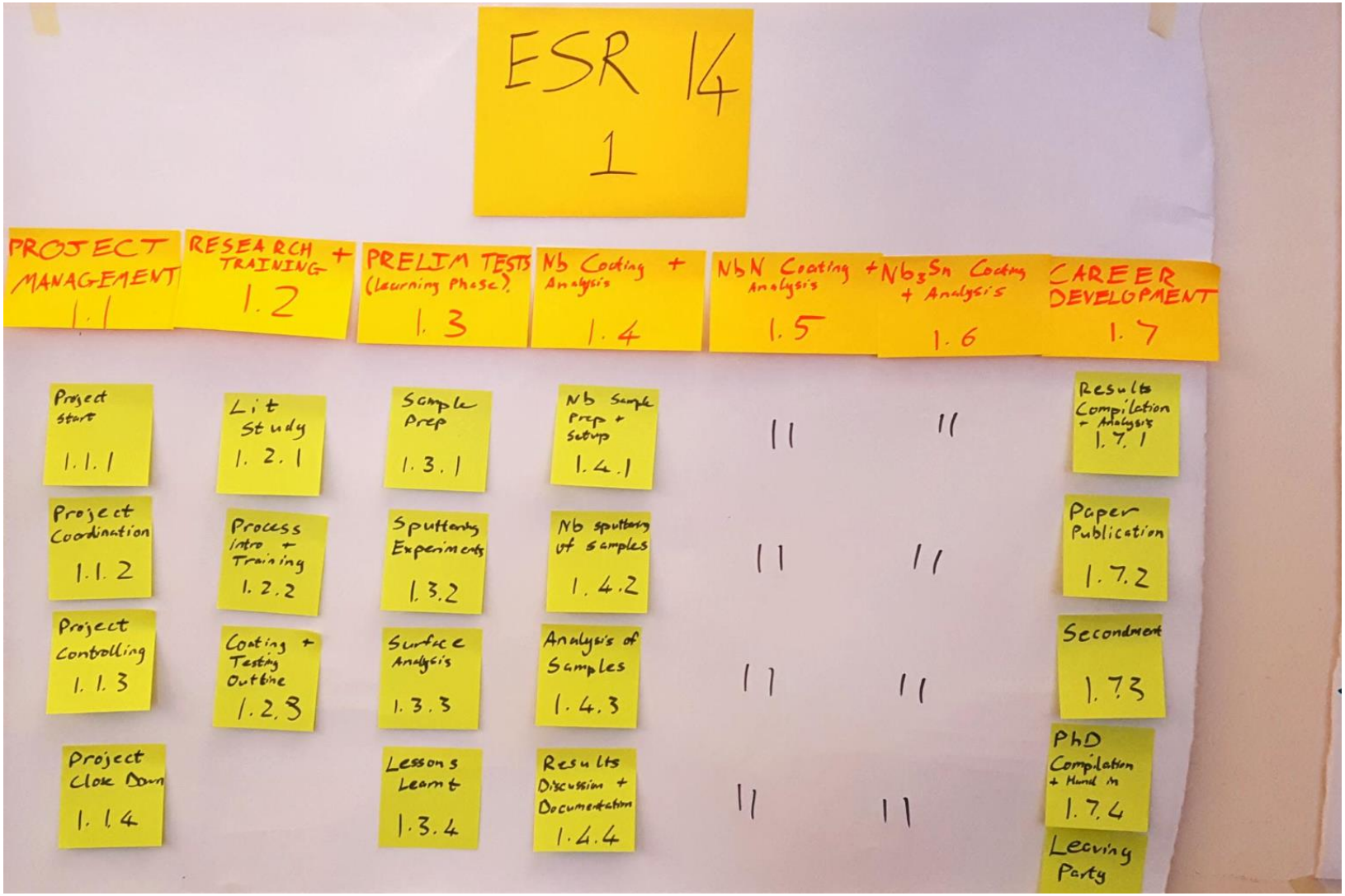
PM related Scope

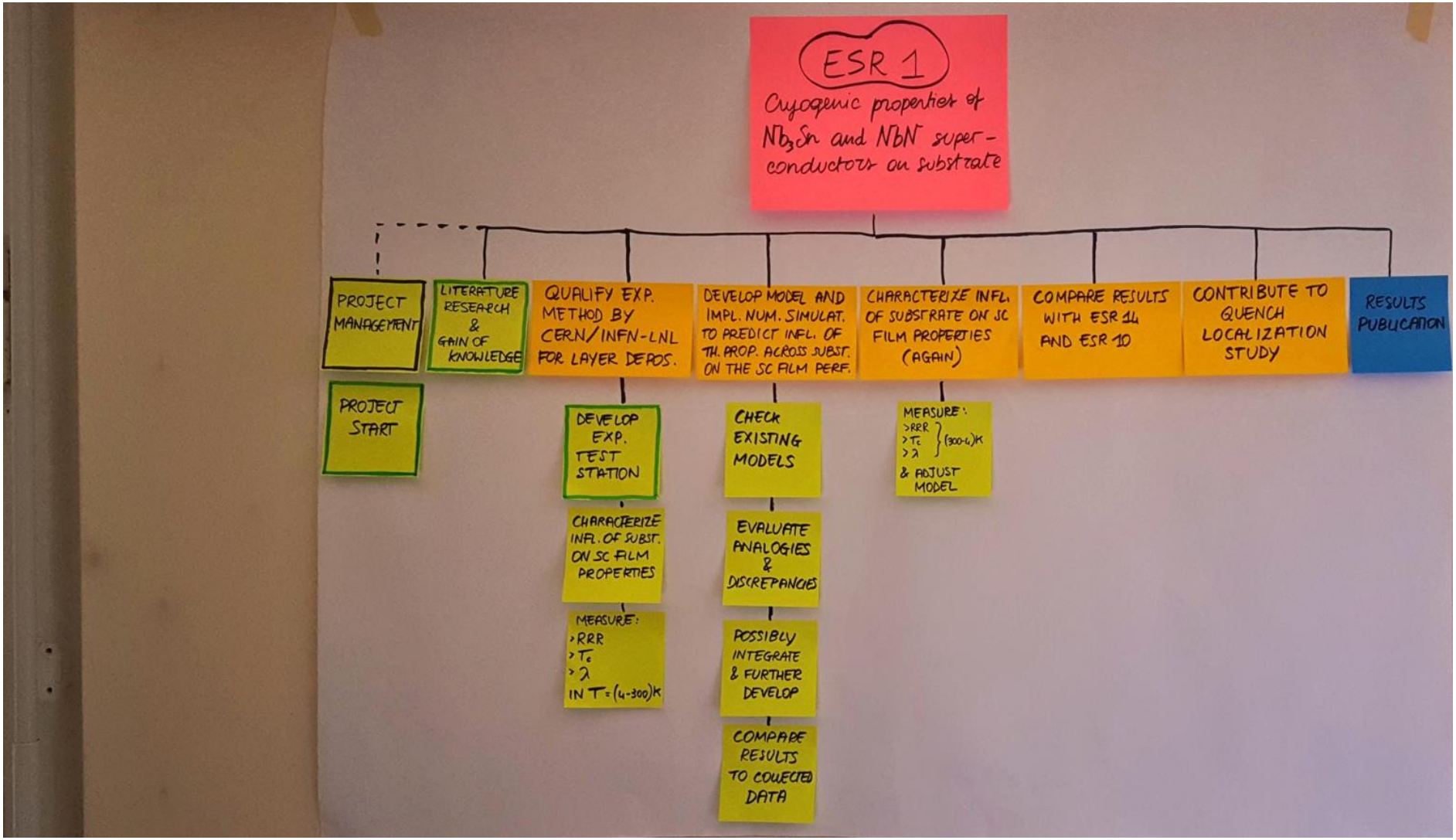
Content related Scope

(example taken from Zuchi, 2014:56)

Project Work Breakdown Structure: Best Practice

- Logical flow – by phases
- Completeness - regarding the project boundaries and context definition
- Visualisation – as main communication instrument
- Understandability – in the formulation of the work packages
- Unambiguousness – by numbering / coding


ESR 14
1
PROJECT MANAGEMENT 1.1
RESEARCH + TRAINING 1.2
PRELIM TESTS (learning phase) 1.3
Nb Coating + Analysis 1.4
NbN Coating + Analysis 1.5
Nb3Sn Coating + Analysis 1.6
CAREER DEVELOPMENT 1.7
Project start 1.1.1
Project Coordination 1.1.2
Project Controlling 1.1.3
Project Close Down 1.1.4
Lit Study 1.2.1
Process intro + Training 1.2.2
Coating + Testing Outline 1.2.3
Sample Prep 1.3.1
Sputtering Experiments 1.3.2
Surface Analysis 1.3.3
Lessons Learnt 1.3.4
Nb Sample Prep + Setup 1.4.1
Nb sputtering of samples 1.4.2
Analysis of Samples 1.4.3
Results Discussion + Documentation 1.4.4
Results Compilation + Analysis 1.7.1
Paper Publication 1.7.2
Secondment 1.7.3
PhD Compilation + Hand in 1.7.4
Leaving Party


ESR 1
Cryogenic properties of Nb_3Sn and NbN superconductors on substrate
PROJECT MANAGEMENT
LITERATURE RESEARCH & GAIN OF KNOWLEDGE
QUALIFY EXP. METHOD BY CERN/INFN-LNL FOR LAYER DEPOS.
DEVELOP MODEL AND IMPL. NUM. SIMULAT. TO PREDICT INFL. OF TH. PROP. ACROSS SUBST. ON THE SC FILM PERF.
CHARACTERIZE INFL. OF SUBSTRATE ON SC FILM PROPERTIES (AGAIN)
COMPARE RESULTS WITH ESR 11 AND ESR 10
CONTRIBUTE TO QUENCH LOCALIZATION STUDY
RESULTS PUBLICATION
PROJECT START
DEVELOP EXP. TEST STATION
CHARACTERIZE INFL. OF SUBST. ON SC FILM PROPERTIES
MEASURE:
> RRR
> T_c
> λ
IN T = (4-300)K
CHECK EXISTING MODELS
EVALUATE ANALOGIES & DISCREPANCIES
POSSIBLY INTEGRATE & FURTHER DEVELOP
COMPARE RESULTS TO COLLECTED DATA
MEASURE:
> RRR
> T_c
> λ
(300-4)K
& ADJUST MODEL


Project Management
07
Project start
Project Coordination
Project controlling
Project closing down
Intro. Knowledge transfer
6
EASitrain march school
1 month
Learning phase, reading
2 month
Skill building
2 month
Finishing (reserve time)
1 month
Secondments at research Institutes
10
Vienna School, FCC week
1 month
Film Produkt sec. (Franz)
3 months
Cav. Produkt sec. (Germ)
4 months
Coating (CERN)
2 months
Measurements & research
7
Sample 1. measurement
1 month
Modernisation of the resonator
3 months
Sample 2. measurement
1 month
Sample 3 measurement
1 month
Sample 4 measurement
1 month
Data evaluation and Publication
7
Data evaluation of sample 1
1 month
Publication of previous data
1 month
Publication of modernisation of resonator
1 month
Data eval. of sample 2 to 4
3 months
Publication of results sample 2-4
1 month
Writing a Phd Thesis
8
Writing PhD thesis Phase 1
3 months
Writing PhD thesis Phase 2
3 months
Correction and thesis defense
2 months


Strategies
BC - Objective
- Valorisation of technological innovation
SR 5
GENERAL PUBLIC
PROJECT STAKEHOLDERS
OTHER
* EU
ESR 5
PHD PROJECT
IMPACT
low
medium
high
DEFINITION RESEARCH Question
LITERATURE REVIEW
FINDING NICHE/ CONTRIBUTION
DEVELOP MODEL/ CONCEPT
DATA COLLECTION
CHOOSING METHODOLOGY
SPECIFY SAMPLES/ SAMPLING METHODS
CONDUCTING OF EXPERIMENTS/ METHODS
ANALYSIS
ANALYSING DATA
DEDUCING FINDINGS
COMPARE RESULTS WITH EXISTING LITERATURE
DISCUSSION OF RESULTS
CONFIRMATION OF RESEARCH QUESTION
LIMITATIONS
DISCUSSING FURTHER RESEARCH SUGGESTIONS
PROJECT MANAGEMENT
PROJECT START
PROJECT COORDINATION
PROJECT CONTROLLING
PROJECT CLOSE DOWN


BC OBJECTIVES
> PhD thesis
→ ACADEMIC CAREER
→ WORK IN COMPANIES
→ EXPERT IN SC
→ OUTREACH
> ACHIEVEMENT OF ESR1
→ IN-COMMUNITY
→ FCC
→ FUTURE CAREER @ CERN
> PERSONAL DEVELOPMENT
IDENTIFICATION OF SCIENTIFIC ISSUES
EXPERIMENTAL WORK & MODELLING
VALIDATION & IMPLEMENTATION
PUBLICATION OF RESULTS
HIGH
MEDIUM
ESR1
CERN
MSCA
HZB
TUWIEN
INTEREST
CRYOLAB
> weekly meetings w/ reports
> deep geodesics
> team-building activities
MSCA
> regular status reports
> trainings


Advanced surface coating techniques for superconducting radiofrequency cavities
2018
PREPARATION OF SAMPLES
SPUTTERING PROCESS
ANALYSIS
LOOP "X"
COMPARISON
Cavities
Water rinsing
Mechanical Polishing
Electro-chemical Polishing
Collaboration with ESR-09 Jean Francois
Quartz
Cleaning
Mounting of each sample
Sputtering process
Optimization of the parameters
Improvement on chamber heating system
Try different materials
Cavities
RF Measurements
Use of cryostat
Q. Measurement
Collaboration with ESR-09 Dmitry
Quartz
SEM Analysis
Collaboration with ESR-09 Dorothea
RRR Measurements
thickness measurements using profilometer
XRD Analysis
Interpretation
Preparation of a sample
Sputtering process
Analysis
Interpretation
between the samples of different bays
of results obtained by ESR1 & ESR8
(STORMING)
(Tuckman)

! enable change

Dr. Dagmar Zuchi

literature

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- Gareis R. & Gareis L., Projekt Programm Change, Manz Verlag, 2017
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- IPMA Competence Baseline, Version 4.0
- PROJEKT MANAGEMENT AUSTRIA, pm baseline, Version 3.0, August 2008
- Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017
- The Report of the World Commission on Environment and Development, Our Common Future, 1987
- Zuchi, Prozessmodell ISO 21500 in *Basiswissen Projektmanagement – Prozesse und Vorgehensmodelle*, Symposion Publishing, 2014

Annex 1:
PMI® Project Management Body of Knowledge

What is a Project?

- **Project** – A project is a temporary endeavor undertaken to create a unique product, service, or result

- **Program** – A program is a group of related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.
- **Portfolio** – A portfolio is a collection of projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives.

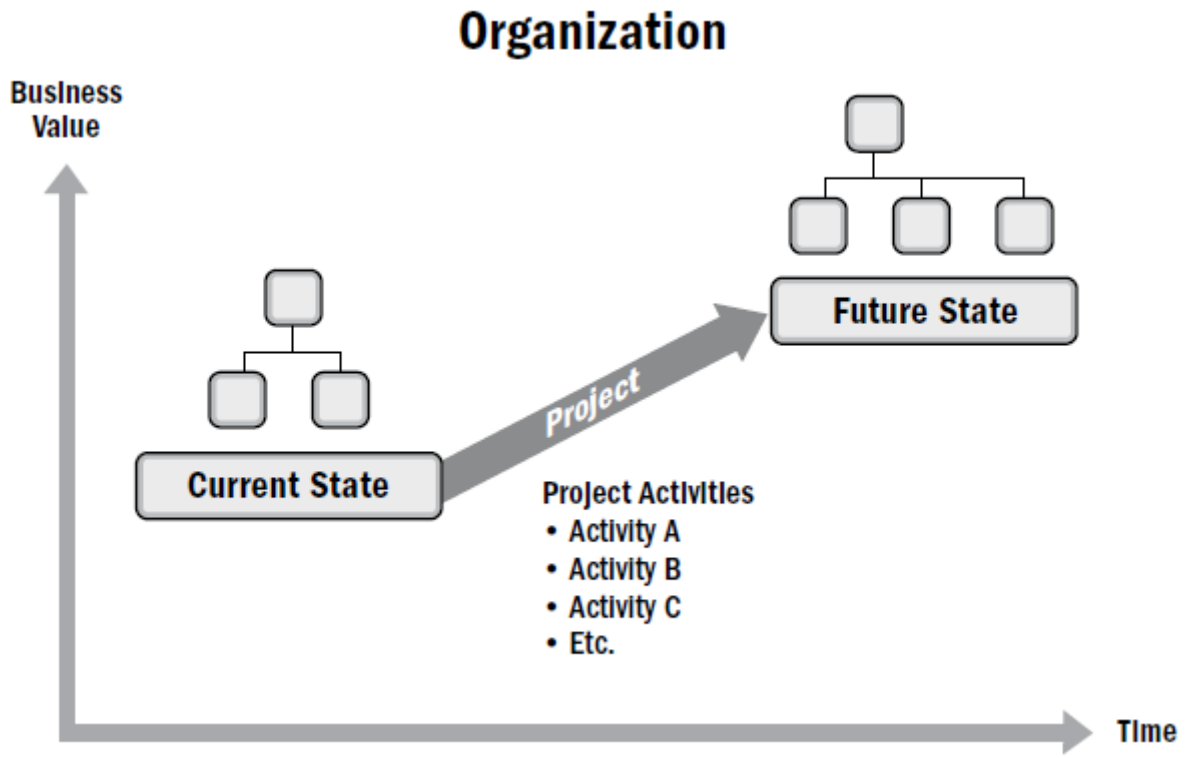
Definitions taken from Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Page 13

Project: Foundational Elements

(Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Page 4-7)

- **Unique Product, Service, or Result**
  - … although repetitive elements may be present in some project deliverables)
  - A service or a capability to perform a service, such as business functions supporting production or distribution
  - A result such as outcomes or documents (e.g. research project develops knowledge)
  - A unique combination of one or more products, services, or results (e.g. a software application, its associated documentation, and help desk services)
- **Temporary endeavor**
  - Definite beginning and definite end
  - (… does not necessarily mean short in duration)
- **Projects drive change**

Projects drive change



Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-1, Page 6

Project: Foundational Elements

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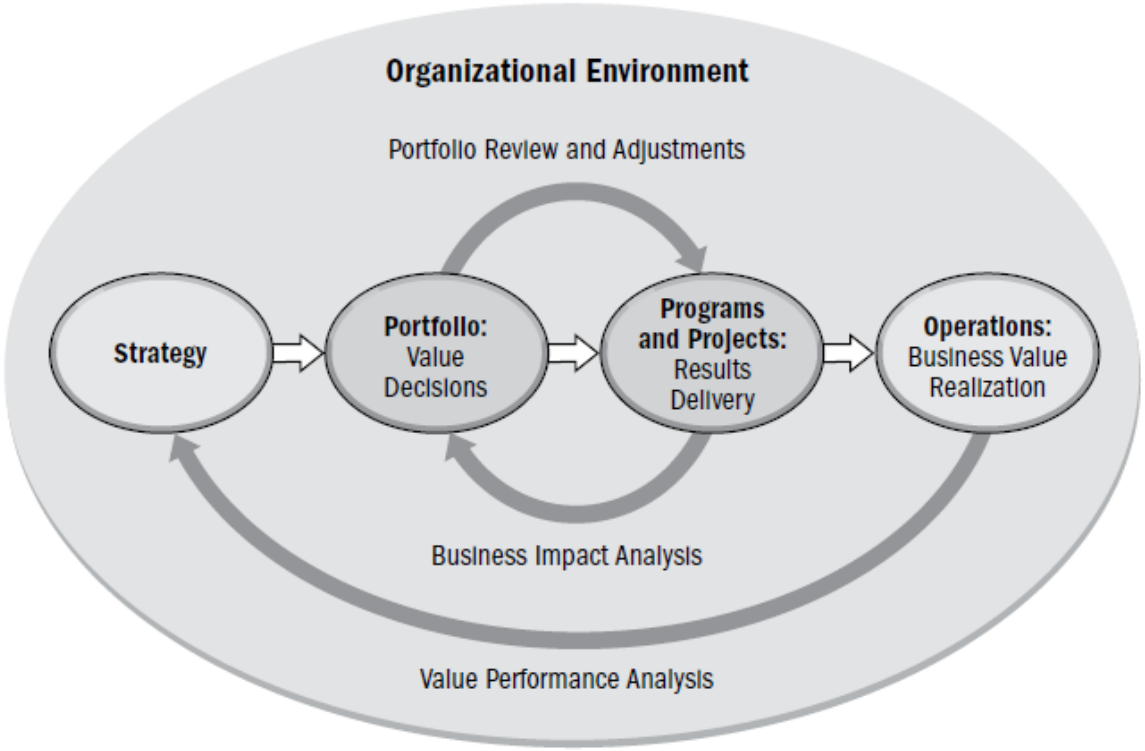
  - A unique combination of one or more products, services, or results (e.g. a software application, its associated documentation, and help desk services)
- Temporary endeavor
  - Definite beginning and definite end
  - (… does not necessarily mean short in duration)
- Projects drive change
- Projects enable business value creation

Organizational Project Management (OPM)



Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-4, Page 17

Project: Foundational Elements

(Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Page 4-7)

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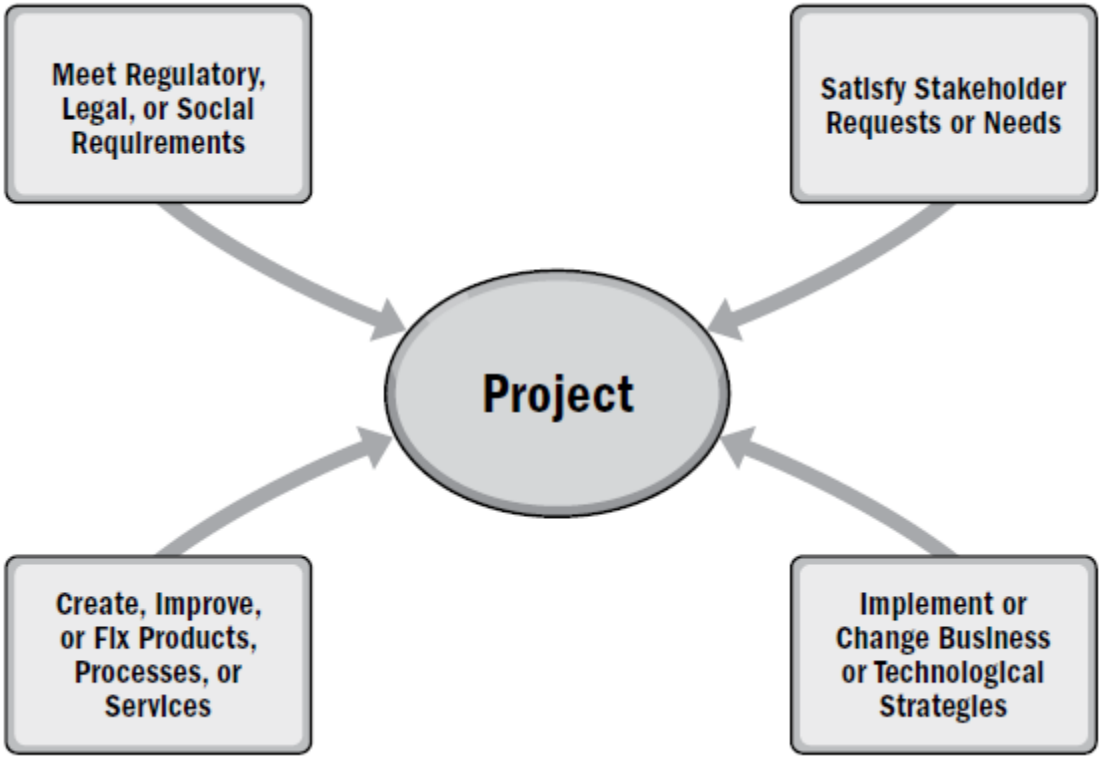
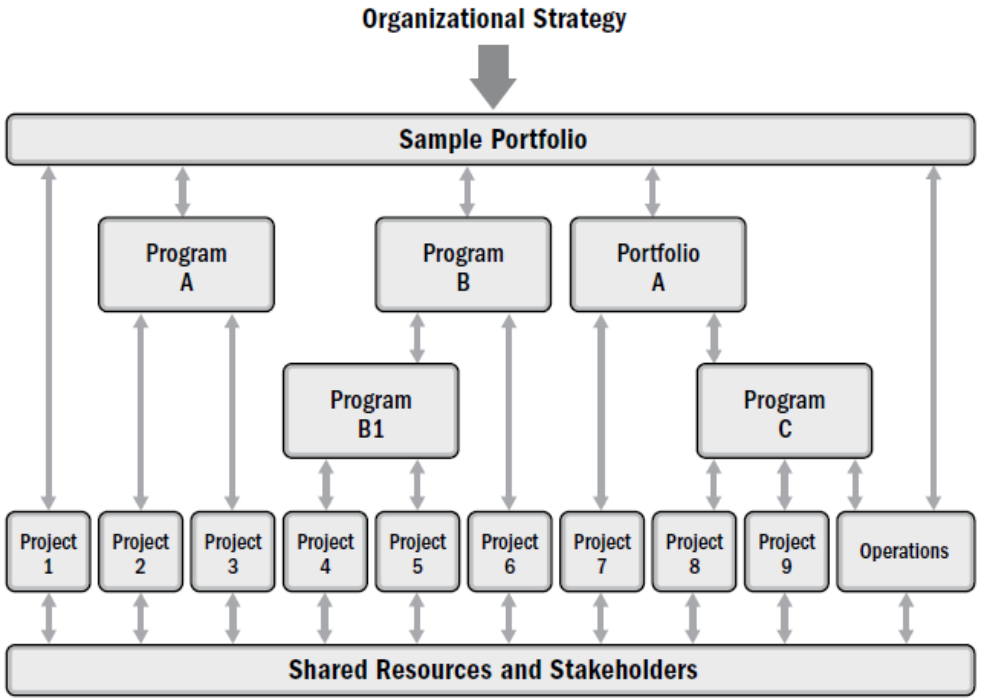
  - … although repetitive elements may be present in some project deliverables)
  - A service or a capability to perform a service, such as business functions supporting production or distribution
  - A result such as outcomes or documents (e.g. research project develops knowledge)
  - A unique combination of one or more products, services, or results (e.g. a software application, its associated documentation, and help desk services)
- Temporary endeavor
  - Definite beginning and definite end
  - (… does not necessarily mean short in duration)
- Projects drive change
- Projects enable business value creation
- Project Initiation Context

Project Initiation Context



Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-2, Page 8

Project, Program & Portfolio



„Program and project management focus on doing programs and projects the „right" way; and portfolio management focuses on doing the „right" programs and projects."

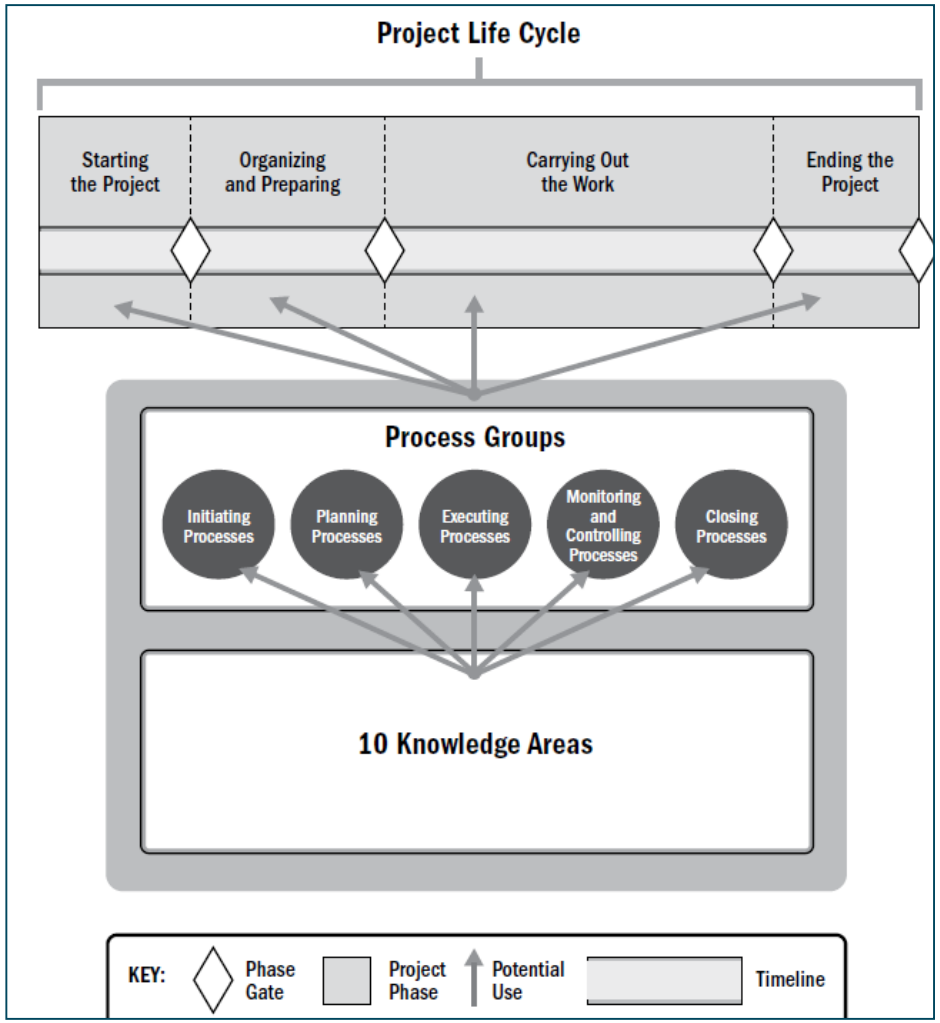
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-3, Page 12

Project Management Processes

- Project Management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.
- Project Management is accomplished through the appropriate application and integration of logically grouped project management processes (in total: 49).
- The PMBOK Guide groups the processes into the following five categories (=Process Groups): Initiating, Planning, Executing, Monitoring & Controlling and Closing.
- In addition to the Process Groups, processes are also categorized by Knowledge Areas, such as Scope Management, Schedule Management.

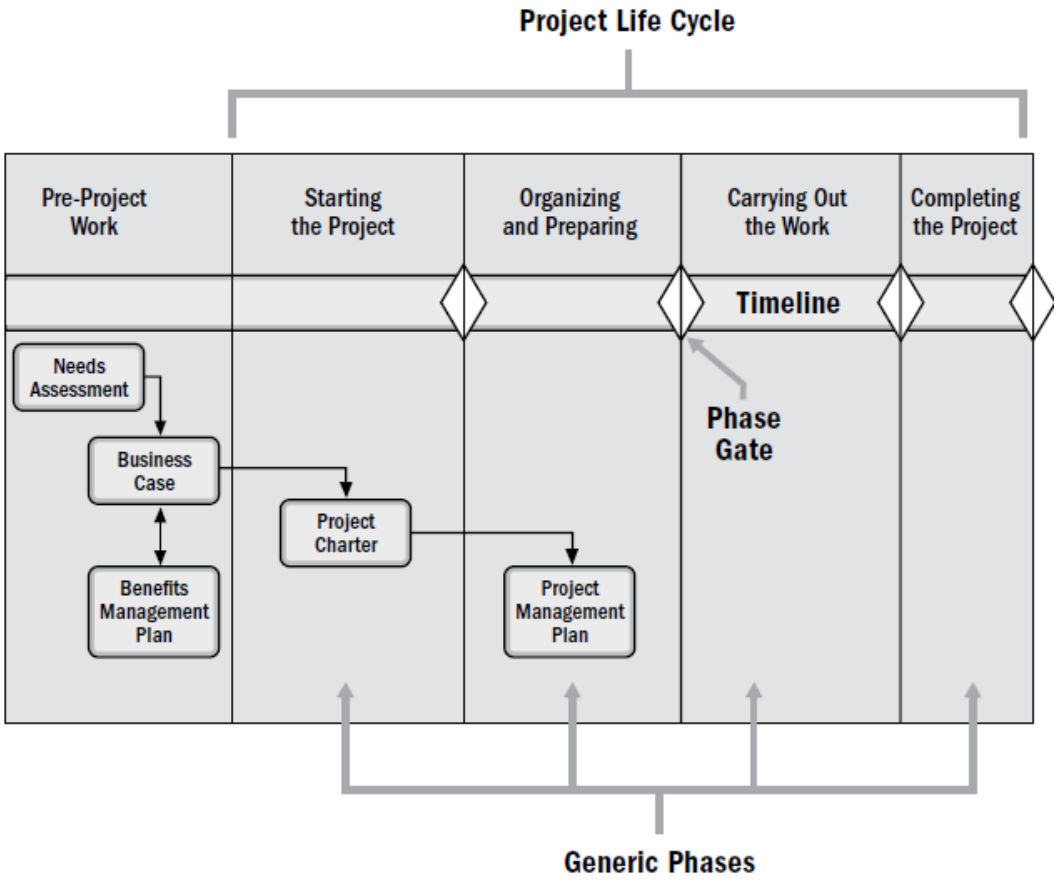
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Glossary/Definitions & Page 22

Project, Program & Portfolio



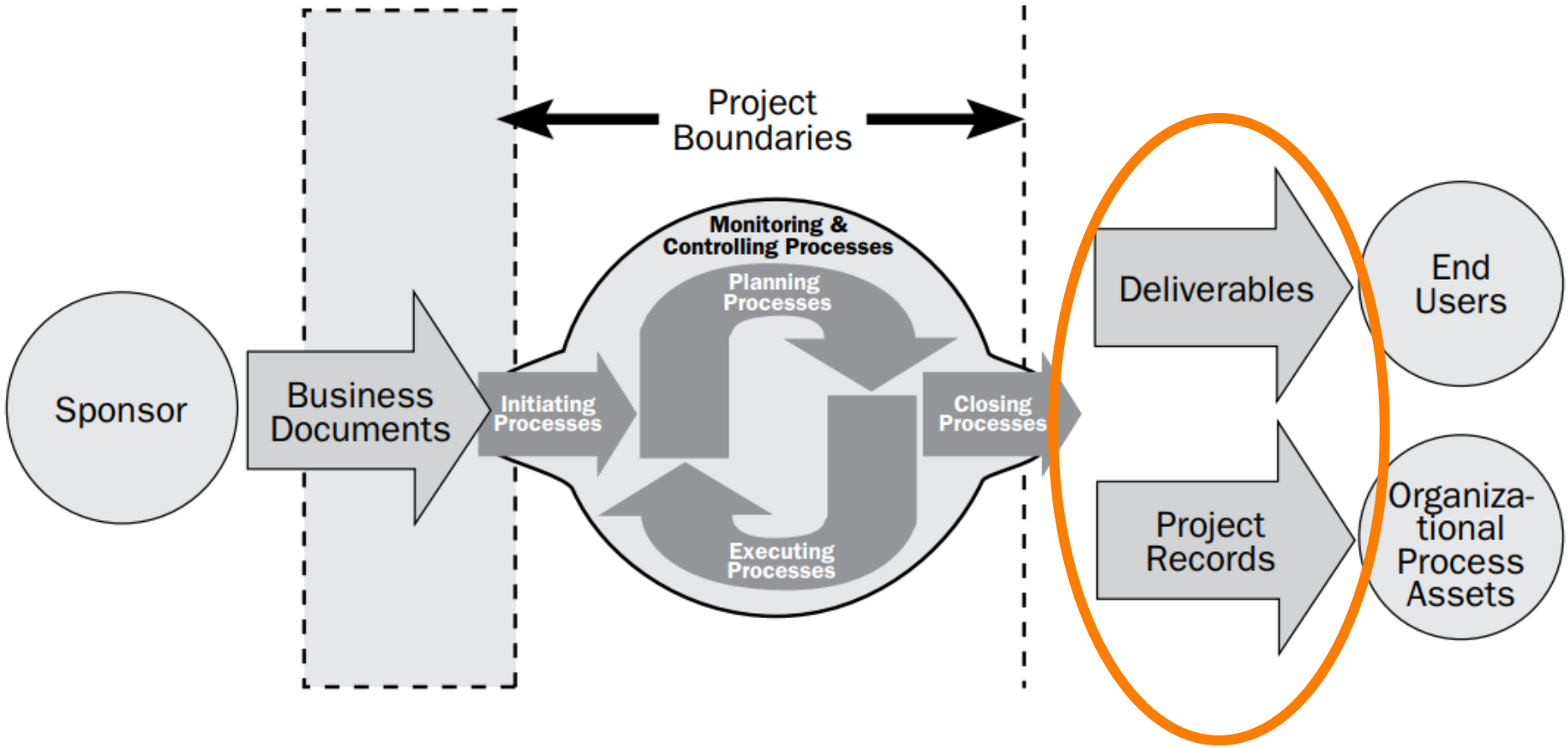
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-5, Page 18

Project Life Cycle



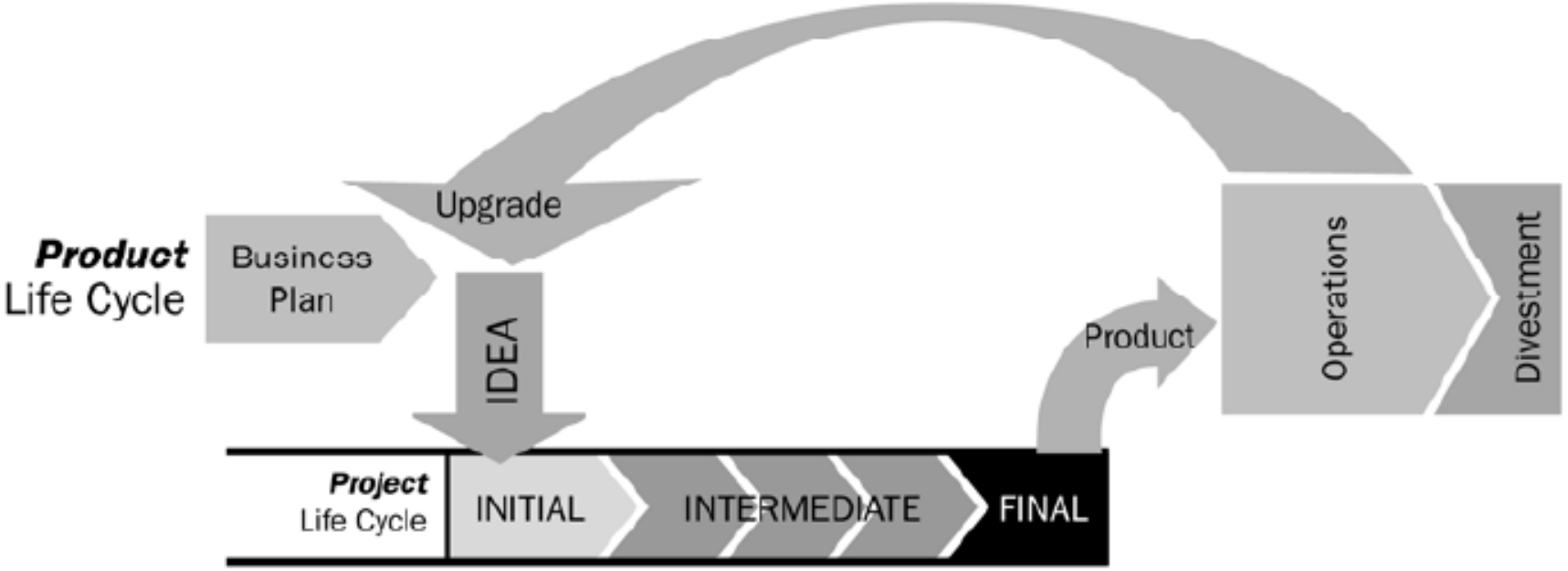
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Figure 1-5, Page 30

PMI: Project Boundaries



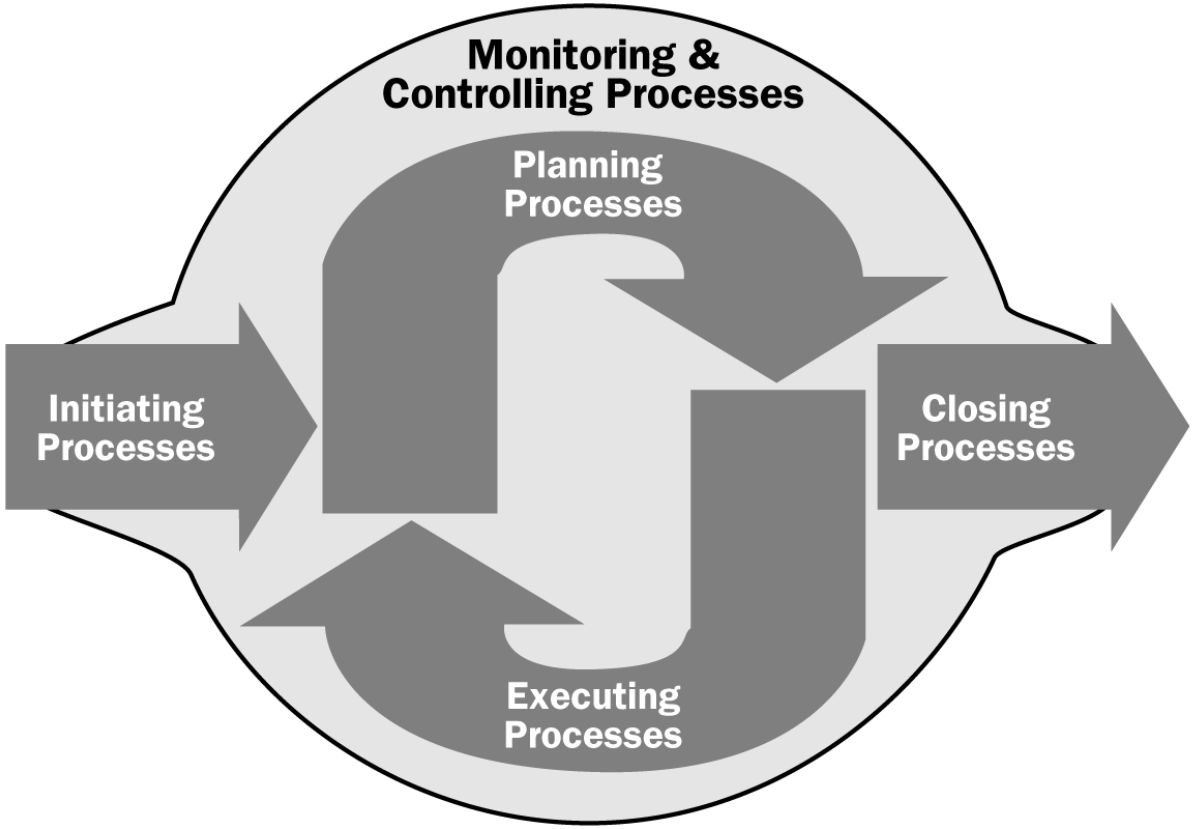
Project Management Institute, A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Sixth Edition, Inc., 2017: Part 2 - The Standard for Project Management – Figure 2-1, Page 562

Product Life Cycle and Project Life Cycle



Project Management Institute, A Guide to the Project Management Body of Knowledge, (*PMBOK*® Guide) – Fourth Edition, Project Management Institute, Inc., 2008, Figure 2-6, Page 24

Process Groups in a Project



Project Management Institute, A Guide to the Project Management Body of Knowledge, (*PMBOK*® Guide) – Fifth Edition, Project Management Institute, Inc., 2013, Figure 3-1, Page 50

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	Planning Process Group	Executing Process Group	Monitoring & Controlling Process Group	Closing Process Group
Project Integration Management	○ Develop Project Charter	○ Develop Project Management Plan	○ Direct and Manage Project Work ○ Manage Project Knowledge	○ Monitor and Control Project Work ○ Perform Integrated Change Control	○ Close Project or Phase
Project Scope Management		○ Plan Scope Management ○ Collect Requirements ○ Define Scope ○ Create WBS		○ Validate Scope ○ Control Scope	
Project Schedule Management		○ Plan Schedule Management ○ Define Activities ○ Sequence Activities ○ Estimate Activity Durations ○ Develop Schedule		○ Control Schedule	
Project Cost Management		○ Plan Cost Management ○ Estimate Costs ○ Determine Budget		○ Control Costs	
Project Quality Management		○ Plan Quality Management	○ Manage Quality	○ Control Quality	
Project Resources Management		○ Plan Resource Management ○ Estimate Activity Resources	○ Acquire Resources ○ Develop Team ○ Manage Team	○ Control Resources	
Project Communications Management		○ Plan Communications Management	○ Manage Communications	○ Monitor Communications	
Project Risk Management		○ Plan Risk Management ○ Identify Risks ○ Perform Qualitative Risk Analysis ○ Perform Quantitative Risk Analysis ○ Plan Risk Responses	○ Implement Risk Responses	○ Monitor Risks	
Project Procurement Management		○ Plan Procurement Management	○ Conduct Procurements	○ Control Procurements	
Project Stakeholder Management	○ Identify Stakeholders	○ Plan Stakeholder Management	○ Manage Stakeholder Engagement	○ Monitor Stakeholder Engagement	

Annex 2: ISO 21500 Guidance on project management

Point of Departure for ISO 21500

- A lot of existing national and international standards, such as (not limited to)
  - DIN 69 901 (Projektmanagement; Projektmanagementsysteme)
  - BS 6079 (Project Management)
  - GA X 50 – 118 (Management des Projets)
  - ISO 10 006 (Quality in Project Management)
  - ANSI/PMI 99-001 PMBoK
  - ....
- But no globally accepted harmonisation of project management

- Spring 2007: Initiative from UK and US
- Fall 2007: 1st plenary meeting of ISO PC236
- Spring 2008 – January 2012: 2nd – 6th plenary meetings

Status

- ISO 21500 is published as guiding standard in Fall 2012
  (and not normative standard, as consequence not basis for certification)
- ISO 21500 was developed by more than 100 experts, from more than 30 countries
- ISO 21500 is published as Austrian ÖNORM (as a 1:1 translation into German)

Paris

Status (2)

- 2011 establishment of the Technical Committee
  TC 258 Project, programme and portfolio management

- Objective: to further develop standards connected with project management
- Published: Project Portfolio Management, Governance on projects, programmes and project portfolios & Programme Management
- In development: Competencies, WBS, EVM.... Update of ISO 21500

ISO 21500 Contents

- Clause 1 Scope
- Clause 2 Terms and definitions
- Clause 3 Project management concepts
- Clause 4 Project management processes
- Annex A (informative) Process group processes mapped to subject groups

ISO 21500 Project Definition

3.2 Project

A project consists of a unique set of processes consisting of coordinated and controlled activities with start and end dates, performed to achieve project objectives. Achievement of the project objectives requires the provision of deliverables conforming to specific requirements. A project may be subject to multiple constraints, as described in 3.11.

Although many projects may be similar, each project is unique. Project differences may occur in the following:

— deliverables provided;

— stakeholders influencing;

— resources used;

— constraints;

— the way processes are tailored to provide the deliverables.

Every project has a definite start and end, and is usually divided into phases, as described in 3.10. The project starts and ends as described in 4.3.1.

Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 3

ISO 21500
Project management concepts

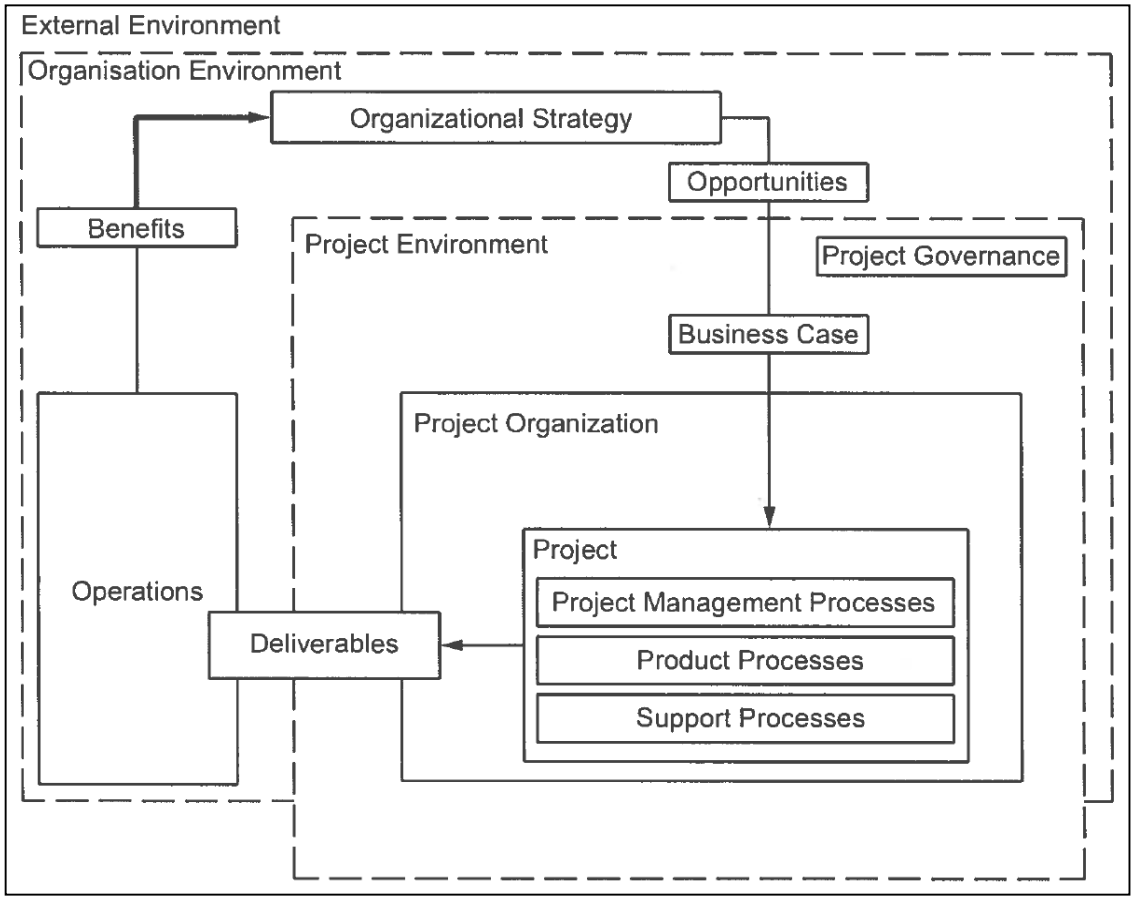


Figure: Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 3

ISO 21500 Project stakeholders

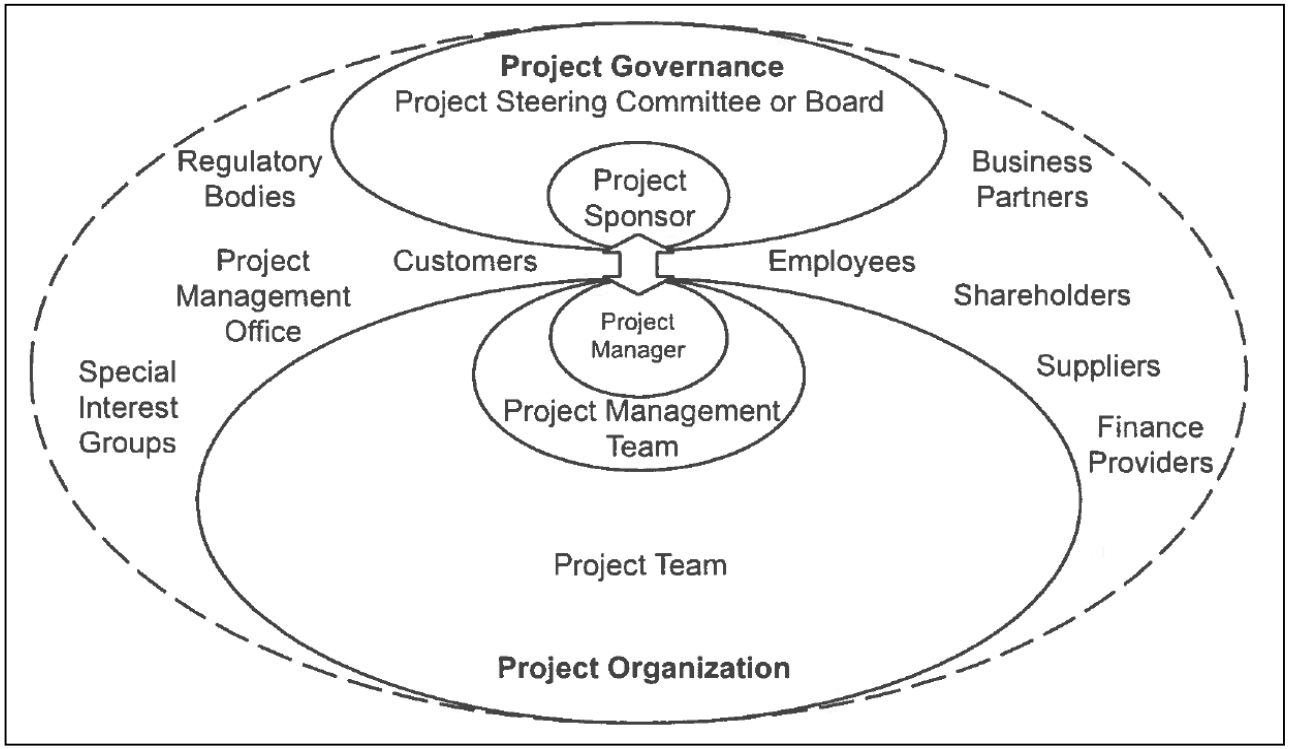


Figure: Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 7

ISO 21500 Project Organisation

The project organization is the temporary structure that includes project roles, responsibilities and levels of authority and boundaries that need to be defined and communicated to all stakeholders of the project. The project organization may be dependent on legal, commercial, interdepartmental or other arrangements that exist among project stakeholders.

The project organization may include the following roles and responsibilities:

a) the project manager, who leads and manages project activities and is accountable for project completion;

b) the project management team, which supports the project manager in leading and managing the project activities;

c) the project team, which performs project activities.

Project governance may involve the following:

— the project sponsor, who authorizes the project, makes executive decisions and solves problems and conflicts beyond the project manager's authority;

— the project steering committee or board, which contributes to the project by providing senior level guidance to the project.

Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 6-7

ISO 21500
Competencies of project personnel

- “Project management competencies can be categorized into, but are not limited to, the following:
  - **technical** competencies, for delivering projects in a structured way, including the project management terminology, concepts and processes defined in this International standard.
  - **behavioural** competencies, associated with personal relationships inside the defined boundaries of the project.
  - **contextual** competencies, related to the management of the project inside the organizational and external environment. “

Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 7-8

ISO 21500 Project Management

3.3 Project management

Project management is the application of methods, tools, techniques and competencies to a project. Project management includes the integration of the various phases of the project life cycle, as described in 3.10.

Project management is performed through processes. The processes selected for performing a project should be aligned in a systemic view. Each phase of the project life cycle should have specific deliverables. These deliverables should be regularly reviewed during the project to meet the requirements of the sponsor, customers and other stakeholders.

Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 4

Project management processes

Table 1 — Project management processes cross-referenced to process and subject groups

Subject groups	Process groups				
	Initiating	Planning	Implementing	Controlling	Closing
Integration	4.3.2 Develop project charter	4.3.3 Develop project plans	4.3.4 Direct project work	4.3.5 Control project work 4.3.6 Control changes	4.3.7 Close project phase or project 4.3.8 Collect lessons learned
Stakeholder	4.3.9 Identify stakeholders		4.3.10 Manage stakeholders		
Scope		4.3.11 Define scope 4.3.12 Create work breakdown structure 4.3.13 Define activities		4.3.14 Control scope	
Resource	4.3.15 Establish project team	4.3.16 Estimate resources 4.3.17 Define project organization	4.3.18 Develop project team	4.3.19 Control resources 4.3.20 Manage project team	
Time		4.3.21 Sequence activities 4.3.22 Estimate activity durations 4.3.23 Develop schedule		4.3.24 Control schedule	
Cost		4.3.25 Estimate costs 4.3.26 Develop budget		4.3.27 Control costs	
Risk		4.3.28 Identify risks 4.3.29 Assess risks	4.3.30 Treat risks	4.3.31 Control risks	
Quality		4.3.32 Plan quality	4.3.33 Perform quality assurance	4.3.34 Perform quality control	
Procurement		4.3.35 Plan procurements	4.3.36 Select suppliers	4.3.37 Administer procurements	
Communication		4.3.38 Plan communications	4.3.39 Distribute information	4.3.40 Manage communications	

NOTE The purpose of this table is not to specify a chronological order for carrying out the activities. Its purpose is to map subject groups and process groups.

Figure: Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 10

ISO 21500 Project management processes

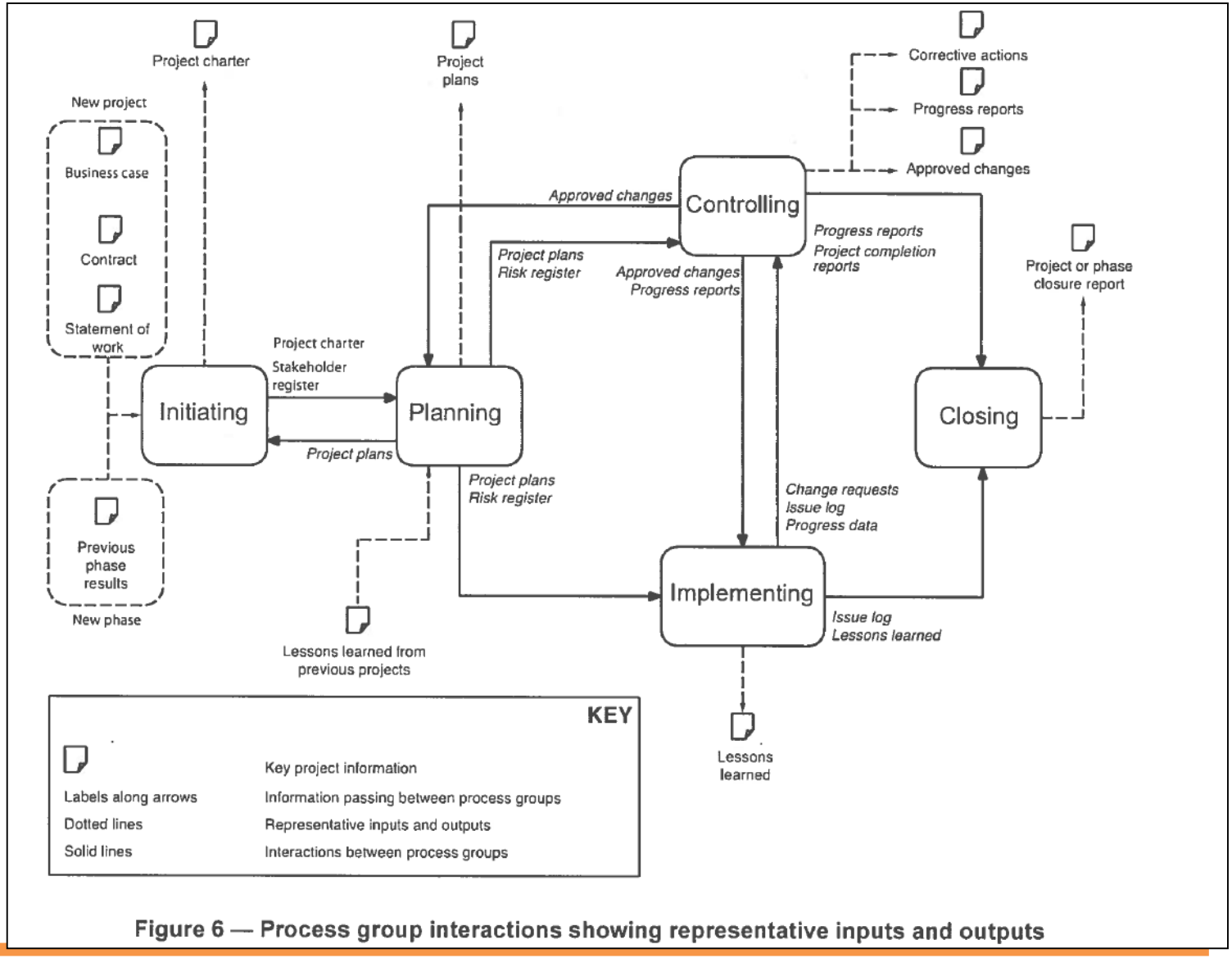


Figure 6 — Process group interactions showing representative inputs and outputs

Figure: Guidance on project management (ISO 21500:2012 (E), first edition 2012-09-01), page 12

Annex 3: Managing Successful Projects with PRINCE2

What is a Project?

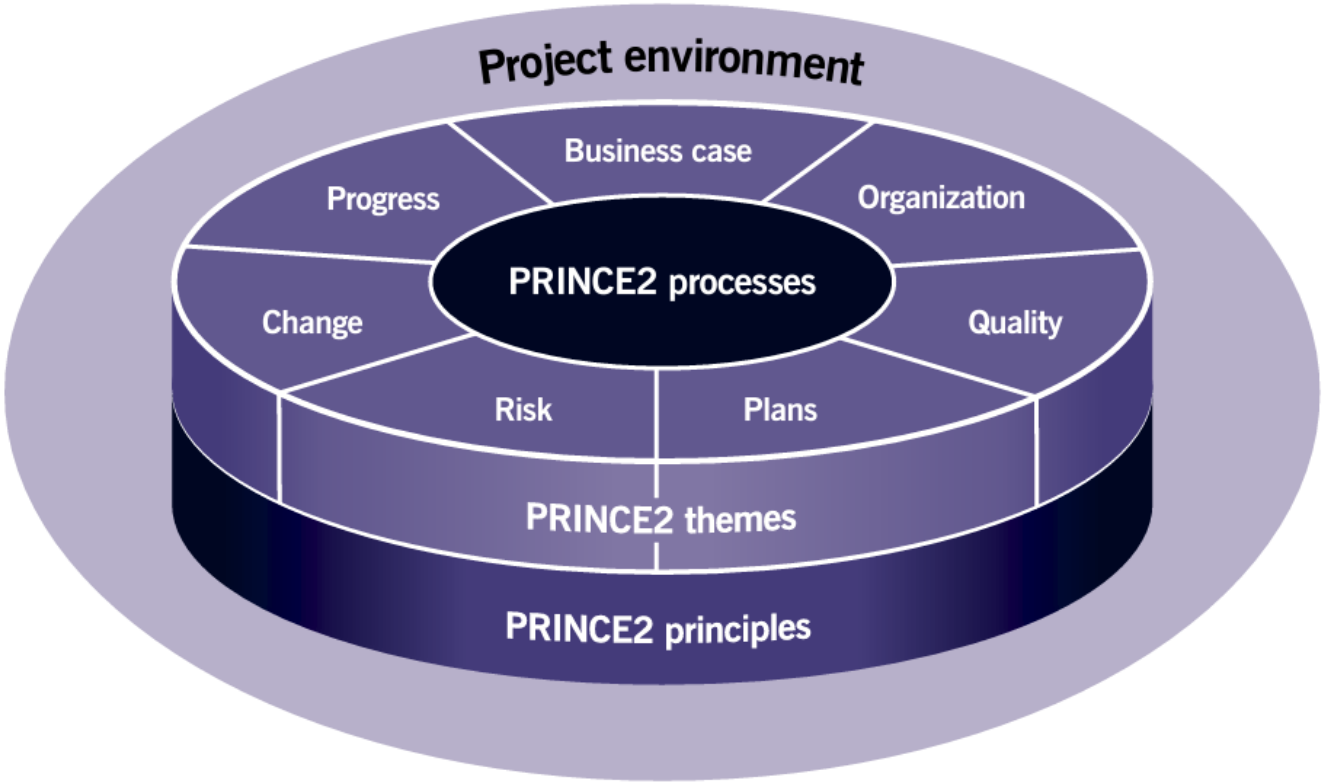
- „A temporary organization that is created for the purpose of delivering one or more business products according to an agreed Business Case."
  *(*PRINCE2, Axelos 2017, p. 8*)*

- *"Project management is the planning, delegating, monitoring and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risk."*
  (PRINCE2, Axelos 2017, p. 9)

Project Characteristics

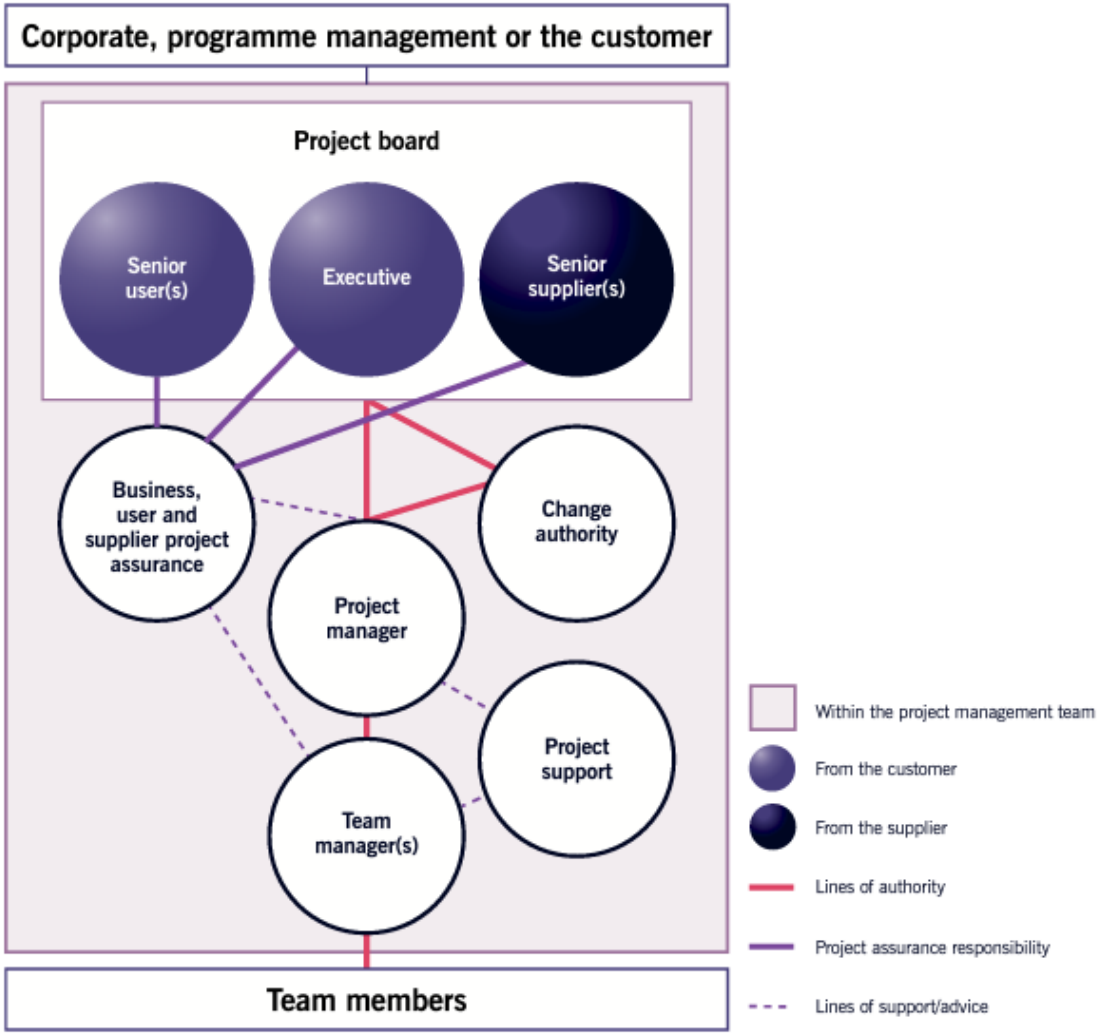
- Change
  - (“Projects are the means by which we introduce change”)
- Temporary
- Cross-functional
- Unique
- Uncertainty

The structure of PRINCE2



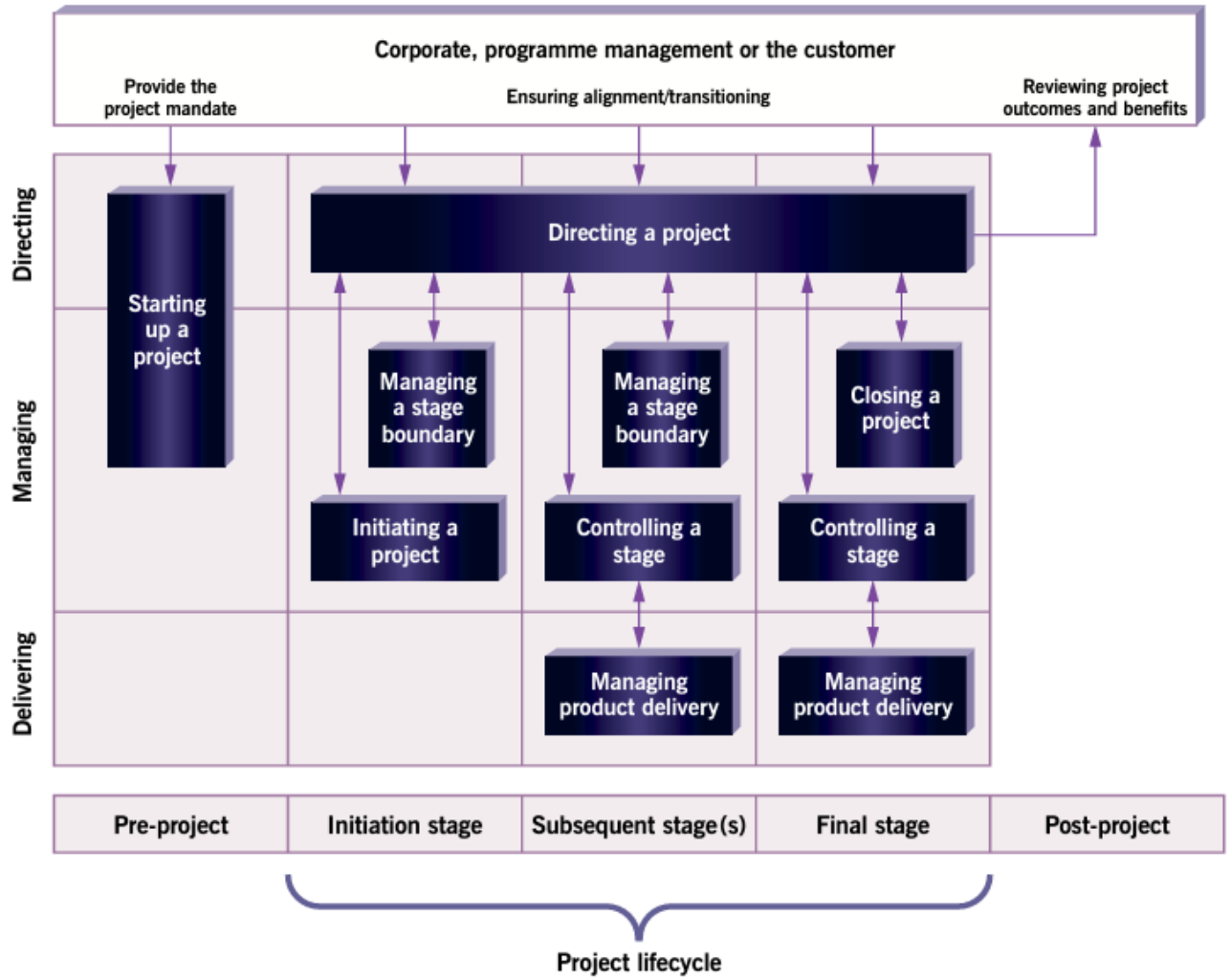
(PRINCE2, Axelos 2017, p. 3)

PRINCE2: Project Organisation



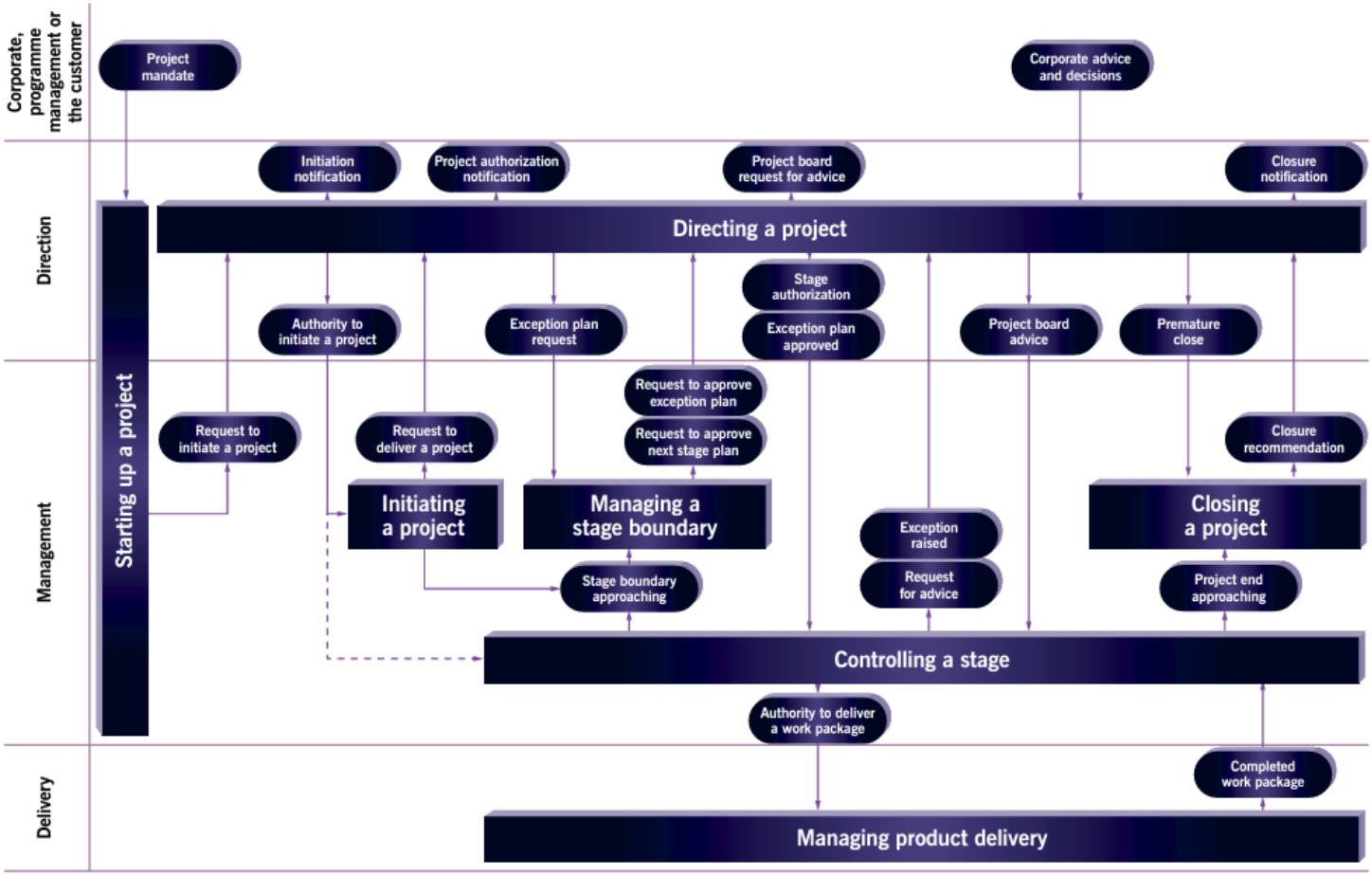
PRINCE2: Processes

(PRINCE2, Axelos 2017, p. 158)



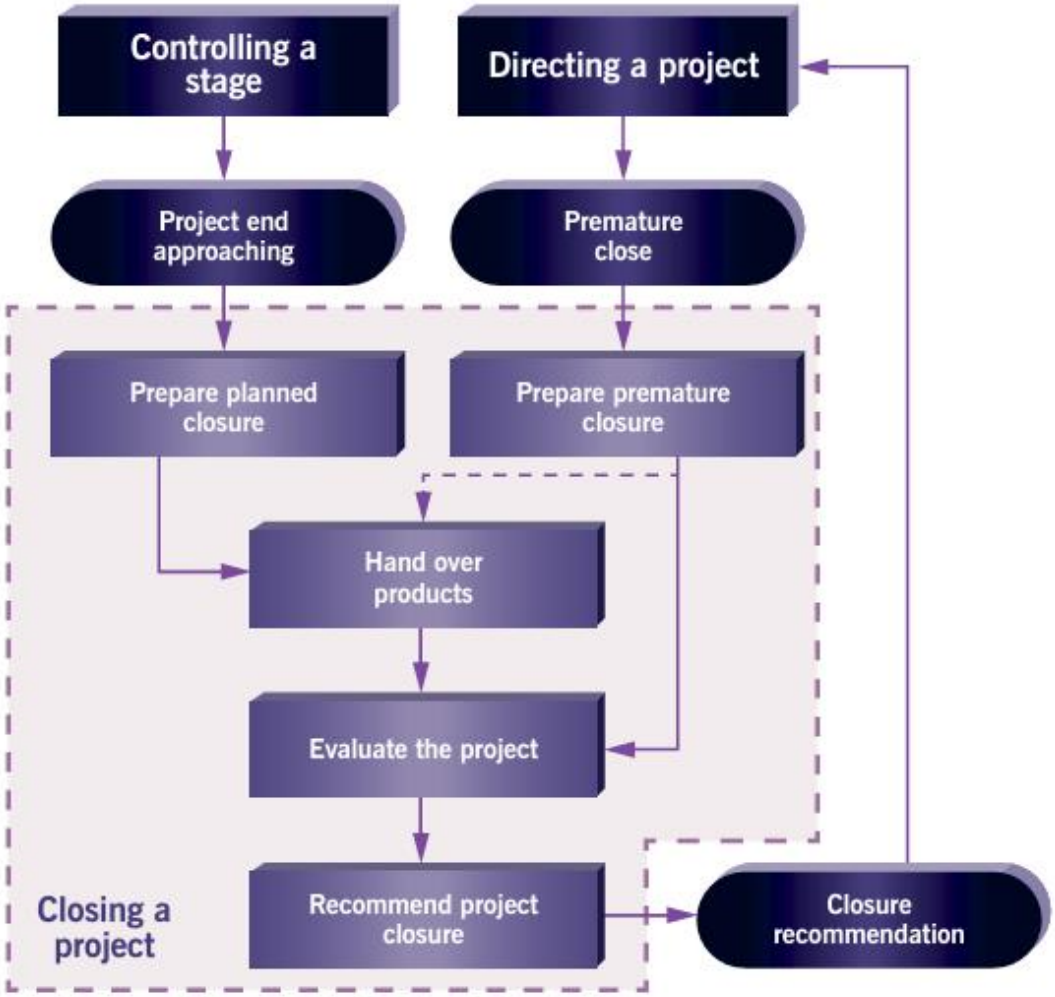
PRINCE2: Processes

(PRINCE2, Axelos 2017, p. 161)



Note 1: At the end of the initiation stage, the initiating a project process is used to request project board approval to deliver the project (with the submission of the PID), and in parallel the managing a stage boundary process is used to request project board approval of the stage plan for the second management stage.
Note 2: The closure activities are planned and approved as part of the stage approval for the final stage, therefore the closing a project process takes place in the final stage.

PRINCE2: Overview of Closing a Project (PRINCE2, Axelos 2017, p. 261)



Annex 4:
IPMA® Competence Baseline

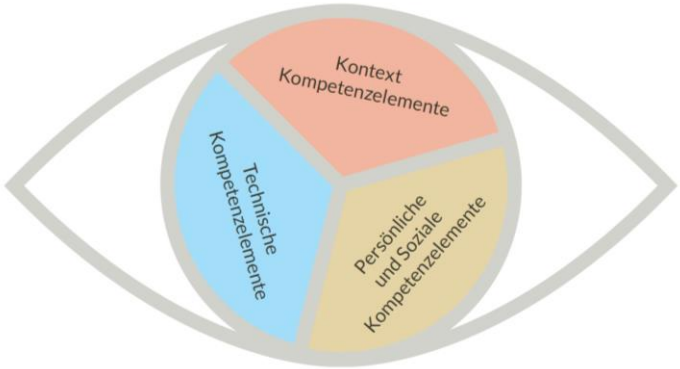
What is a Project?

Source: ICB® 4.0, page 27

- **A project** is a unique, temporary, multi-disciplinary and organised endeavour to realise agreed deliverables within predefined requirements and constraints. Project management typically involves personnel from project management associates up to senior project managers.
- **A programme** is set up to achieve a strategic goal. A programme is a temporary organisation of interrelated programme components managed in a coordinated way to enable the implementation of change and the realisation of benefits. Programme management typically involves senior project managers or project directors.
- **A portfolio** is a set of projects and/or programmes, which are not necessarily related, brought together to provide optimum use of the organisation's resources and to achieve the organisation's strategic goals while minimising portfolio risk. Important issues on a portfolio level are reported to the senior management of the organisation by the portfolio manager, together with options to resolve the issues.

“The Eye of Competence” ICB® 4.0

The Eye of Competence represents the universe of competences for Project, Programme, and Portfolio Management. Competences are divided into three domains: People, Practice and Perspective. Domains provide focus for the aspects of competence, and together create the whole, balanced individual.



Source: ICB® 4.0, page 25

The 3 Competence Areas

- **The three competence areas are as follows:**
  - **People competences:**
    these consist of the personal and interpersonal competences required to successfully participate in or lead a project, programme or portfolio
  - **Practice competences:**
    these are the specific methods, tools and techniques used in projects, programmes or portfolios to realise their success
  - **Perspective competences:**
    under this heading come the methods, tools and techniques through which individuals interact with the environment, as well as the rationale that leads people, organisations and societies to start and support projects, programmes and portfolios

Source: ICB® 4.0, page 26

4.3.	**Perspective**
4.3.1.	Strategy
4.3.2.	Governance, structures and processes
4.3.3.	Compliance, standards and regulation
4.3.4.	Power and interest
4.3.5.	Culture and values
4.4.	**People**
4.4.1.	Self-reflection and self-management
4.4.2.	Personal integrity and reliability
4.4.3.	Personal communication
4.4.4.	Relationships and engagement
4.4.5.	Leadership
4.4.6.	Teamwork
4.4.7.	Conflict and crisis
4.4.8.	Resourcefulness
4.4.9.	Negotiation
4.4.10.	Results orientation
4.5.	**Practice**
4.5.1.	Project design
4.5.2.	Requirements and objectives
4.5.3.	Scope
4.5.4.	Time
4.5.5.	Organisation and information
4.5.6.	Quality
4.5.7.	Finance
4.5.8.	Resources
4.5.9.	Procurement
4.5.10.	Plan and control
4.5.11.	Risk and opportunity
4.5.12.	Stakeholders
4.5.13.	Change and transformation

ICB 4.0 Competence Elements

Perspective competences

Every project, programme and portfolio is started, driven, supported and governed by external drivers. People, organisations and societies demand things, varying extraordinary. Somewhere along that line, realising what people want gets so complicated that a project or programme is considered. It is rare that any project or programme is executed in a vacuum – they are influenced by their organisational, societal and political context.

The drivers for every project or programme can be roughly divided into the formal and explicit goals and needs of the organisation and/or society, and more informal and implicit motives and interests.

A clear example of a set of formal, explicit and present drivers of projects, programmes and portfolios is the strategy of an organisation. **The Strategy (Perspective 1)** generally has clear goals and objectives and, more often than not, projects and programmes contribute to these goals and objectives, while project and programme portfolios are prioritised according to these goals and objectives.

Organisational and external **Governance, structures and processes (Perspective 2)** create the formal context of a project, programme or portfolio. The amount and interdependency of the project, programme or portfolio interfaces with this context defines an important part of the complexity. It may mean that a project, programme or portfolio has to deal with legacy processes or structures that served clear goals when they were established but are cumbersome to use in the present situation.

Compliance, standards and regulations (Perspective 3) also contain relevant perspectives and drivers. They comprise the relevant laws, regulations, standards and tools that reflect priorities, best practices and demands of the organisation, industry, society and professional regulatory bodies.

Source: ICB® 4.0, page 28

The informal Power and interest (Perspective 4) of people within an organisation can have a huge influence on the success of any project, programme and portfolio. This is the informal and implicit counterpart of the organisation's strategy. People are not just driven by the formal rules and objectives of an organisation; they also have personal goals and objectives.

The Culture and values (Perspective 5) of an organisation (or society) are by definition for the most part informal and implicit. Of course, an organisation may try to influence the informal culture by formal and explicit mission statements and corporate values. Yet the majority of cultural values remain implicit and informal, although they influence all other perspective elements

– admissible strategies, rules and regulations, etc. Understanding the mores, customs, conventions and practices of an organisation or society is therefore an essential requisite for the success of any project, programme or portfolio.

Source: ICB® 4.0, page 28

People competences

This competence area describes the personal and social competences an individual working in the project, programme or portfolio needs to possess to be able to realise success.

All personal competence starts with the ability to self-reflect. In the end, an individual's competence is proven by realising the agreed tasks successfully, that is, to the satisfaction of the stakeholders. Between these extremes eight other competence elements are defined.

Basic personal attributes are discussed in **Self-reflection and self-management (People 1)** and **Personal integrity and reliability (People 2).**

Communicating with others is described in **Personal communication (People 3)**, and building relations in **Relations and engagement (People 4).**

Projects, programmes and portfolios increasingly rely on **Leadership (People 5).** And two specific aspects of leadership are also presented: **Teamwork (People 6)** and how to handle **Conflict and crisis (People 7).**

Resourcefulness (People 8) describes ways of thinking (conceptual and holistic) and sets of techniques (analytic and creative), but above all focuses on the ability to create an open and creative team environment, where each can work and contribute optimally. **Negotiation (People 9)** describes how to reach results that are both in the interest of the project, programme or portfolio and acceptable to other parties; and **Results orientation (People 10)** describes the ways an individual can stimulate and steer his team to realise optimal results.

Source: ICB® 4.0, page 29

Practice competences

All contextual influences and demands come together when the organisation initiates a new project, programme or portfolio. The individual working in project, programme or portfolio management has to take into account all these influences and demands.

The individual prioritises and translates these into **a project, programme or portfolio Design (Practice 1).** The project, programme or portfolio design is a 'charcoal sketch' that defines the high-level choices for this project, programme or portfolio (e.g. make or buy, linear or iterative, possible funding or resourcing options, how to manage the project, programme or portfolio). In the other technical competence elements, each of these basic decisions will be specified, implemented and managed.

Goals, objectives, and benefits (Practice 2) include the various demands and expectations regarding the outcomes and the objectives, and how these are prioritised. **Scope (Practice 3)** describes the specific boundaries of the project, programme or portfolio.

Time (Practice 4) focuses on the order and planning of the delivery; **Organisation and information (Practice 5)** deals with the organisation of the project, programme or portfolio and its internal information and communication flows; and **Quality (Practice 6)** describes the demands and organisation of both process and product quality and its controls.

Of course projects, programmes and portfolios are dependent on the input of people, material and money. These input constraints include money, **Finance (Practice 7)** and (human and other)

Source: ICB® 4.0, page 29

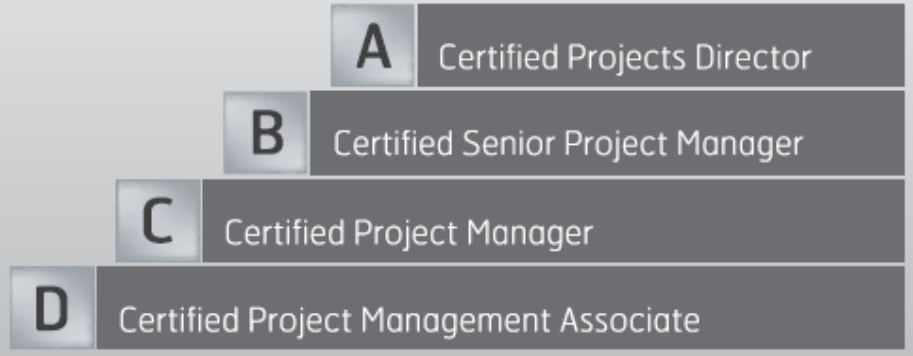
Resources (Practice 8). Often, acquiring resources requires Procurement (Practice 9).

Integration and control of all activities is described in the competence element Plan and control (Practice 10). Apart from that, the individual has to identify, prioritise and mitigate the main Risk and opportunity (Practice 11) and to assess, and engage with, Stakeholders (Practice 12).

Another output is Change and transformation (Practice 13) – changes in the organisation necessary for, or part of, realising the benefits. And finally, the competence Select and balance (Practice 14; only for programme and portfolio management) describes the selecting and balancing of components of programmes and portfolios.

Source: ICB® 4.0, page 30

IPMA Competence Levels



Level A: Certified Projects Director able to manage complex project portfolios and programmes.

Level B: Certified Senior Project Manager able to manage complex projects. Minimum five years of experience.

Level C: Certified Project Manager able to manage projects with limited complexity. Minimum three years of experience.

Level D: Certified Project Management Associate able to apply project management knowledge when working in a project.

Source: http://www.ipma.ch/SiteCollectionDocuments/Certification%20folder.pdf