TDT4252
Enterprise modelling and –architecture-
Enterprise modelling methodology focusing on participatory modelling

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Today – Participatory enterprise modelling

- Mainly chapter 2.4 in Krogstie: Model-based development of information systems (+ 2.1.4 and 2.1.5)
- Additional material: A. Persson and J. Stirna, Towards Defining a Competence Profile for the Enterprise Modelling Practitioner. P. van Bommel et al. (eds.), PoEM 2010, LNBIP 68, pp. 232-245.

Friday – C3S3P - an approach for participatory modelling

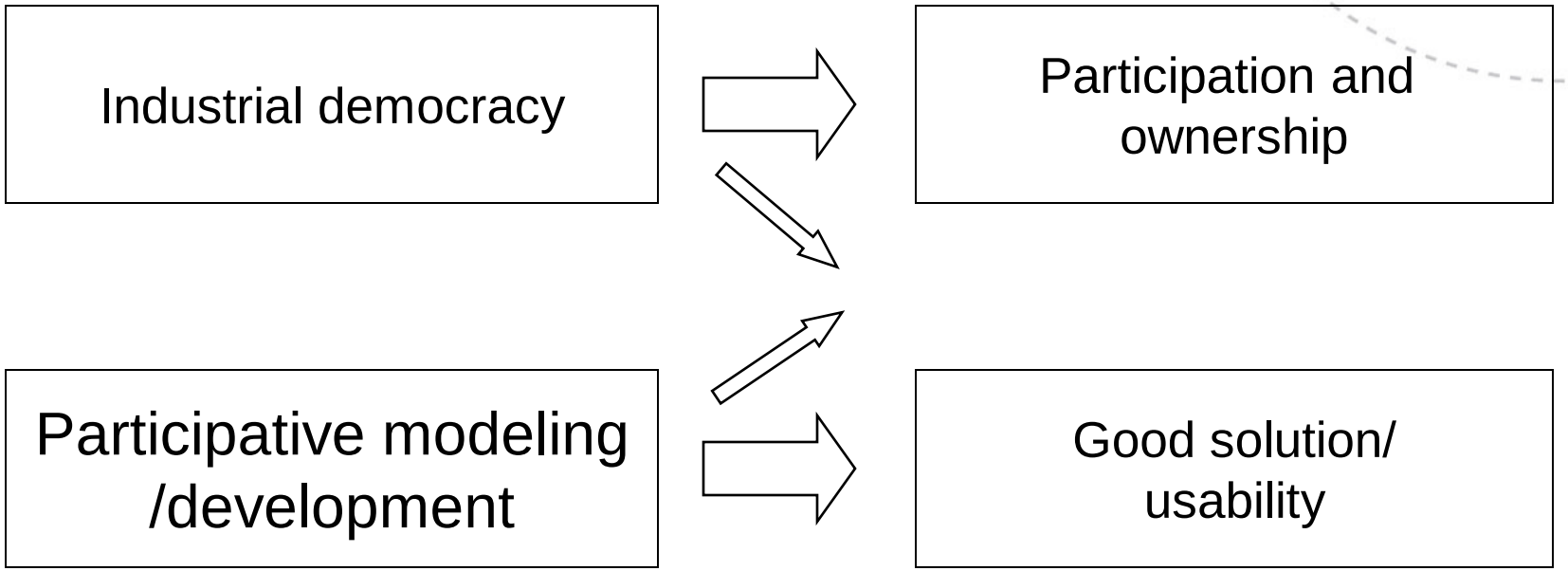
What do we mean with participation,
- different degrees of participation and influence by the stakeholder of a change (Arnstein, 1969;Heller, 1991)

- Manipulation
- No information
- Information
- Consultation
- ~~Advice taken into account~~
- Common decission
- ~~Delegated authority~~
- Full control

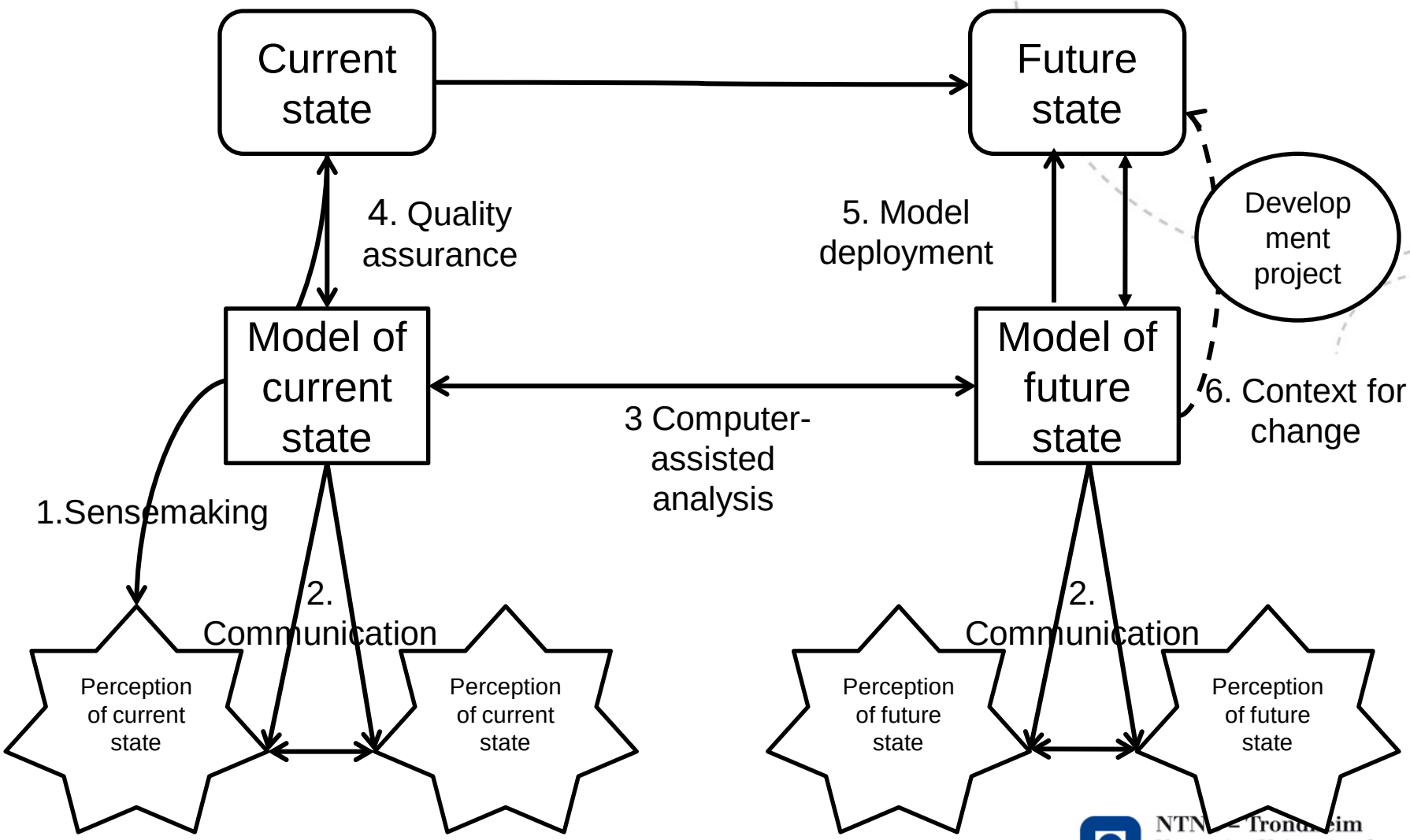
Why user participation and involvement (Mumford) ?

1. Morally right
2. Ensure change is carried forward
3. Improved solution
4. Improved ownership/motivation, better implementation

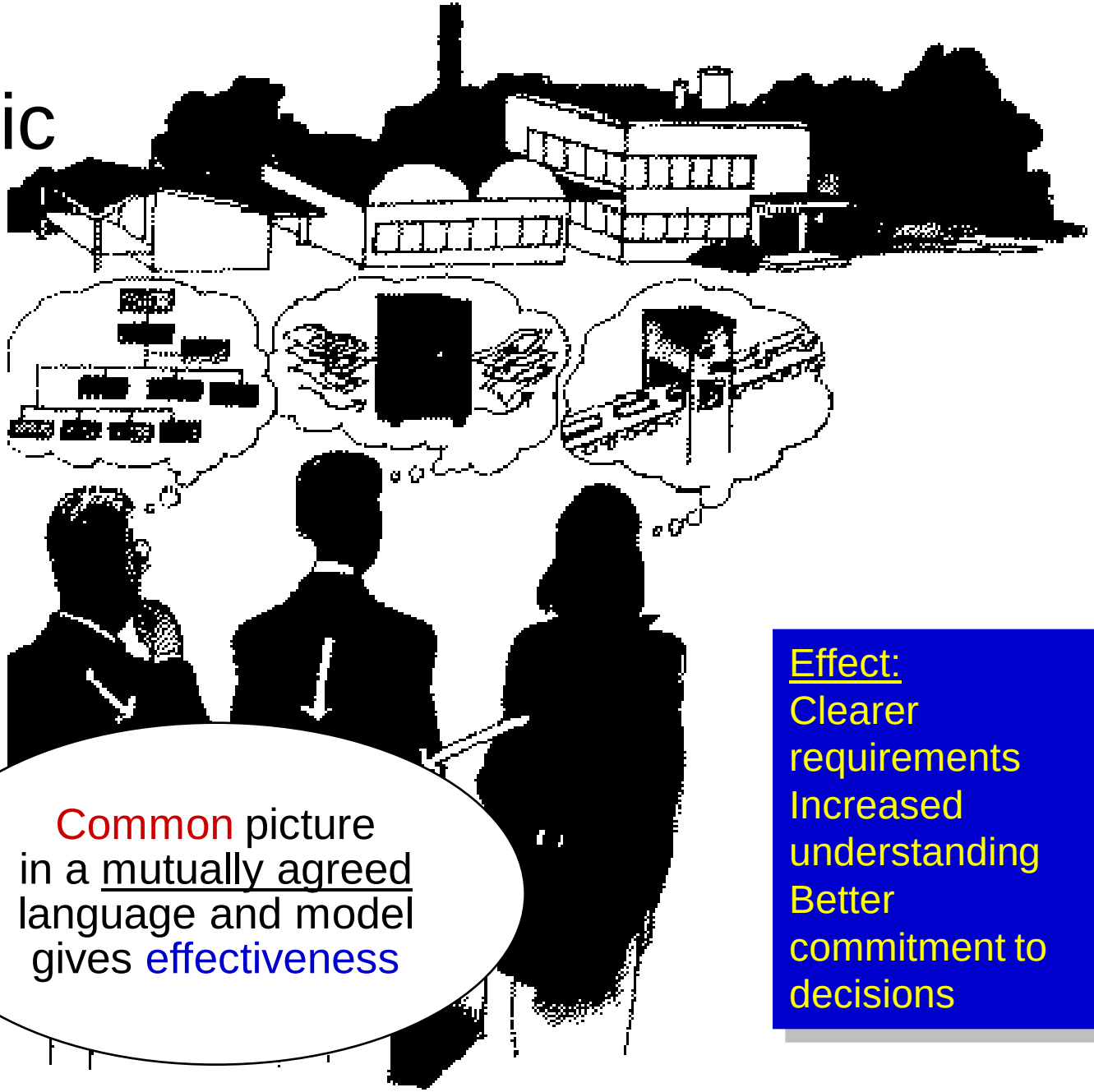
Different reasons to involve users



Usage of modeling



The Nordic Attitude



Common picture in a mutually agreed language and model gives effectiveness

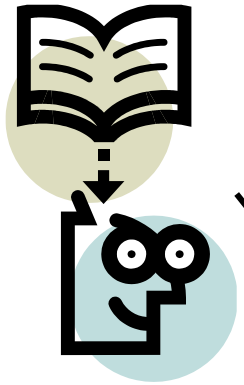
Effect:
Clearer requirements
Increased understanding
Better commitment to decisions

Participatory approach

A participatory approach requires:

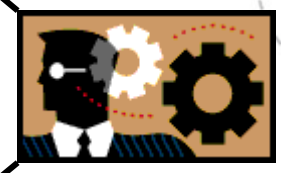
- Active communication and lively discussions leading to a joint decission based on different views.
- Creating a group: people feel they are working towards a common goal and increases the chance of achieving good results.

Concept of Competency



Domain expert

Knowledge	Skills
Willingness to contribute	Individual properties

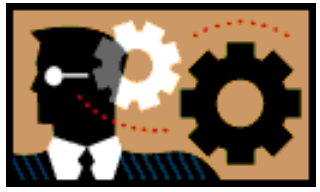


Modelling Practitioner

Modelling Practitioner

- To create Enterprise Models using a participatory approach, a modelling practitioner is needed.
- They can take on several roles:
  - Project leader
  - Facilitator
  - Tool expert
  - ➢ Modelling team, led by the Project Leader.

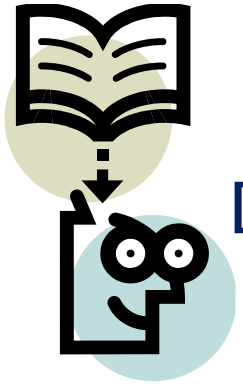
Domain expert and Modelling Practitioner



Modelling Practitioner

Responsible for →

- Quality of Modelling Process
- Reasonable method use
- Model Quality



Domain expert

Responsible for →

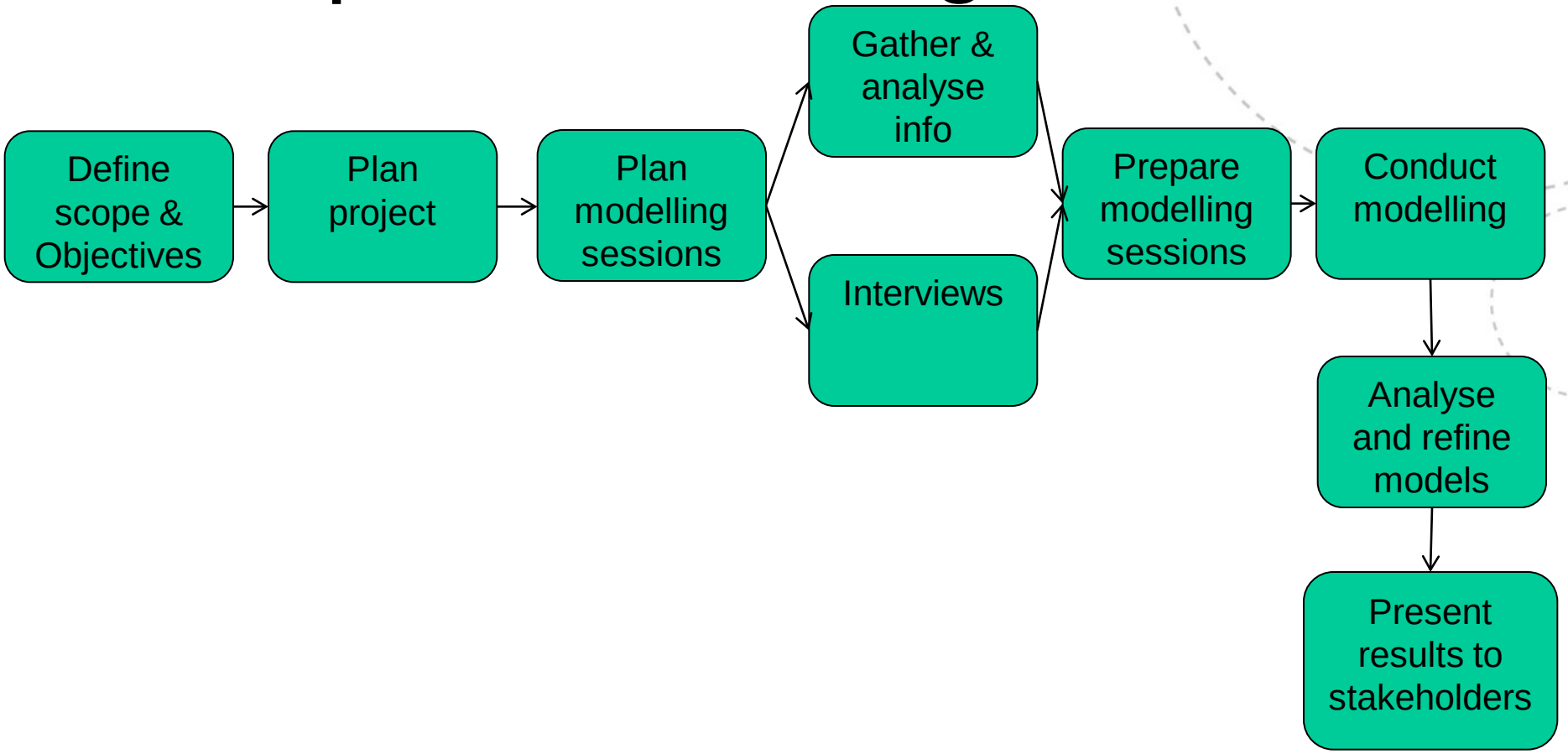
- Correct and relevant knowledge content

Participative modelling: roles

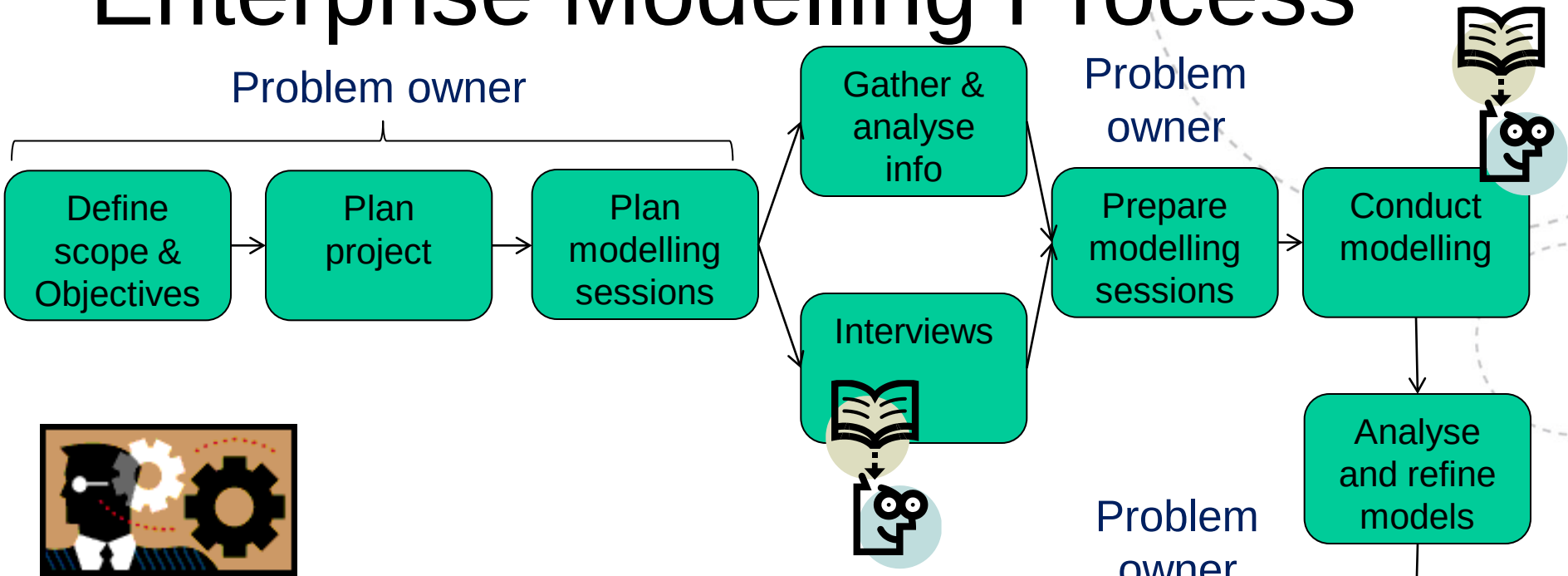
- Problem owner being responsible for establishing the modelling activity within the enterprise, selecting the right personnel resources, arranging meetings, etc.
- Domain experts/stakeholders providing knowledge about the domain under consideration
- Facilitator providing expertise in using the selected modelling process and tool as well as supporting the modelling process and model development by coaching the modellers.
- Modelling expert having in-depth knowledge in the modelling method and tools.
- Tool operator responsible for documenting the enterprise models in the computerized tool during the modelling process

- Could there be other roles ?

Enterprise Modelling Process



Enterprise Modelling Process



Modelling Practitioner is involved in all the steps.

Core Competences in Enterprise Modelling

- Ability to model
- Ability to facilitate modelling sessions

At the heart of Enterprise Modelling

- Ability to lead projects

Related to Project Management

Competences related to modelling

- Ability to model
  - Making use of the chosen language to create models.
- Ability to facilitate a modelling session
  - Communication and socialising, team work, problem solving.

Competences related to Managing EM projects

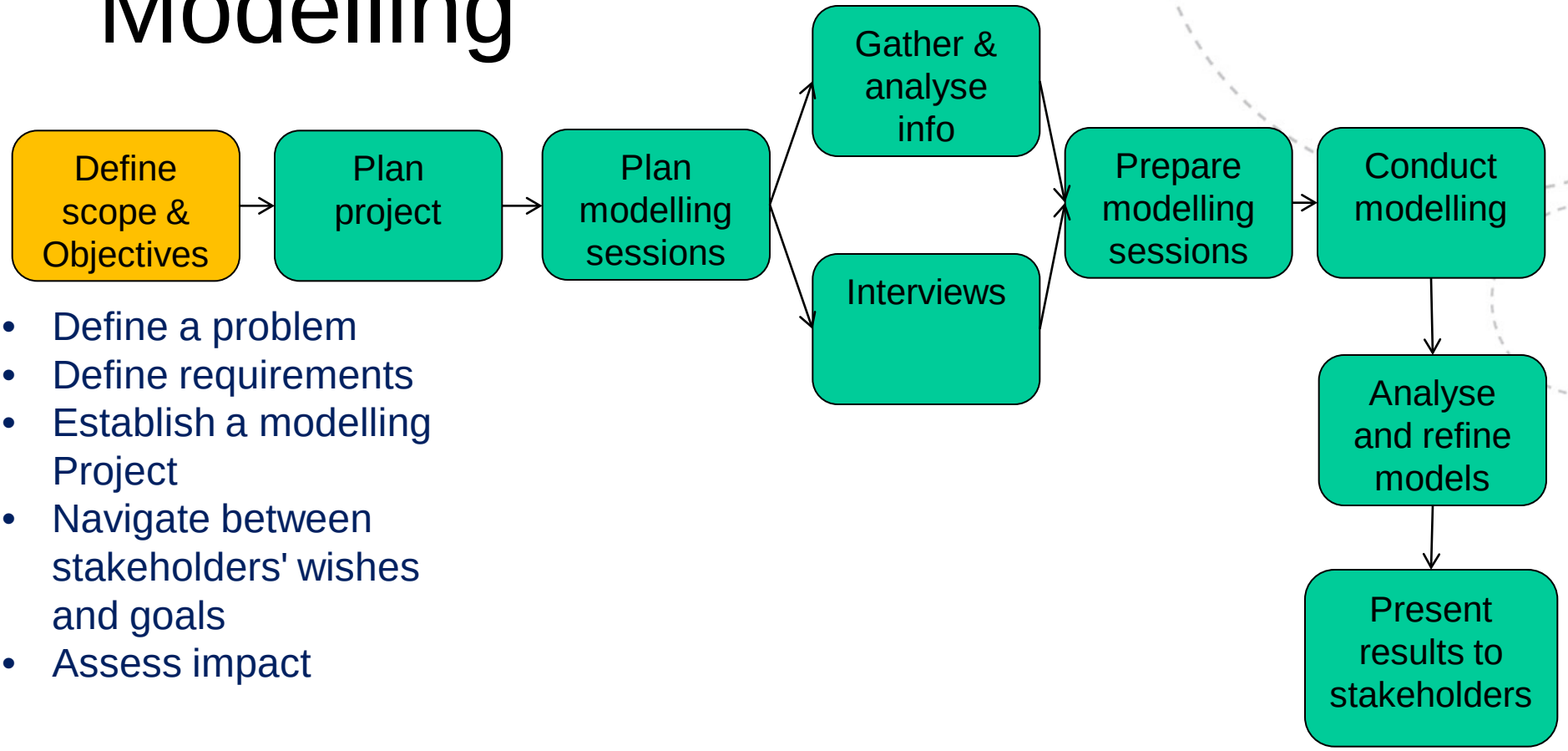
- Ability to select an appropriate Enterprise Modelling approach and tailor it to the situation.

- Ability to interview involved domain experts
  - Social skills are essential, e.g. listening skills, body language.
- Ability to define a relevant problem that is feasible to model.
  - Assessing the complexity of the problem.
- Ability to define requirements on the results.
  - Product and process requirements

Competences related to Managing EM projects (contd.)

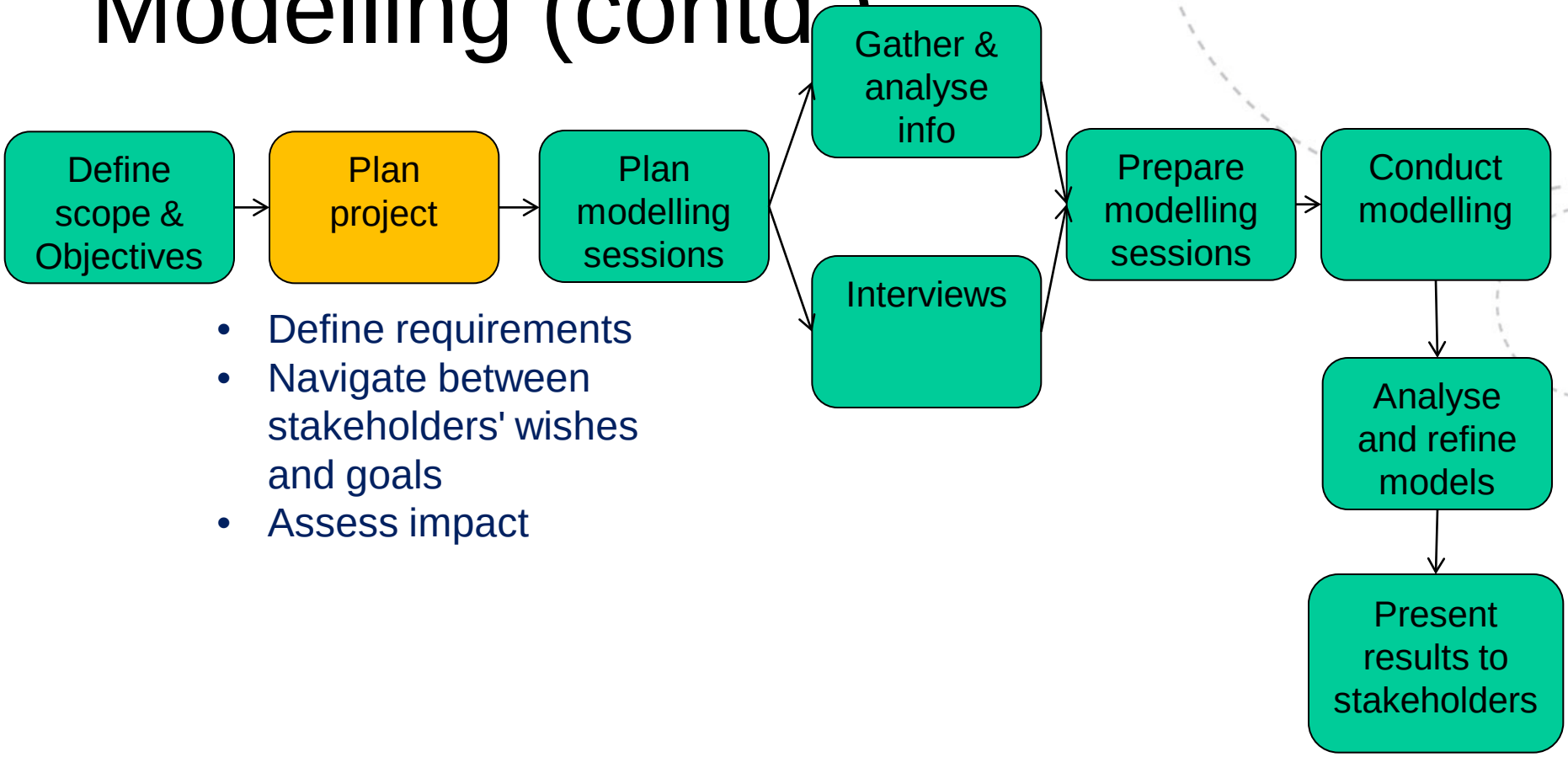
- Ability to establish a modelling Project.
- Ability to adjust the presentation of the Project results (model) and issues related to the various stakeholders.
- Ability to navigate between the various stakeholders' wishes while upholding the goals of the Project.
- Ability to assess the impact of the modelling result and the modelling process in the organisation.

Competences for Enterprise Modelling



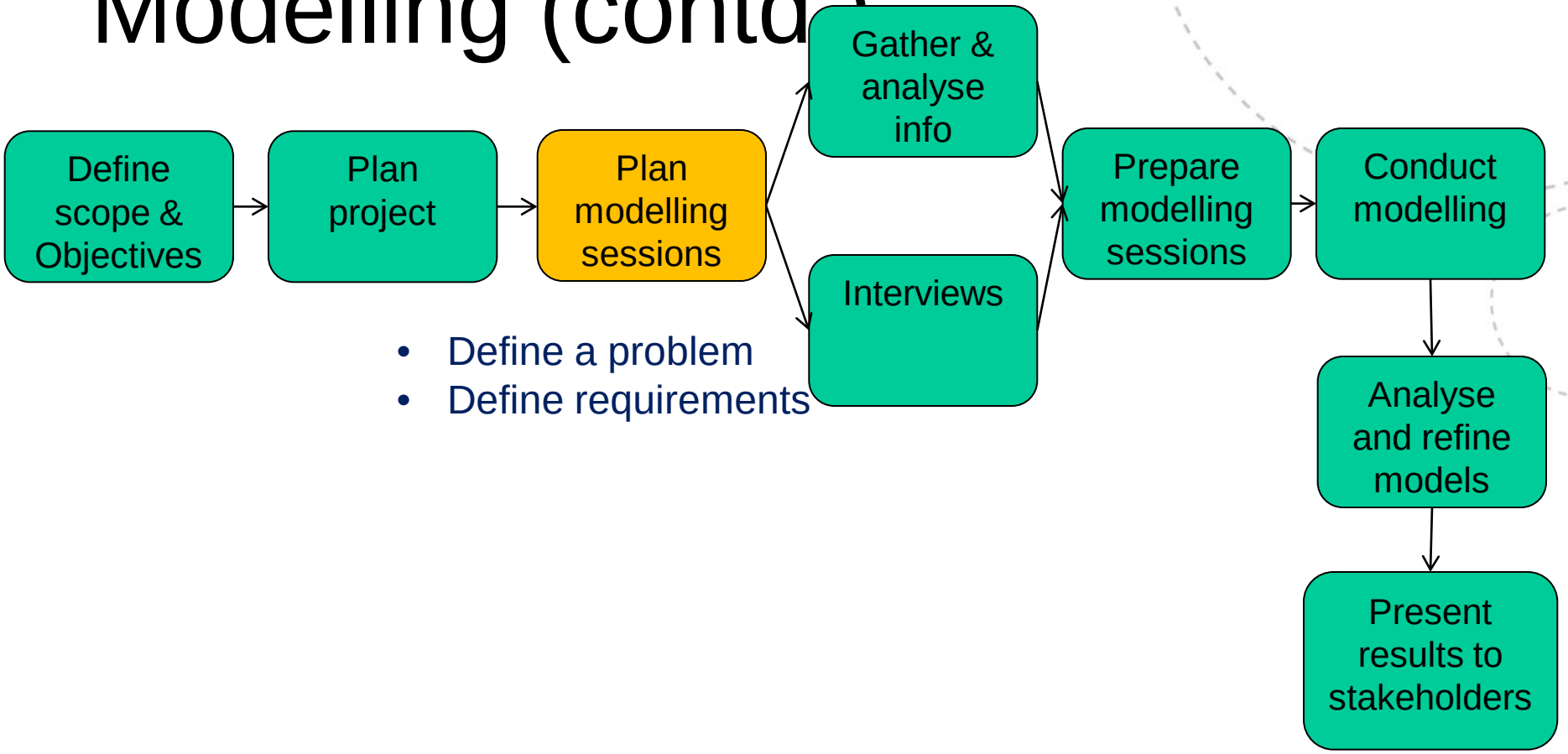
- Define a problem
- Define requirements
- Establish a modelling Project
- Navigate between stakeholders' wishes and goals
- Assess impact

Competences for Enterprise Modelling (contd.)



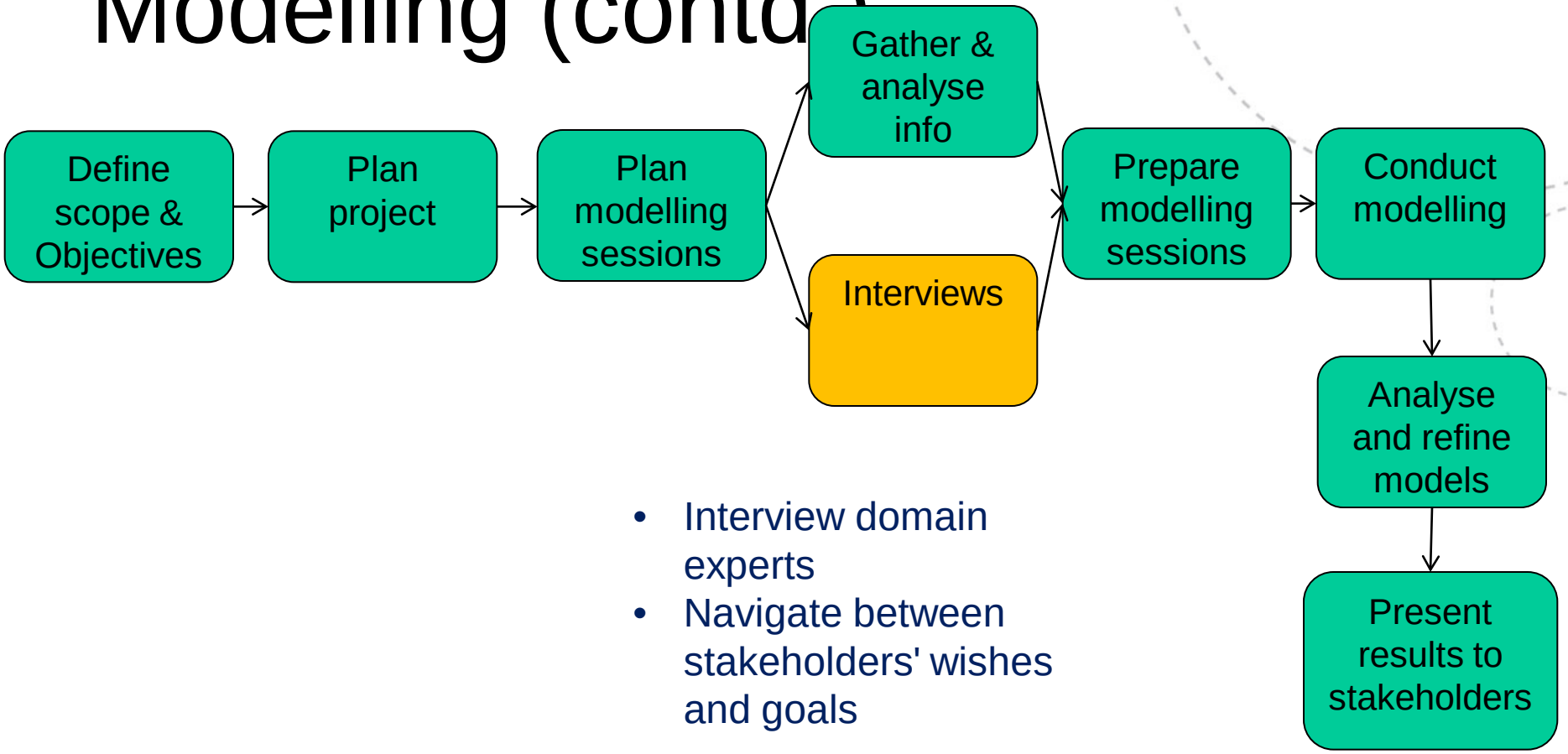
- Define requirements
- Navigate between stakeholders' wishes and goals
- Assess impact

Competences for Enterprise Modelling (contd.)



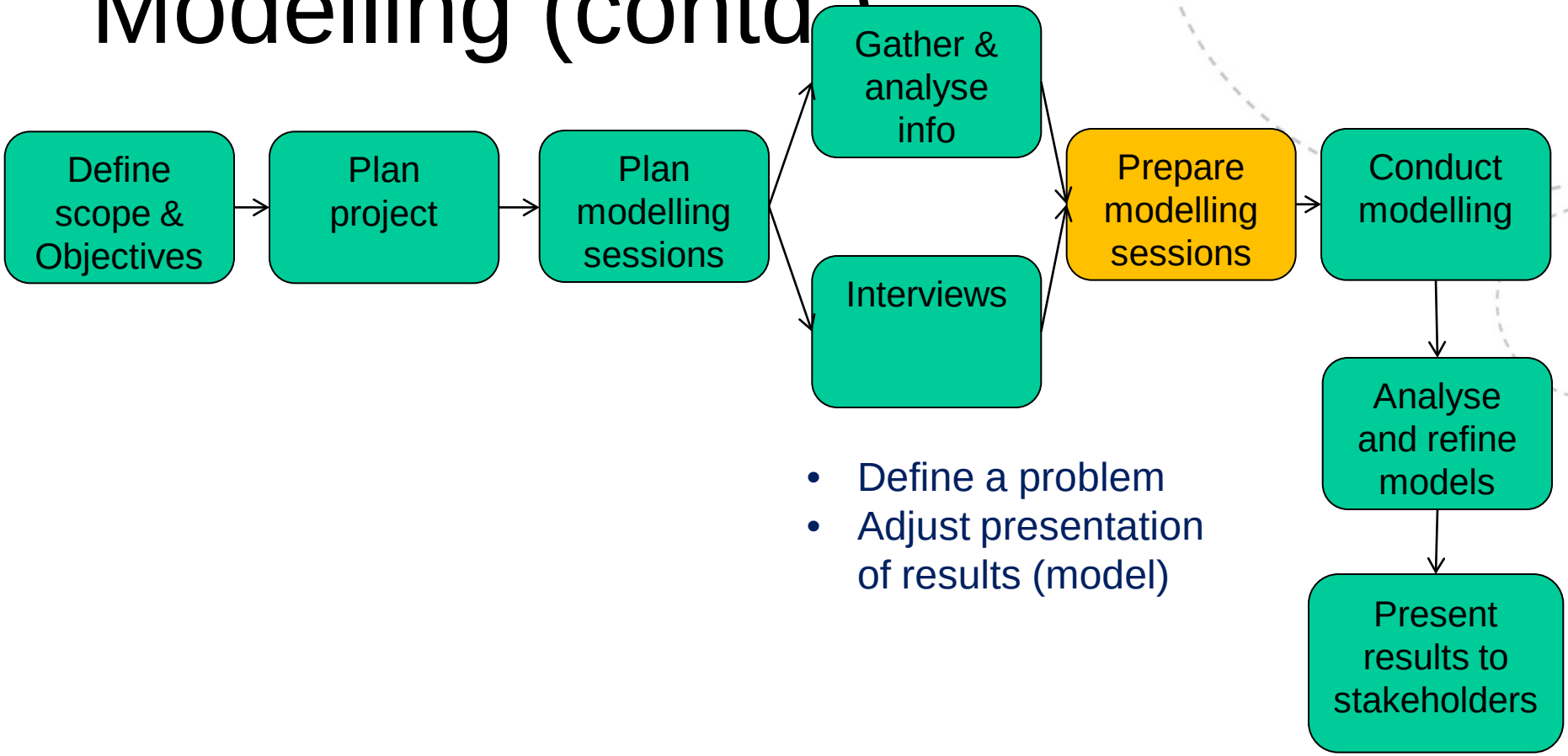
- Define a problem
- Define requirements

Competences for Enterprise Modelling (contd.)



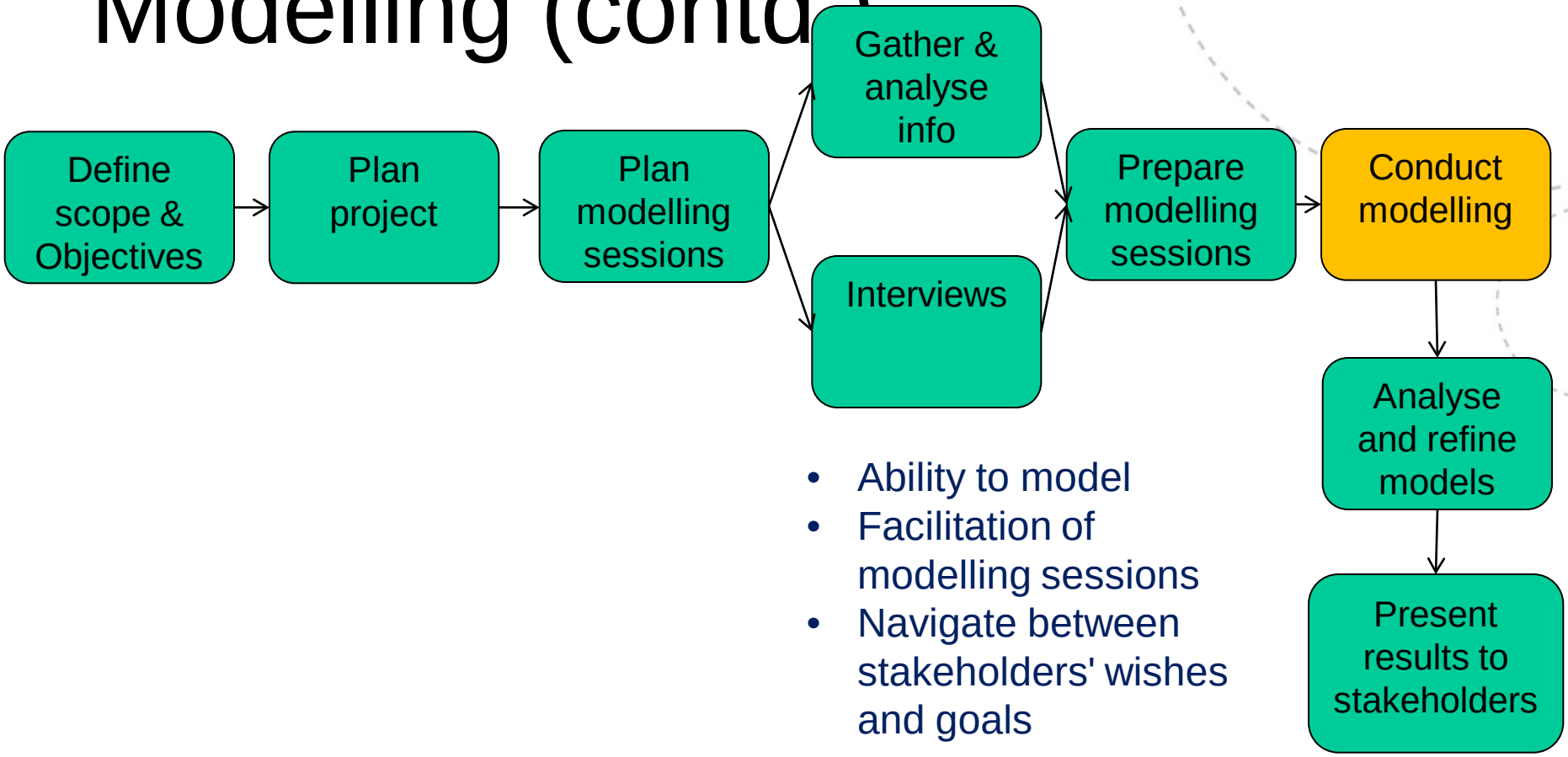
- Interview domain experts
- Navigate between stakeholders' wishes and goals

Competences for Enterprise Modelling (contd.)



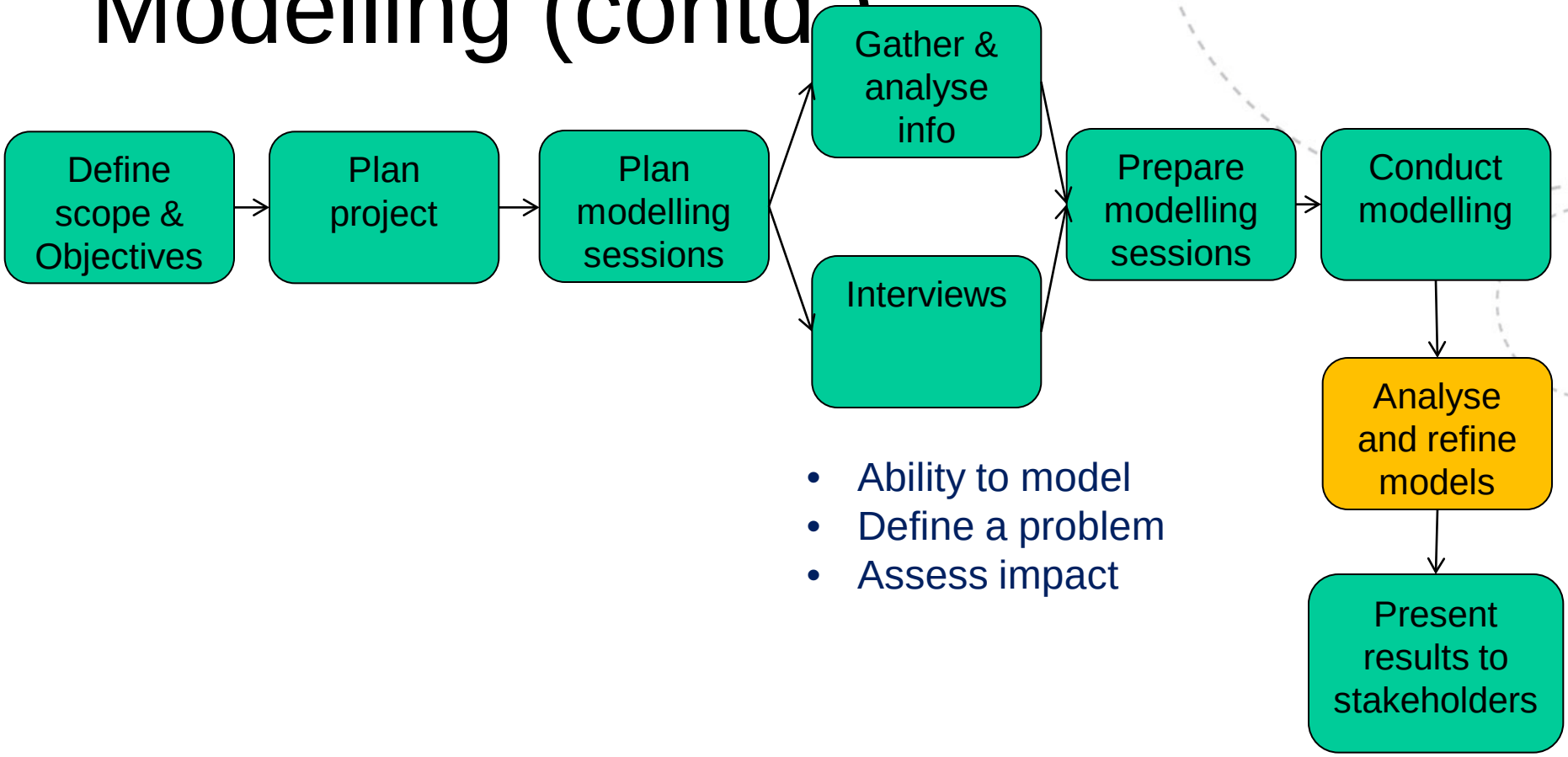
- Define a problem
- Adjust presentation of results (model)

Competences for Enterprise Modelling (contd.)



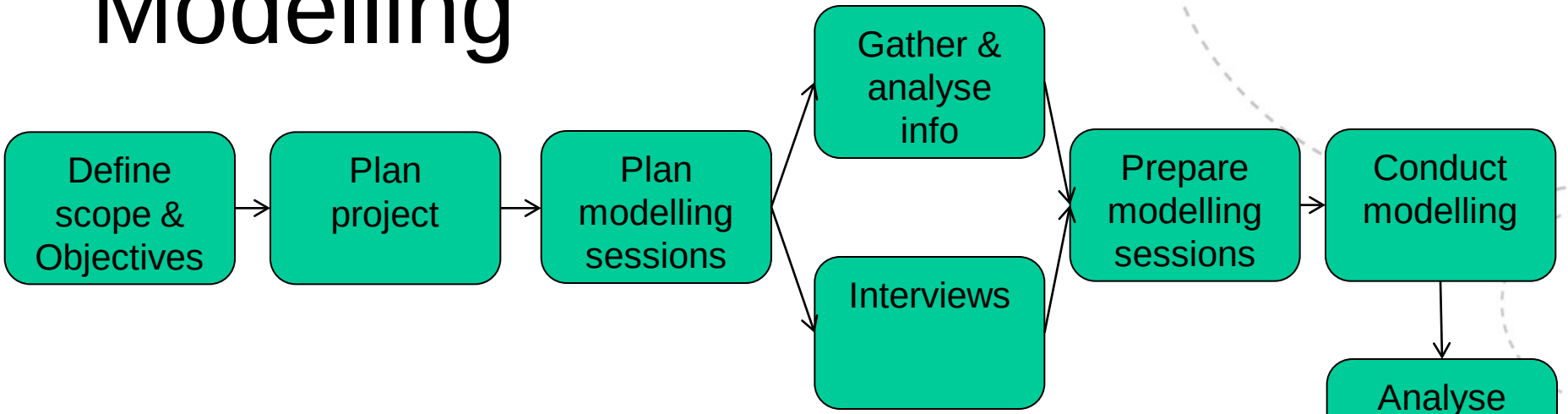
- Ability to model
- Facilitation of modelling sessions
- Navigate between stakeholders' wishes and goals

Competences for Enterprise Modelling (contd.)



- Ability to model
- Define a problem
- Assess impact

Competences for Enterprise Modelling



- Adjust presentation of results (model)
- Navigate between stakeholders' wishes and goals
- Assess impact

Experiences and recommendations

- Assess the organizational context
- Assess the problem at hand
- Assign roles in the modelling project
- Acquire resources
- Conduct modelling sessions
- Tool support

Assess the organizational context

- Power and decision-making structure → you have to have access to and obtain the trust of the relevant decision makers
  - This is influenced by the credibility of the method and its provider

- Consensus driven vs. authoritative organisational culture
- Management by objective vs. management by directives
- Long term vision vs. “fire fighting”
- Openness vs. hidden agendas

- Ask questions, listen, observe, and sense
  - what is said vs. what is not said

- This should not be done by novices!

Assess the problem at hand

Two approaches :

- interview the key decision maker(s), *and/or*
- conduct short participative EM session to identify the objective

Problem types:

- *Fairly simple* – clear definition and perceivable solution, do not require the co-ordination of a large number of different preconditions, activities, actors and resources.
- *"Complex" problems* – fairly clear definition and a perceivable solution, but require the co-ordination of a large number of different preconditions, activities, actors, and resources.
- *"Wicked problems"* -- ill-structured problems, no clear problem definition and there is no way of measuring that the problem is solved.

- This determines competency requirements for the project

Assign roles to the modelling project

- The facilitator is only there to moderate the problem solving process among the domain experts, *not* to solve the problem
- Use two facilitators if possible

- Before the modelling session *each* participant has to:
  - understand the objective of the modelling session,
  - agree upon the importance of this objective,
  - feel personally capable to contribute to a positive result, and
  - be comfortable with the rest of the team and the facilitator.

Acquire resources

- For the project in general and
- For the *preparation efforts* in particular

- The modelling team needs:
  - Authority
  - Time for participation (including “the always busy” top management)

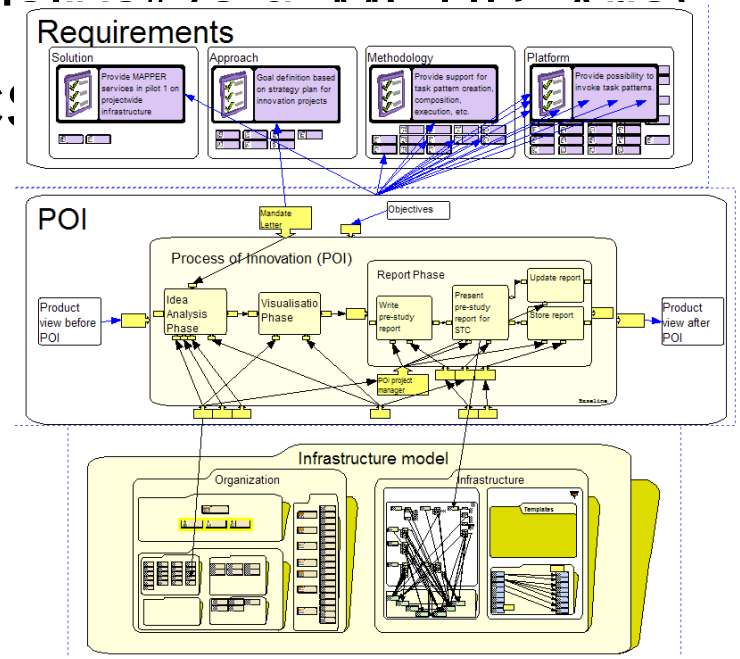
- Allocation of effort:
  - ~40% preparation
  - ~30% modelling seminars
  - ~30% documenting and reporting

Conduct modelling sessions

- Each modelling session should have clear objectives
- Use notation that everyone understands
- Do not ”train” the participants in the modeling method/notation
- Keep everyone involved and focused on problem at hand
- Do not accept unknown participants, even “representatives” of the top managers
- The problem owner(s) should not dominate
- Develop sub-models in parallel
- Make specific decisions
- Focus on resolving the problem, do not develop a “polite” model
- Decide on actions after the seminar
- …

Tool support

- Simple tools - to capture the ideas generated during the modelling seminar, to serve as meeting minutes (e.g. Visio)
- EM/EA tools -- to document the model in order to be refined later, included in a report or a repository, or the model is going to be kept "



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Modeling-conference technique

- Process modelling as visualisation
  - Creating a common frame of reference
  - Focusing on what is done (not what is made, or by whom)
  - Focus on process and not organisational function
  - Many process modelling languages too expressive to be easily used by ’everyone’
- Search Conferences
  - Technique from the field of organisational development

Basic principles for a modelling conference

- Open systems thinking and active adaptation
- Genuine democracy
- Simplicity
- Pragmatism
- The use of the process model as a communicative and reflective device
- Learning

Guidelines

- The whole process is performed at one site
- All relevant roles are represented
- Alternation between group and plenary work
- The participants represents themselves, but are jointly responsible for the result
- Use of facilitators
- Simple tools and techniques
- The main outcome of the conference is the process model

Process modelling language

- Very simple language, few symbols
  - Process (verb, noun)

  - Product (end and intermediary products)

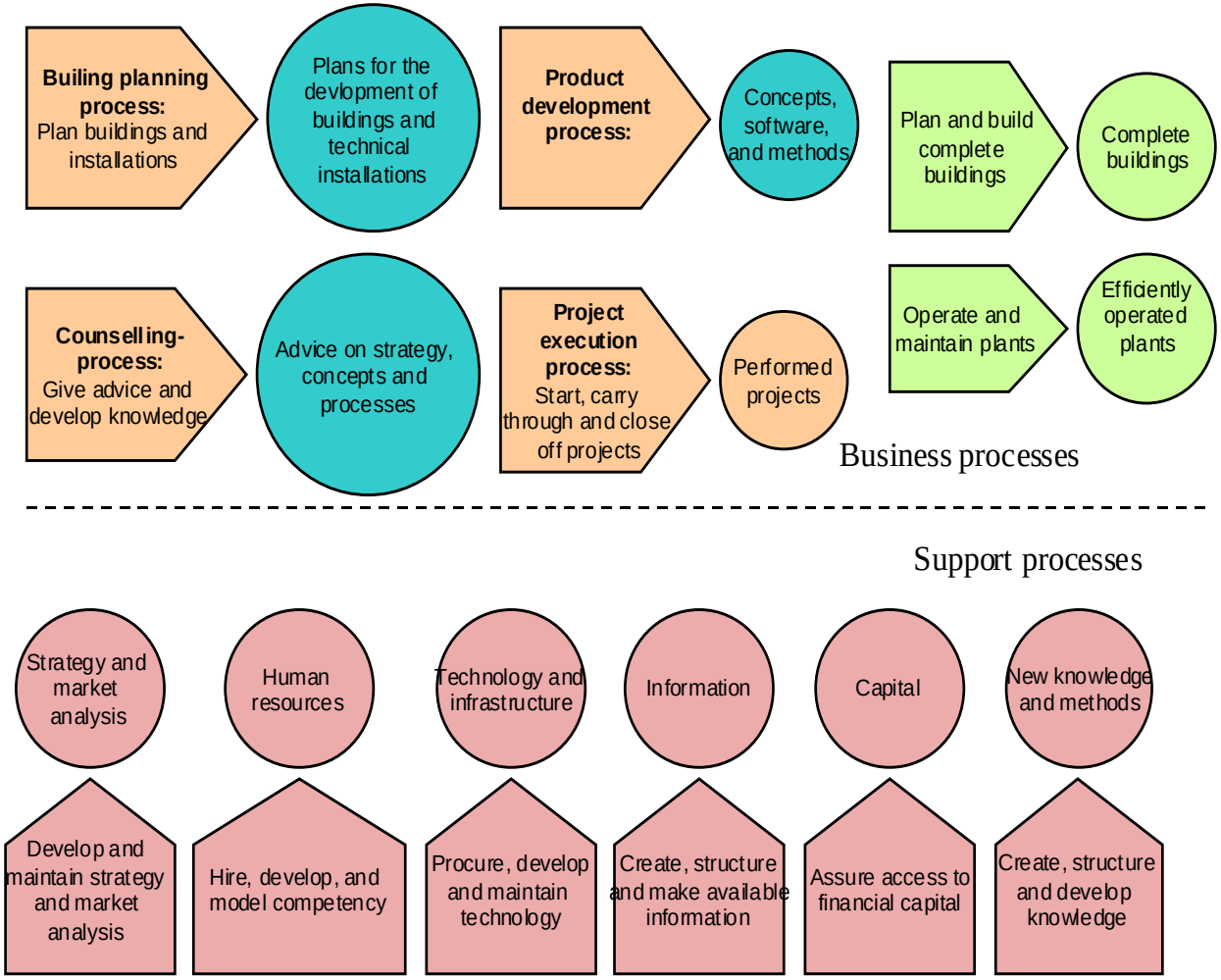
  - Customer

Case : Intranet with common process for ICG - InterConsultGroup

- ICG
  - Consultancy within engineering
  - 700 employers mainly in three different cities
  - 100 employees abroad
  - The result of a merger between three companies specialising within different areas of engineering
- The intranet project at ICG
  - Knowledge Infrastructure prosjektet (KIP) - Intranet
  - Should support the work of the employees directly
  - Several views to the organisation (Process, organisation, location)
  - Modelling conference to establish a common process model for manual deployment

Initiating the process modelling process

- The



Structure of process modelling process

- The project execution process looked upon as central, was to be modelled first.
- Process owners appointed
- Change agents identified
- Four modelling conference on the project execution process.
  - Oslo, Trondheim, Fredrikstad (engineering)
  - One for other specialities
  - Participants selected by process-owners and change agents
  - One-day conferences

Program for the conferences

Introduction

- Welcome. The goals of the conference and of the Project Execution process. The Process Owner.
- Enterprise modeling, processes, and the modeling conference. The Conference Leader.
- Presentation of the initial model. The Conference Leader.

Group work 1: Goals for the Project Execution process. Construction of a process visualization. (90 min.)
Homogenous groups.
Plenary presentation of results.

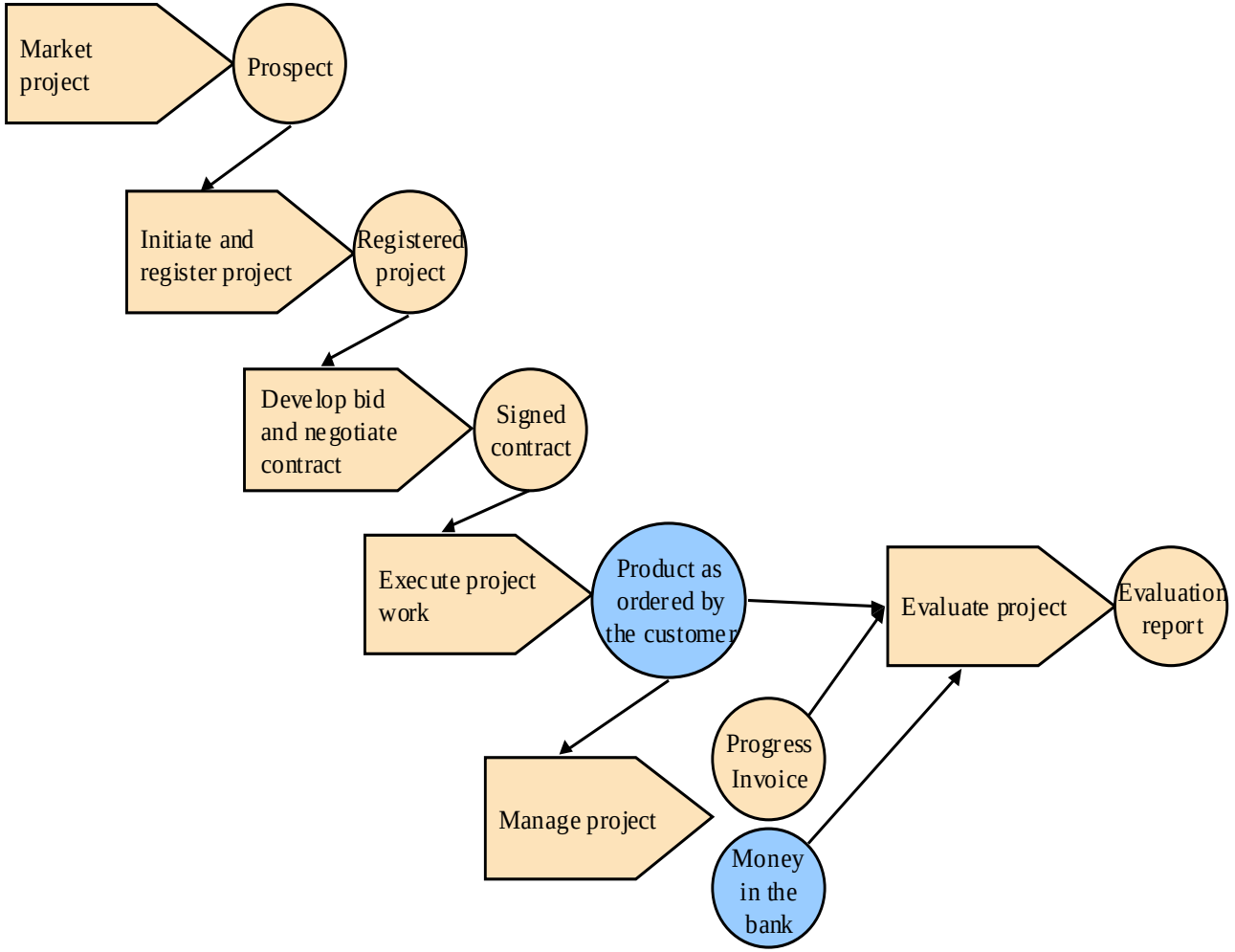
Lunch

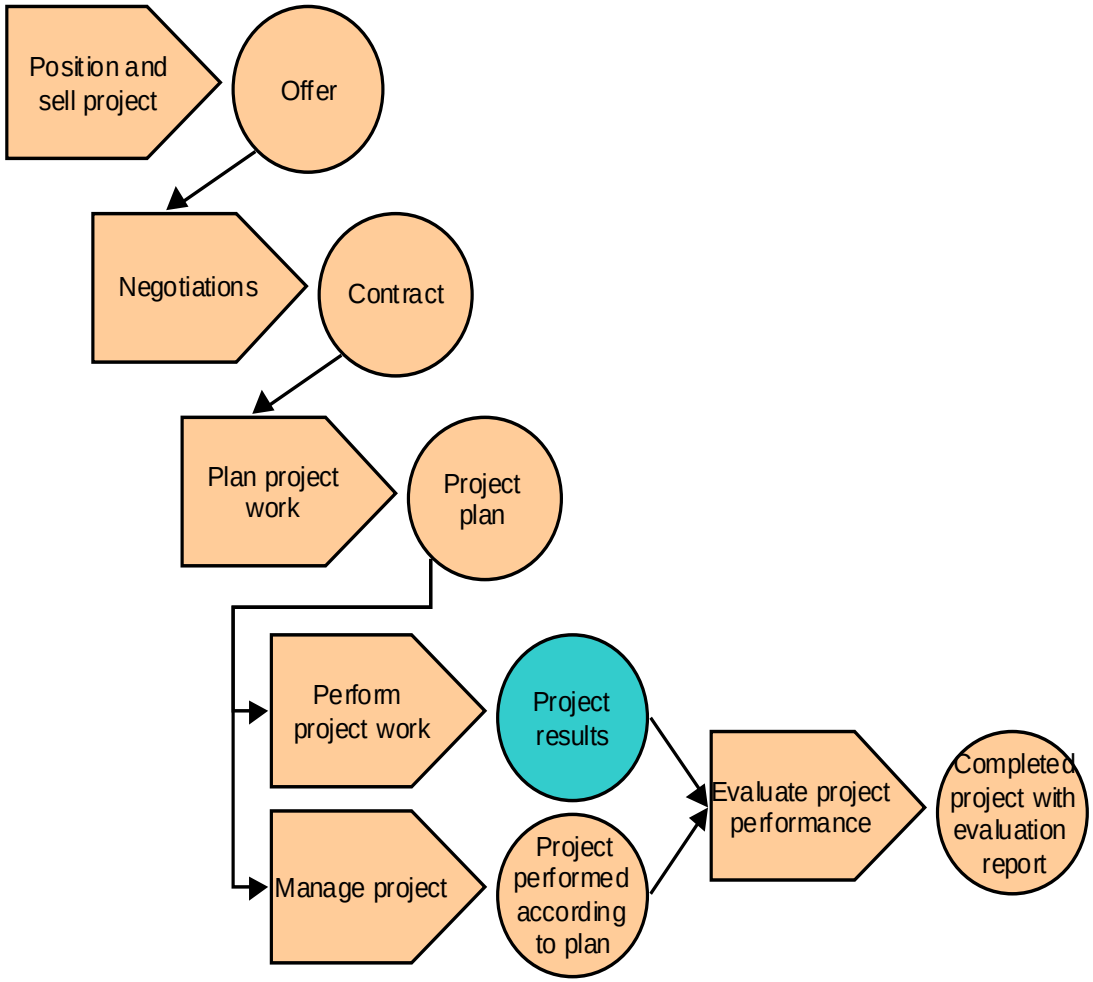
Group work 2: Construction of a process visualization II. (75 min.)
Heterogeneous groups.
Plenary presentation of results.

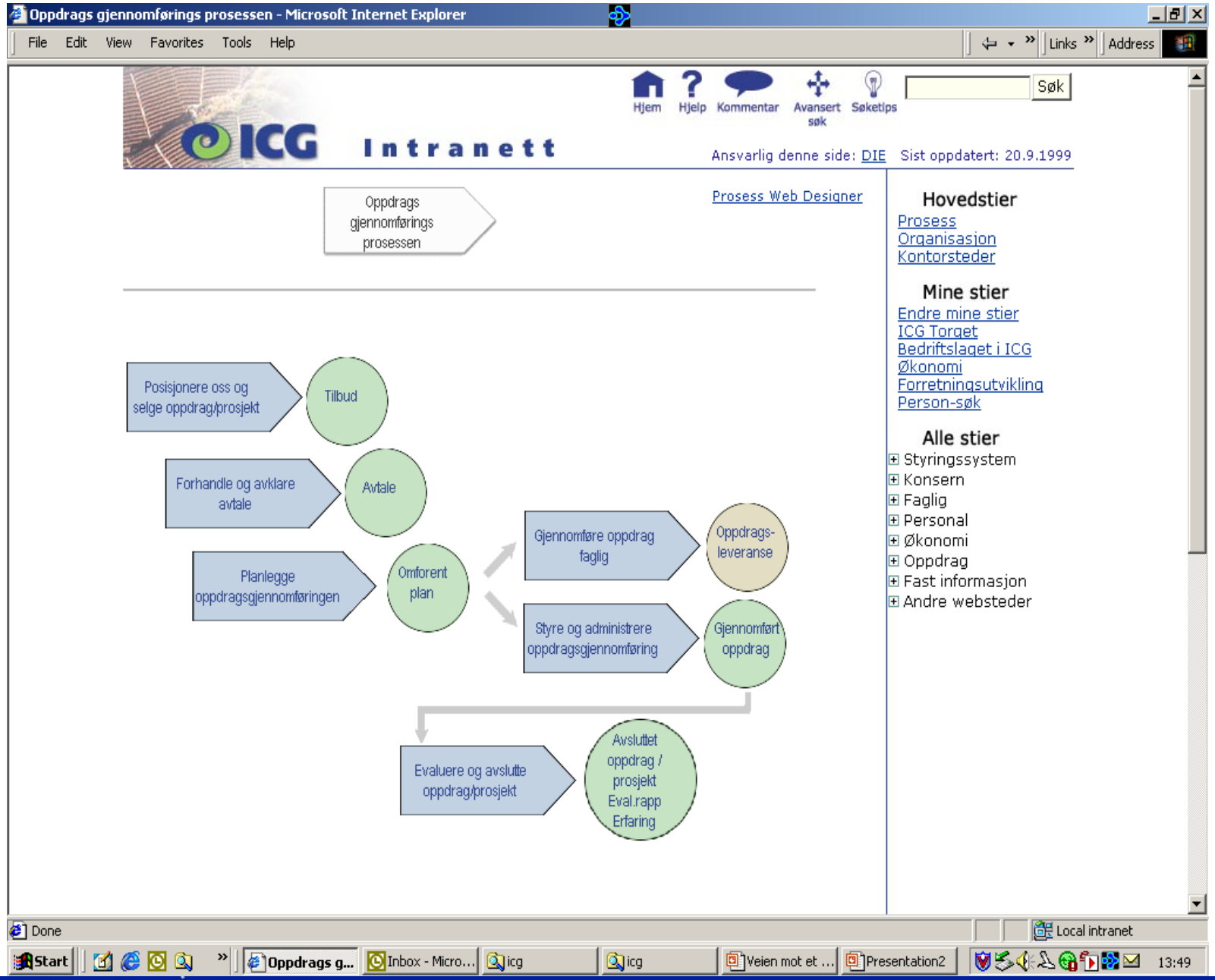
Plenary: Construction of a joint process visualization.

Group work 3: What information and tools are needed in the sub-processes? (50 min.)
Same groups as in group work 2.
Plenary presentation of results.

Initial process model




Position and sell project
Offer
Negotiations
Contract
Plan project work
Project plan
Perform project work
Project results
Manage project
Project performed according to plan
Evaluate project performance
Completed project with evaluation report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File Edit View Favorites Tools Help
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Hjem Hjelp Kommentar Avansert søk Søketips
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Ansvarlig denne side: DIE Sist oppdatert: 20.9.1999
Oppdrags gjennomførings prosessen
Prosess Web Designer
Hovedstier
Prosess
Organisasjon
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Mine stier
Endre mine stier
ICG Torget
Bedriftslaget i ICG
Økonomi
Forretningsutvikling
Person-søk
Alle stier
Styringssystem
Konsern
Faglig
Personal
Økonomi
Oppdrag
Fast informasjon
Andre websteder
Posisjonere oss og selge oppdrag/prosjekt
Tilbud
Forhandle og avklare avtale
Avtale
Planlegge oppdragsgjennomføringen
Omforent plan
Gjennomføre oppdrag faglig
Oppdrags-leveranse
Styre og administrere oppdragsgjennomføring
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Done
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Evaluating the effects

- Quantitative (survey), acceptance, ownership and use
- Acceptance: Is the model an appropriate representation of the work?
- Ownership: Enthusiasm and feeling of responsibility that work is done according to the model
- Use(frequency and way of use)
- Two surveys at two times
  - Right after modelling conference
  - Six weeks after general deployment
    - Both conference participants and other workers
- Instruments to measure acceptance and ownership (DeVellis)
- Main significant results
  - Acceptance and ownership better among participants
  - Acceptance of final model better than of preliminary model

Points on validity and generalisability

- Results according to research hypothesis
- Results according to existing theory
- Results and interpretations discussed with the workers involved and with other researchers being familiar with the organisation

Summary on experiences with modelling conferences

- The use of an initial model
- Conservative results
- The use of experts
- Choice of participants
- Size of each conference
- The role of the facilitator
- The use of the model after the conference
- Need to look upon system and organisational development in concert