Example of Method Engineering project

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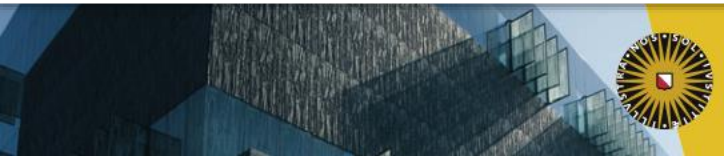
Quick overview of the topic (Assignment A)

- ICT4D projects fail due to the same reasons as normal software projects.
- Yet, Agile methods do not solve these problems because …
- So we need a new framework: Low-resource aware framework for development in ICT4D services.

- If your argumentation fails here, your entire paper is basically worthless



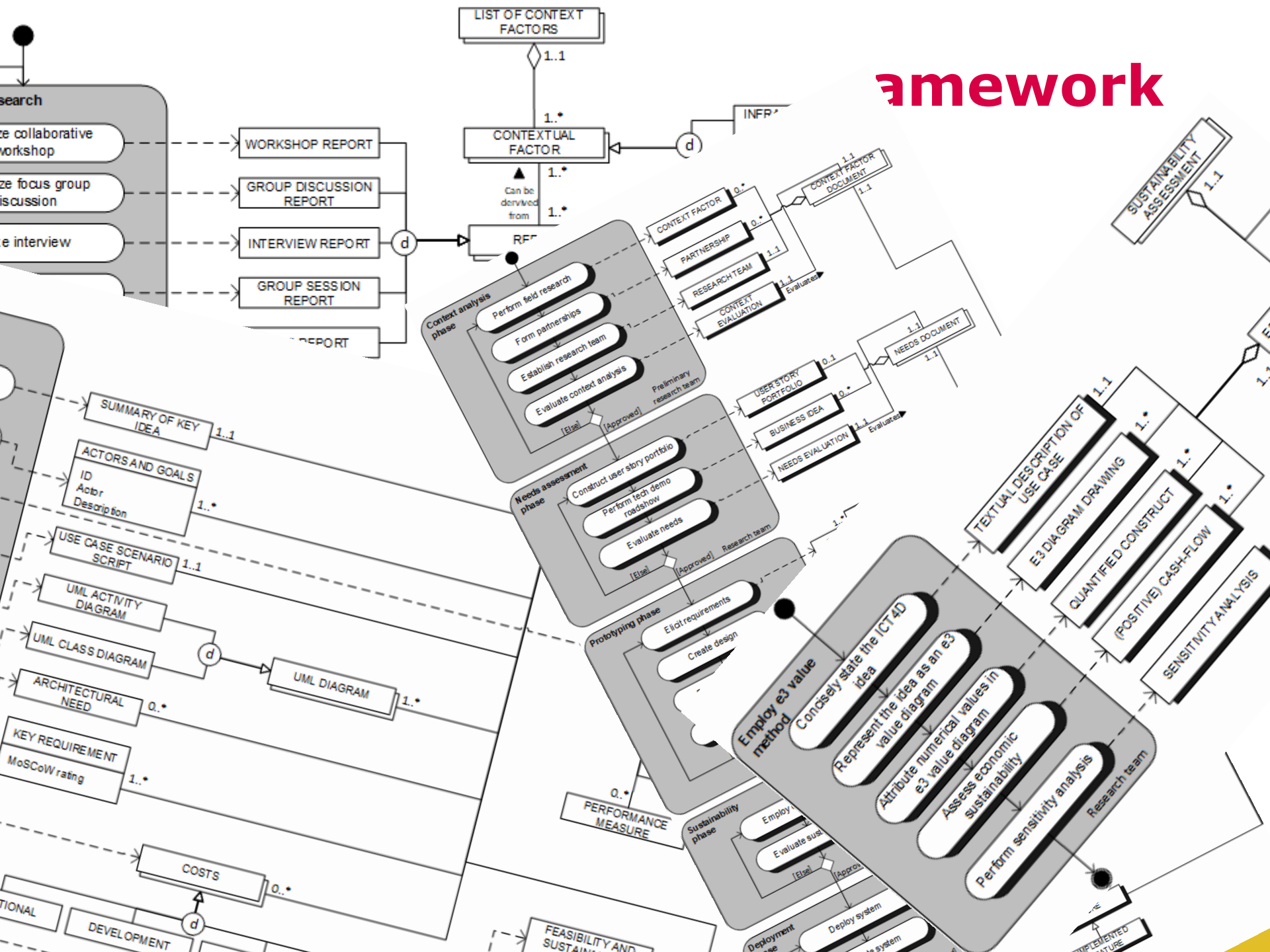
The LRAF4DICT4D has five phases

- Phase 1: Context analysis
- Phase 2: Needs assessment
- Phase 3: Requirement analysis
- Phase 4: Sustainability assessment
- Phase 5: Testing and deployment

An example clarifies these phases

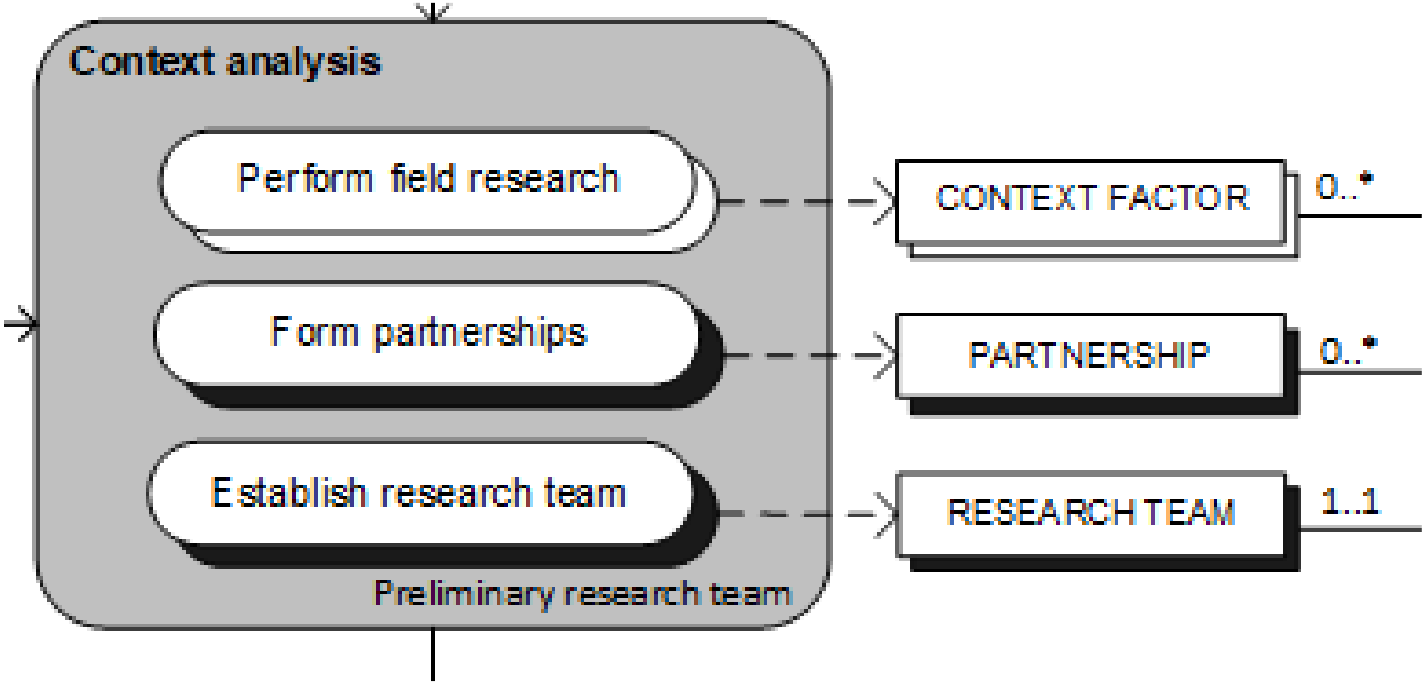
- Context analysis: We went to a village in Mali and talked to the inhabitants.
- Needs assessment: We found out that they would like a weather forecast system.
- Requirements analysis: The system needs to be low-cost, robust and linked to the radio station.
- Sustainability assessment: We have modeled the potential cashflows.
- Testing and deployment: We have implemented the system and revisted the site after some time

Origin: my paper


amework
LIST OF CONTEXT FACTORS
1..1
1..*
CONTEXTUAL FACTOR
Can be derived from
WORKSHOP REPORT
GROUP DISCUSSION REPORT
INTERVIEW REPORT
GROUP SESSION REPORT
CONTEXT FACTOR
PARTNERSHIP
RESEARCH TEAM
CONTEXT EVALUATION
CONTEXT FACTOR DOCUMENT
SUSTAINABILITY ASSESSMENT
Context analysis phase
Perform field research
Form partnerships
Establish research team
Evaluate context analysis
[Else]
[Approved]
Preliminary research team
USER STORY PORTFOLIO
BUSINESS IDEA
NEEDS EVALUATION
NEEDS DOCUMENT
Needs assessment phase
Construct user story portfolio
Perform tech demo roadshow
Evaluate needs
Research team
SUMMARY OF KEY IDEA
ACTORS AND GOALS
ID
Actor
Description
USE CASE SCENARIO SCRIPT
UML ACTIVITY DIAGRAM
UML CLASS DIAGRAM
UML DIAGRAM
ARCHITECTURAL NEED
KEY REQUIREMENT
MoSCoW rating
COSTS
DEVELOPMENT
Prototyping phase
Elicit requirements
Create design
PERFORMANCE MEASURE
TEXTUAL DESCRIPTION OF USE CASE
E3 DIAGRAM DRAWING
QUANTIFIED CONSTRUCT
(POSITIVE) CASH-FLOW
SENSITIVITY ANALYSIS
Employ e3 value method
Concisely state the ICT4D idea
Represent the idea as an e3 value diagram
Attribute numerical values in e3 value diagram
Assess economic sustainability
Perform sensitivity analysis
Research team
Sustainability phase
Deployment
Deploy system

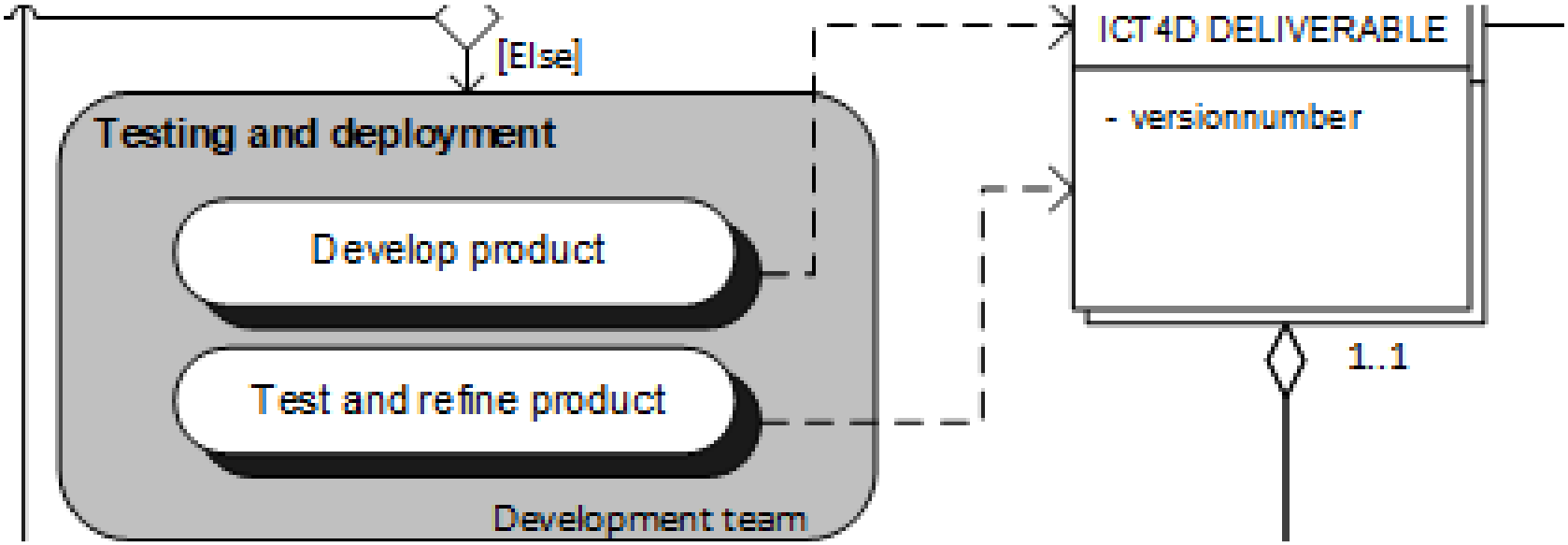
Tips for modelling a PDD

- Use a phase for a collection of steps
- Each step should have an output
- Don’t forget to mention the role



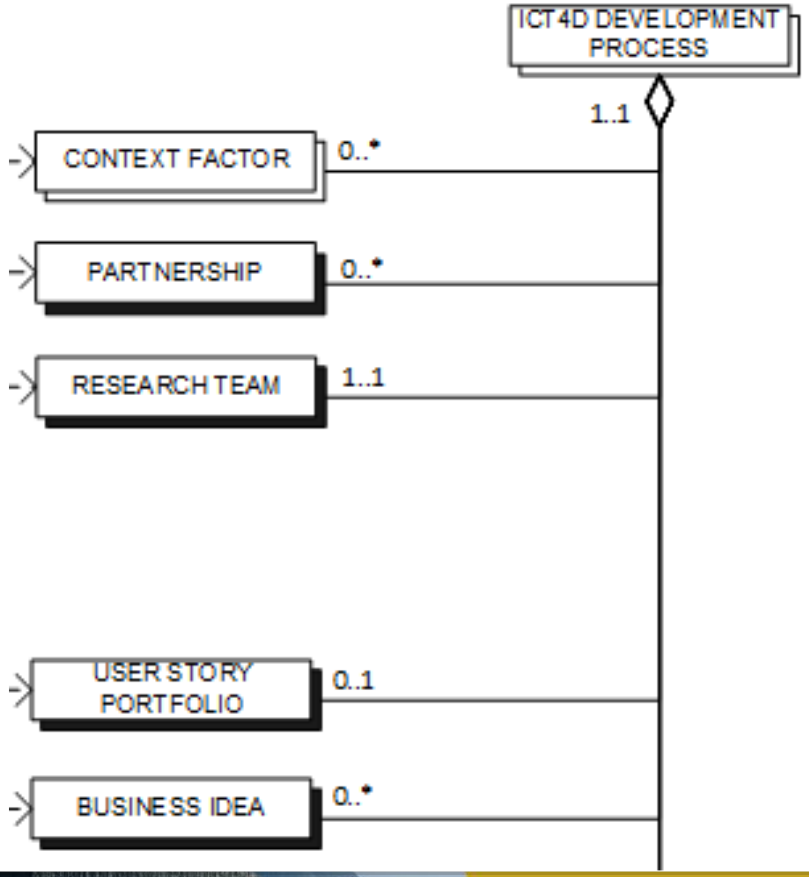
More tips for modelling a PDD

- Some steps can influence the same concept

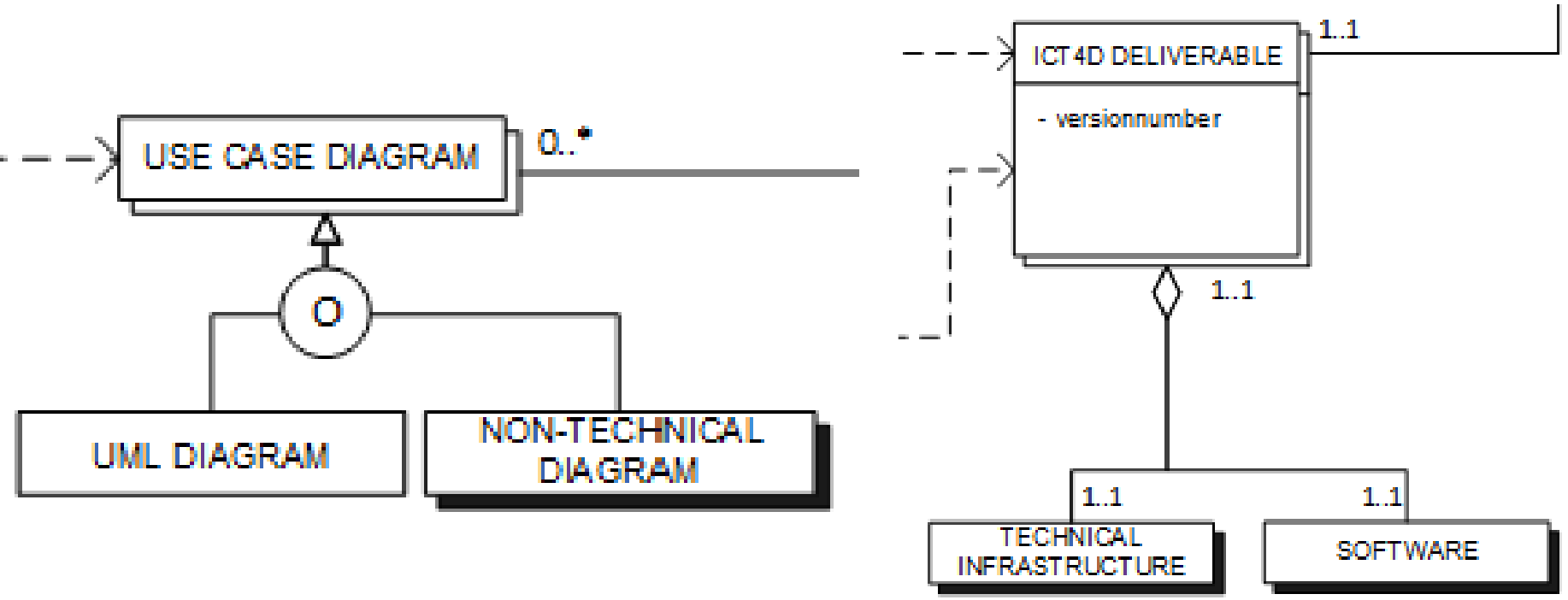


Connect your concepts

- Even if it is through a simple aggregation



Because some might be more complex



Reminder to not forget the tables

Activity	Sub-activity	Description
Context analysis	Perform field research	CONTEXT FACTORS that can influence the project are discovered by the RESEARCH TEAM. This is further elaborated upon in figure 3
	Form partnerships	The RESEARCH TEAM establishes connections with relevant partners.
	Establish RESEARCH TEAM	A main group (by adding/removing members) is composed to lead the development process.
Needs assessment	Construct USER STORY PORTFOLIO	A set of USER STORies is constructed and stored by the research team.

Be aware of the differences between the tables!

Concept	Description
LIST OF CONTEXT FACTORS	This list is composed of numerous elements that can affect the ICT4D project (Bon et al., 2016).
PARTNERSHIP	A list of partners of the project (Bon et al., 2016).
RESEARCH TEAM	The RESEARCH TEAM (additions/removals) that will perform the rest of the activities (Bon et al., 2016).

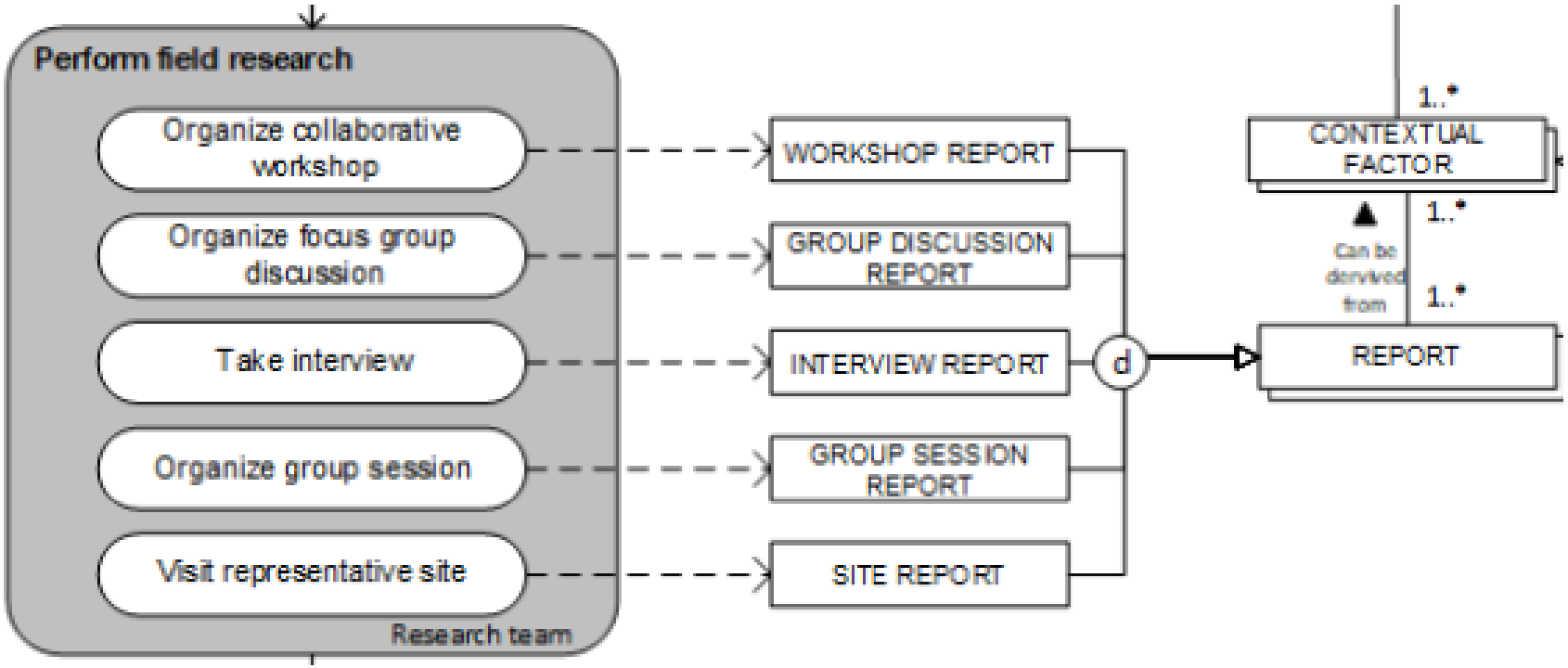
Concepts are always mentioned in CAPTIONS

A PDD does not replace text

- A good description is essential, do not spend 80% of your time on making nice models

- Mention interesting constructions in your description:
  - "This comes with a caveat"
  - "A special notion should be made"
  - "This is important because"

Concepts are not always described in the paper



I had to postulate the workshop report, group discussion report, etc. This is OK, as long as it makes sense.

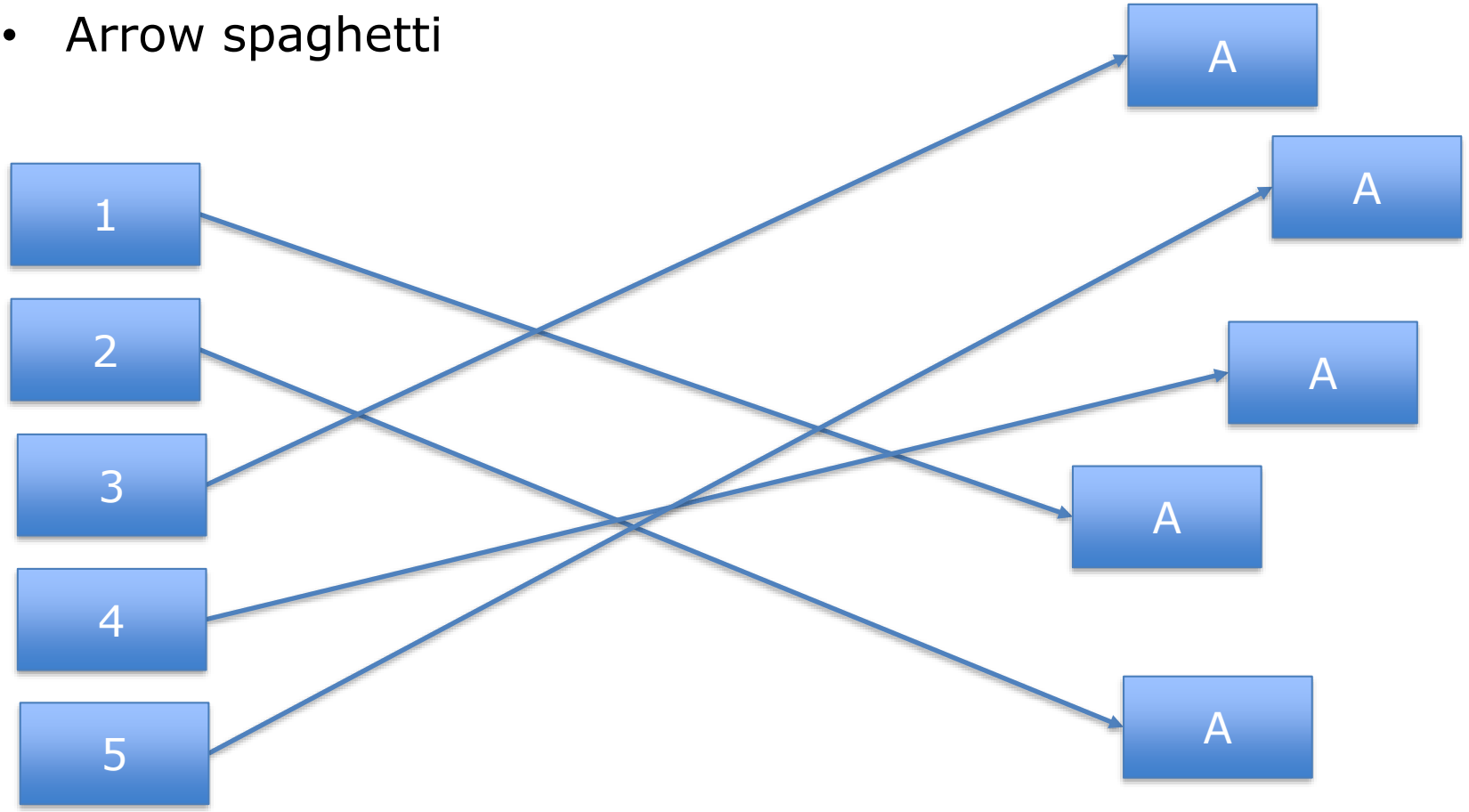
A description I like

This is a very linear process which is run from A to Z consisting all of standard activities and concepts. However, there is a long list of activities and deliverables. The most complicated concepts are *the feasibility and sustainability document* and *the context and scope*. Both are open concepts which consist of one or multiple standard concepts that are identified by their corresponding step. However, this has been modeled as a single arrow to the parent object to prevent arrow spaghetti. A special notion should be made about the concept *feasibility analysis*. This concept is part of the *the feasibility and sustainability document*, but consists of two parts, a technical part and a business socioeconomic part.

- Note the *Italic concepts* in your text

Modelling mistake to prevent

- Arrow spaghetti



What related work to look for? (Assignment E)

- Look for methods that solve the same problem
- In my case: Hansson et al. (2009), Doerflinger and Dearden (2013), Haikin and Ducombe (2013), Ferrario et al. (2014).

- Or partial solutions:
- Islam and Grönlund (2010) on context analysis, Peter (2015) on usability engineering, Haxby and Lekhi (2017) on software development.

Additional findings (also E)

- Look for the author and plan an interview to evaluate the method
  - If you would like to do this, plan this NOW
- Find a company using the method and see how it is implemented in practice
  - Also, plan this NOW
- Find grey literature on the method: blogs, video material, books, etc.
- Get a buddy with a similar method and perform a comparative analysis
  - My approach

Write your own findings

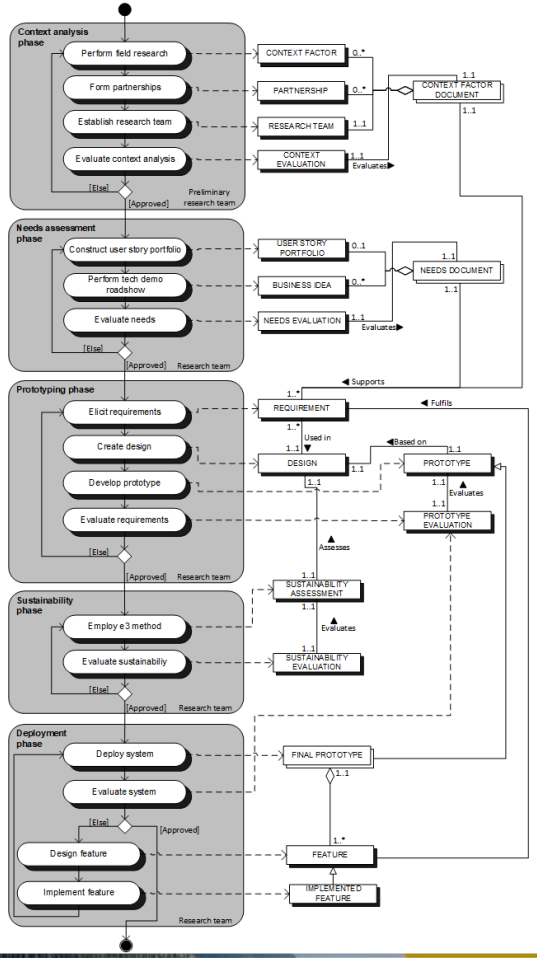
Perform an activity and concept comparison: Which of them occur in the other methods and how are these called?

Table 9. Method statistics

	Bon	Doerflinger	Ferrario
Activities	5	3	4
Sub-activities	11	13	13
Concepts	15	13	12

This of course only makes sense when all methods solve the same problem.

And move towards a reference method (Assignment E and H)



Activity Bon	Doerflinger	Ferrario
Perform field research		
Form partnerships		
Establish research team		
Construct user story portfolio		
Elicit requirements	Identify requirements	Act (prepare)
Develop prototype	Create prototype	Act (design)
Model use cases		
Employ e^3 value method		Focal point/ act (sustain)
Develop product	Deploy system	Act (build)
Test and refine product	Evaluate system/ design feature/ develop feature	

Activity Doerflinger	Bon	Ferrario
Identify requirements	Elicit requirements	Act (prepare)
Create design		Plan (design)
Create prototype	Develop prototype	Act (design)
Evaluate requirements		Reflect (design)
Install initial version		
Fix bugs		
Evaluate prototype		
Refactor prototype		
Install feature		
Deploy system	Develop product	Act (build)
Evaluate system	Test and refine product	Reflect (build)
Design feature	Test and refine product	
Develop feature	Test and refine product	

QUESTIONS?