



Faculty of Science



## ASSIST-ME

*Assess Inquiry in Science, Technology and Mathematics Education.*

<http://assistme.ku.dk/>

Jens Dolin

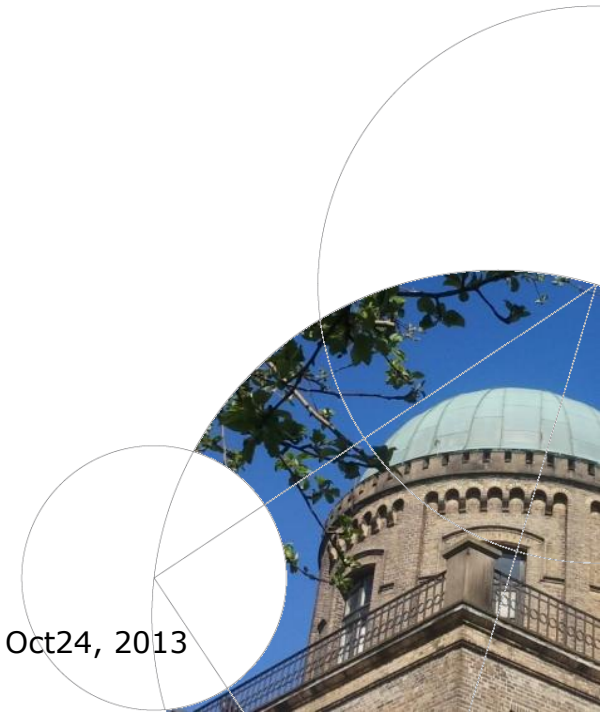
Head of Department of Science Education



**ASSIST**ME



Secure Mechelen Oct24, 2013



Participant No.	Participant organisation name	Acronym	Country
1	University of Copenhagen, Department of Science Education (Coordinator)	UCPH	Denmark
2	University of Kiel, Leibniz Institute for Science and Mathematics Education	IPN	Germany
3	University of Cyprus, Department of Educational Sciences, Learning in Science Group	UCY	Cyprus
4	Fachhochschule Nordwestschweiz, Pädagogische Hochschule, Centre for Science and Technology Education	FHNW	Switzerland
5	Centre National de la Recherche Scientifique, Lyon, ICAR, ENS Lyon	CNRS	France
6	King's College London, Department of Education & Professional Studies	KCL	UK
7	University of Jyväskylä, Department of Teacher Education	JYU	Finland
8	University Joseph Fourier Grenoble 1, Teacher Education Institute, Educational Science Laboratory	UJF	France
9	University of South Bohemia	JU	Czech Republic
10	Pearson Education International	PEI	UK

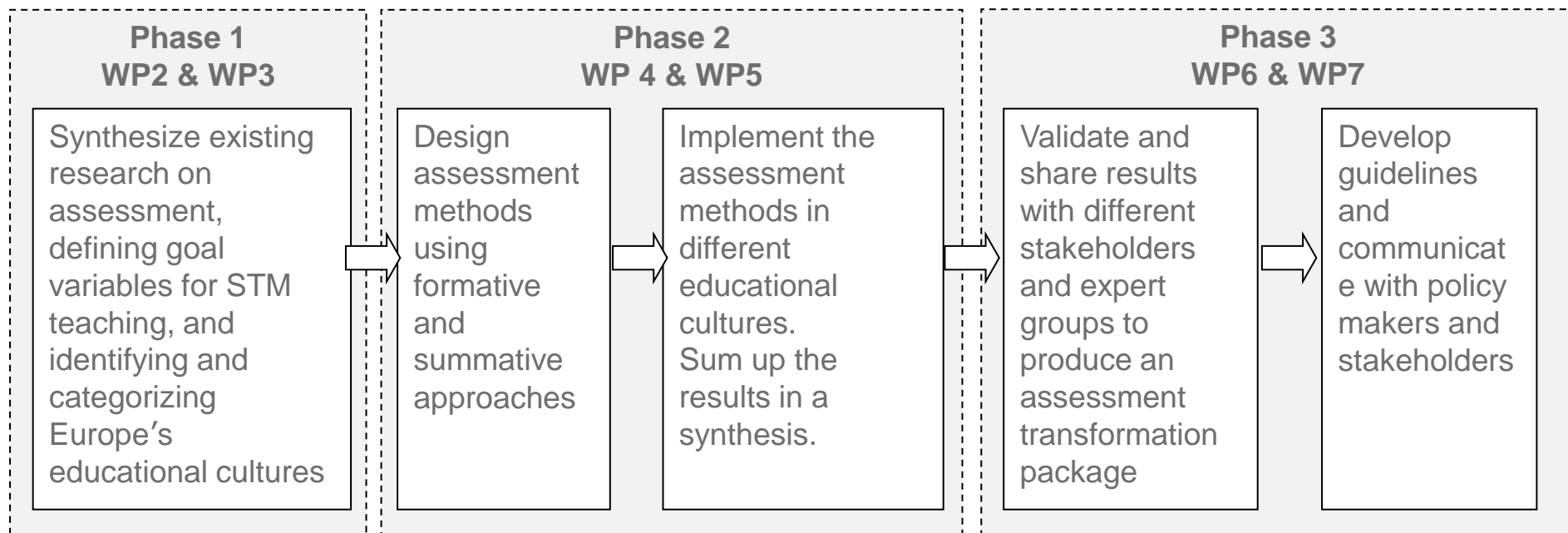


## What's the problem?

1. A modern society and our increased insight into learning and teaching make an increased demand to students' outcome of the science education – the educational goals are constantly getting more and more ambitious, demanding advanced professional and generic abilities.
2. We know a lot about how to teach for these (new) competences (for instance through many FP7 projects), but
3. The predominant assessment and evaluation forms are not able to capture these new goals.
4. The assessment forms have a deciding influence on teaching.
5. 'Traditional' assessment forms will encourage 'traditional' teaching so most existing assessment and evaluation forms are blocking for teaching that makes it possible for students to acquire the new learning goals.
6. We need knowledge of what hinders and promotes uptake of competence oriented assessment (and teaching)
7. We need political awareness of these problems and involvement in solutions.



The overall aim of ASSIST-ME is to provide a research base on effective uptake of formative and summative assessment for inquiry-based, competence oriented Science, Technology and Mathematics (STM) education in primary and secondary education in different educational contexts in Europe and to use this research base to give policy makers and other stakeholders guidelines for ensuring that assessment enhances learning in STM education.

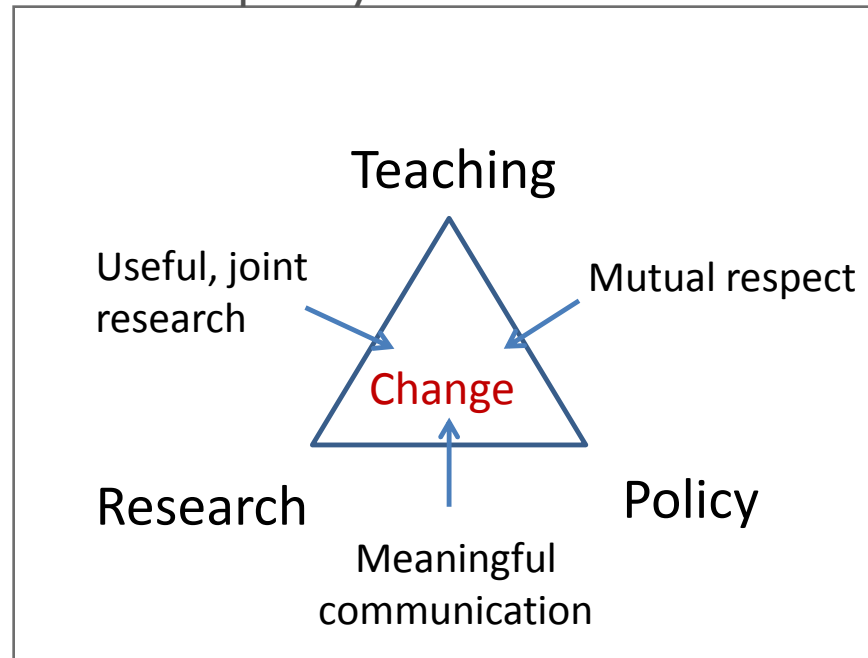


## Some key aspects of ASSIST-ME

The establishment of a common European understanding of IBSTME closely linked to competences (professional, generative) and to formative og summative assessment

The development of innovative assessment forms adaptable to different educational cultures – a proof of practicability

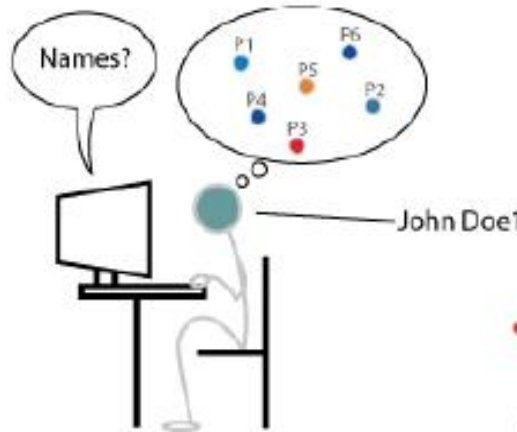
Research and implementation in close collaboration between researchers, teachers and policy makers:



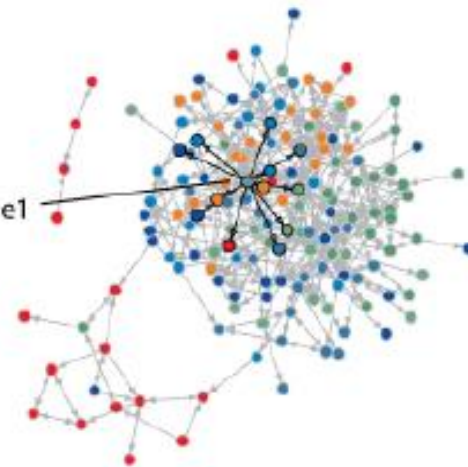
# Finding key stake holders

Respondent list		
Name	E-mail	Type
Jane Doe	jane@doe.com	Gov. Official
John Doe1	john@doe1.com	Journalist
Jane Doe2*	jane@doe2.com	Teacher
John Doe3	john@doe3.com	Parental Org.
..	..	..
..	..	..
..	..	..

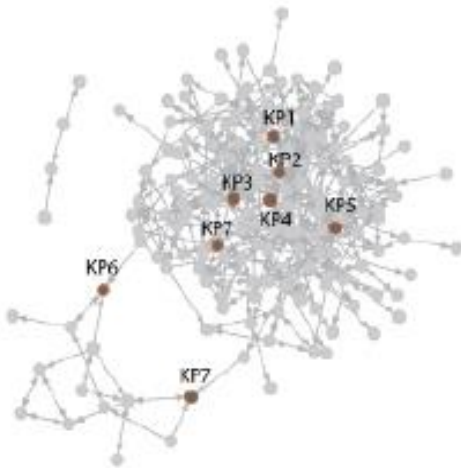
A: Make list of stakeholders



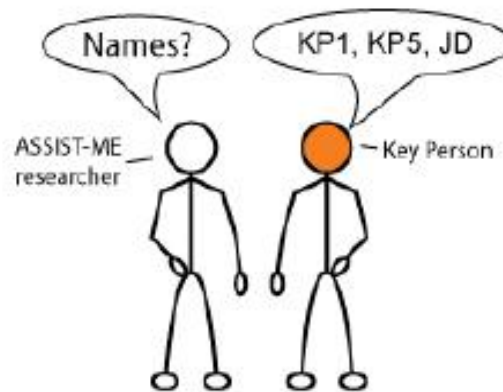
B: Send out network survey



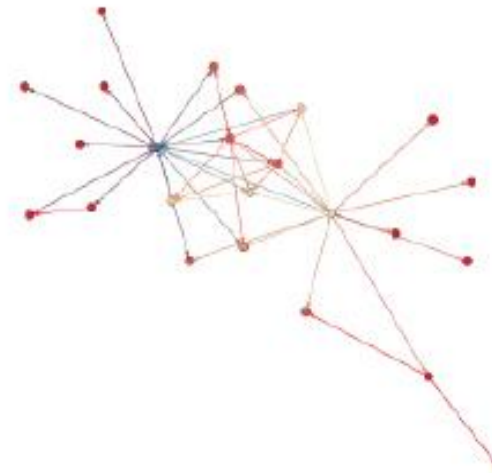
C: Use answers to produce network



D: Select key persons for new list

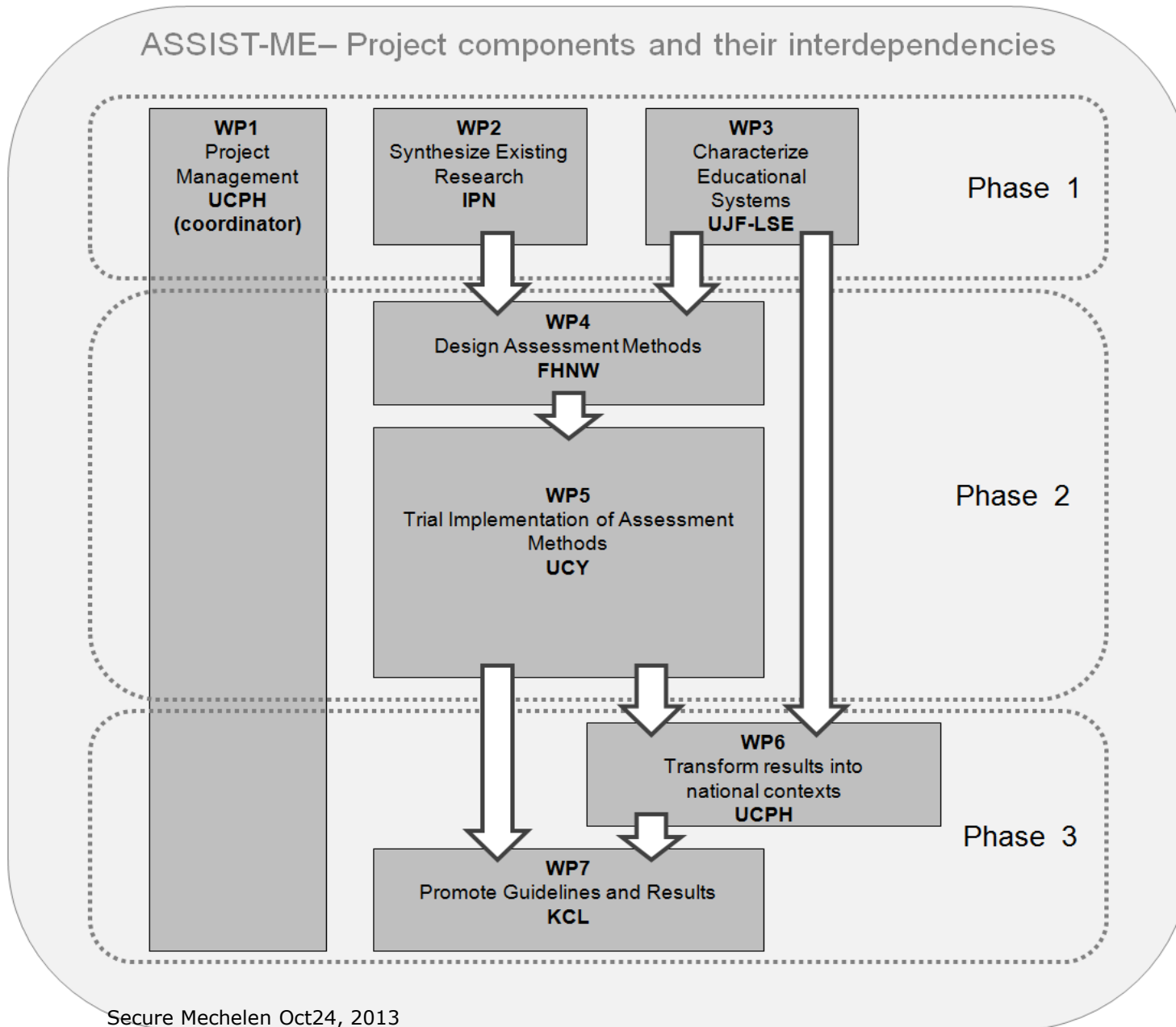


E: Ask key persons for names

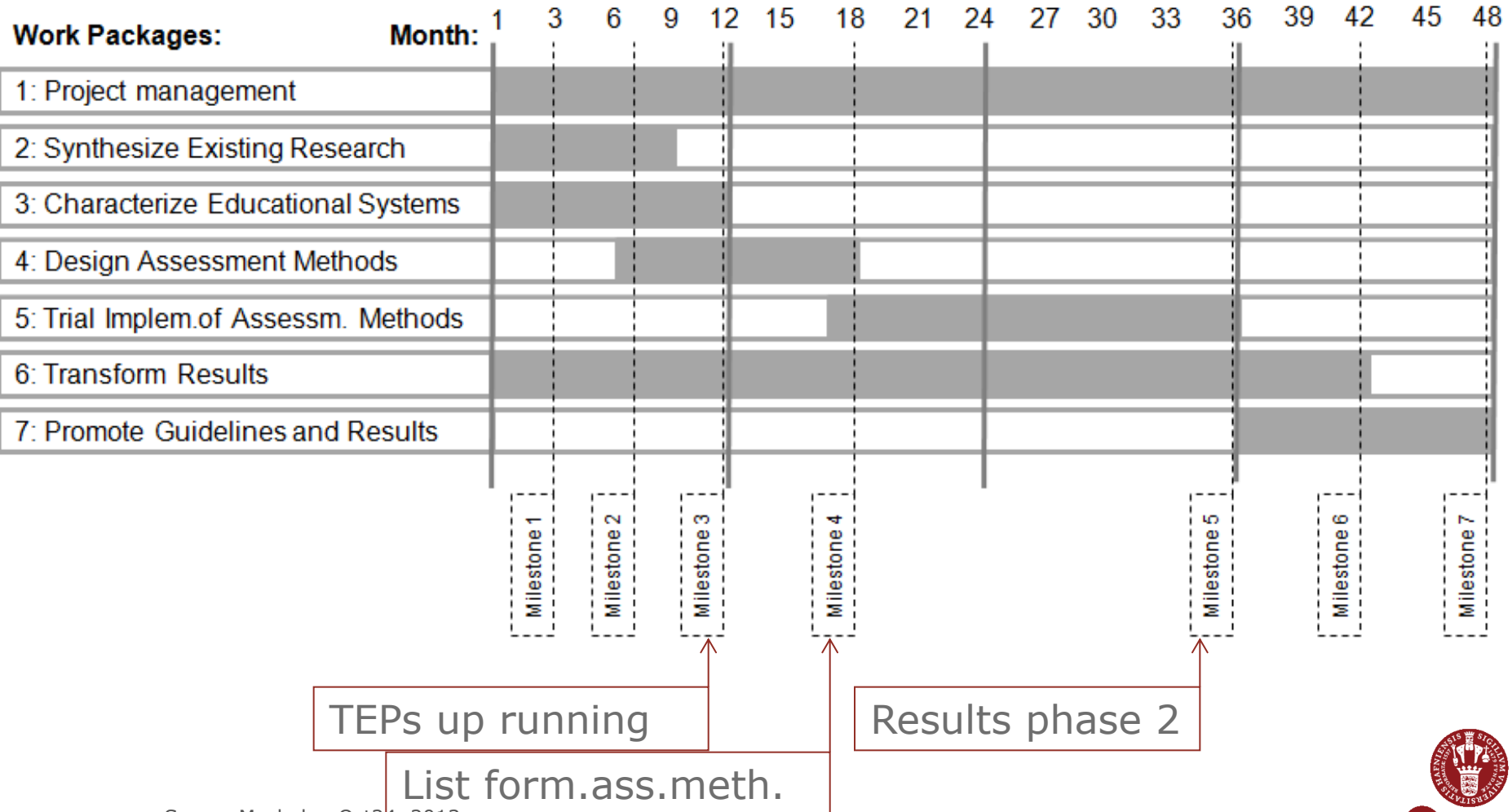


F: Refine network (and select NSP members)

## ASSIST-ME– Project components and their interdependencies



## Timing of Work Packages and milestones







## The desirable combination

On the one side we have the educational assessment based on the teacher's interaction with the students and her/his professional judgement of the strengths and weaknesses of the individual students (or group of students) in their learning processes.

A socio-cultural, hermeneutic oriented investigation, classroom adaptable and with high validity

On the other side we have the objective test performed in a special setting with its norm-referenced scoring and its focus on scaling and comparing individuals in order to form rankings.

A post-positivistic, psychometric oriented test design, standardized and with high reliability

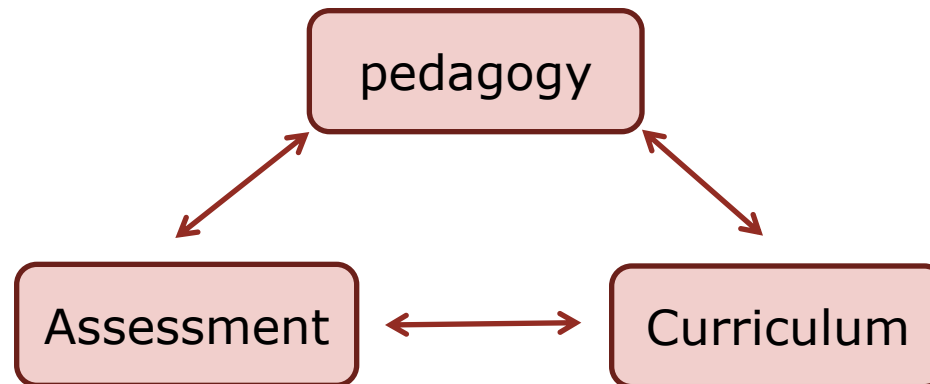
The task is to develop assessment procedures that fits into the everyday classroom practice, and that provide qualitatively oriented descriptions and monitoring of competence oriented learning processes and that at the same time can deliver quantitative, standardized information on individual achievement.



# Assessment, pedagogy and curriculum (lehrplan)

## Conceptions of learning

Transmission - interpretation



## Evaluation paradigm

Post positivistisk – socio-cultural

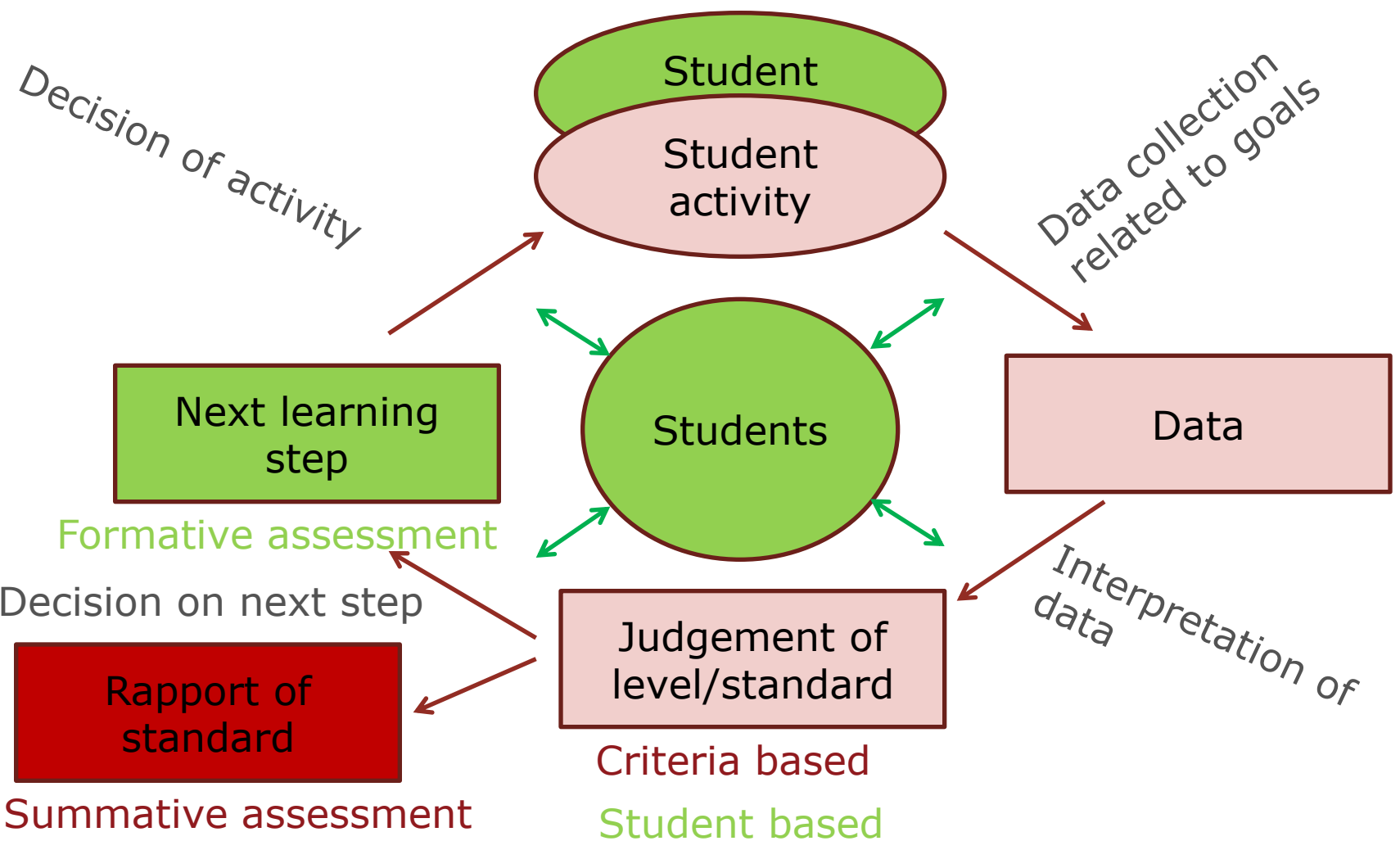
## Goal categories

Information/knowledge - competences

Point: In order to have teachers assess competences – they must hold a certain conception of learning and assessment and the matching pedagogy



# Formative and summative assessment (based on Wynne 2012)



## The task

The task is to develop some assessment methods (that can be used both formatively and summatively) able to capture key competences related to IBSTME, have the methods implemented in different educational systems (by skilled teachers) and investigate the implementation processes (what supports/undermine the uptake?).

Some important elements in this process are

- A common understanding of key concepts and processes (for reliability reasons)
- Deciding which competences we focus on as representing IBSTME (concentrate on maybe three domain specific and 1-2 generic)
- Exemplify how to teach for the selected competences (one canonical case in each subject and level)
- Develop some assessment methods able to judge the competences (define operationalizable criteria)
- Involve teachers in adapting the teaching and assessment methods into their class rooms
- Research the implementation process (together with the teachers)
- Continuously engage stakeholders in the process.

