



of teaching  
ESSENCE

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# KTH Royal Institute of Technology



- ❑ The largest and oldest technical university in Sweden.
- ❑ 1/3 of Sweden's technical research and engineering education capacity

# School of Information and Communication Technology at KISTA



- ❑ Education and research in all the areas which today's information society is based upon - from nano scale physics to the benefit of the end user.
- ❑ 300 students, 321 employees, 41 professors, 30 associate professors.
- ❑ Situated in Northern Europe's Silicon Valley – home to 1000 companies.

# Outline

- Problems today

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- IT-Project Course

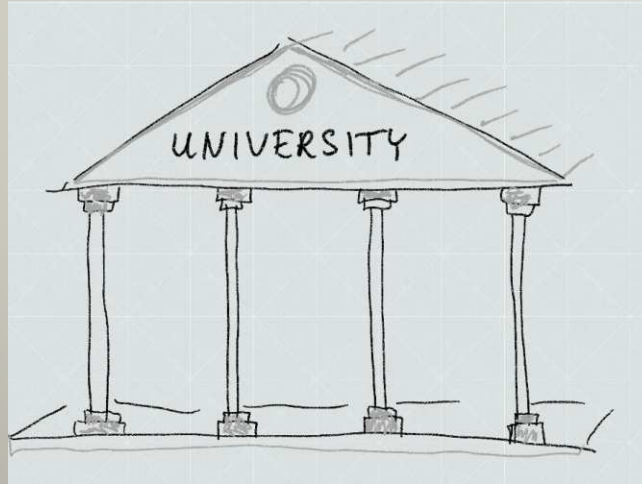
- Students' opinion about ESSENCE

# Graduated students are poorly equipped for their future careers



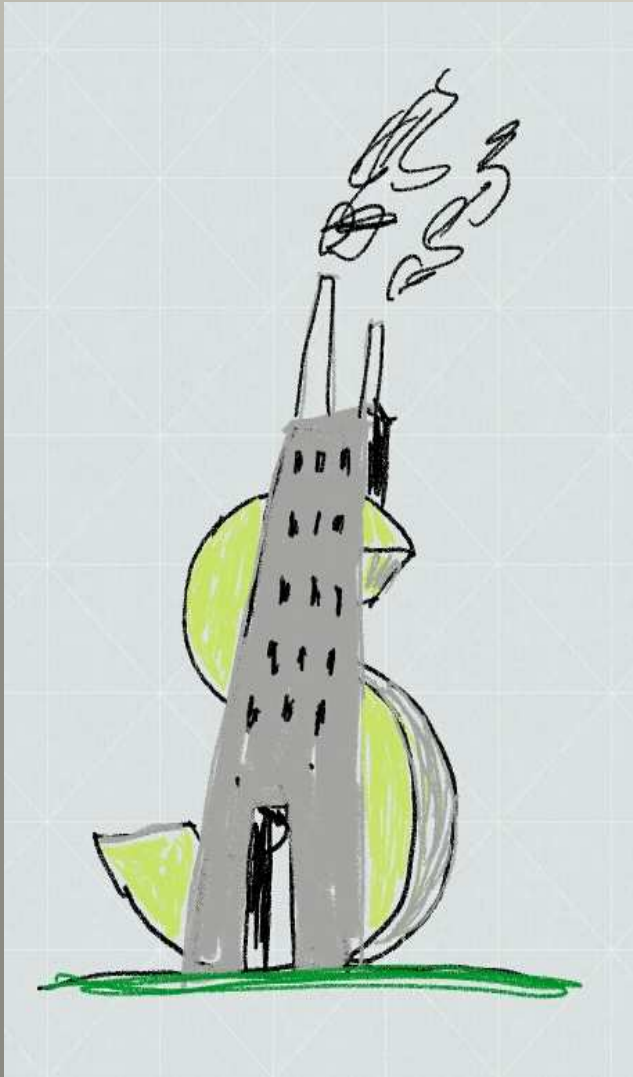
- Software engineering is difficult to learn/teach in a classroom environment.
- Next to impossible to gain experience.
- Difficulties to assess students' progress and competence.
- Students have become nationally and internationally mobile.

# Problems at universities



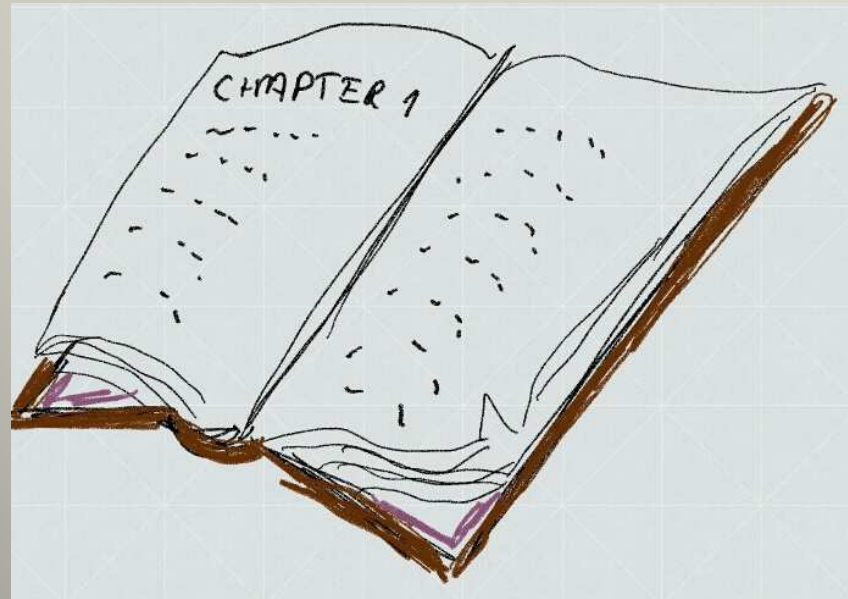
- Software engineering is often squeezed into one course.
- You cannot deliver all within one course.
- No way of assessing current educators wrt how capable they are to deliver competencies.
- Need for a global approach for evaluating the educators, not just school reputation.

# Problems within industry



- Shortage of employee candidates.
- Graduate students are poorly equipped for their future careers.
- Graduate students do not possess enough knowledge about and skills within software engineering.

# Problems with educational material



- No interest in writing educational books.
- Different terminology used.
- Different understanding of software engineering
- Books too difficult for students to understand.
- There is no book that covers the whole software engineering domain for the beginners in 150 – 200 pages.

# Outline

- ❑ Problems today
- ❑ IT-Project Course

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- ❑ Students' opinion about ESSENCE

# IT-Project Course at KTH

2  
weeks

4  
weeks

3  
weeks

## Phase 1

(IT Project, Part 1)

Theoretical part, some  
practical exercises

## Phase 2

(IT Project, Part 2)

Practical course

## Phase 3

(IT Project, Part 1)

Theoretical part, analytical  
perspective

time

**Other teachers  
have this part**

# Handshake Agreement in Sprint 2012



- At that time, no one in the world taught ESSENCE.
- There was no educational material.
- The agreement was made two weeks before the course started.

# IT-Project Course at KTH

2  
weeks

Phase 1

(IT Project, Part 1)

Theoretical part, some  
practical exercises

3  
weeks

Phase 3

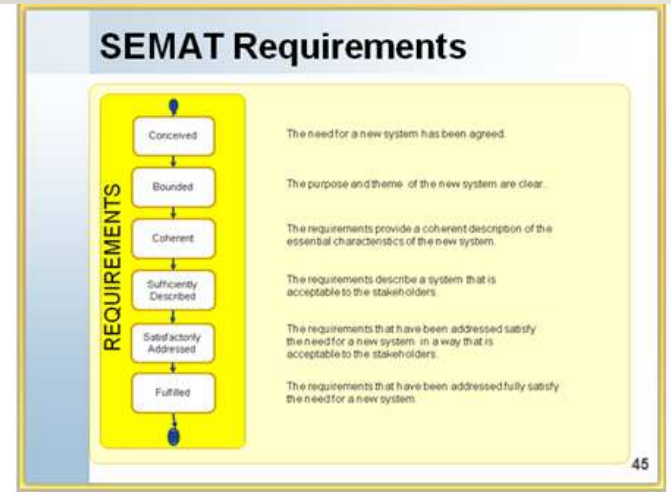
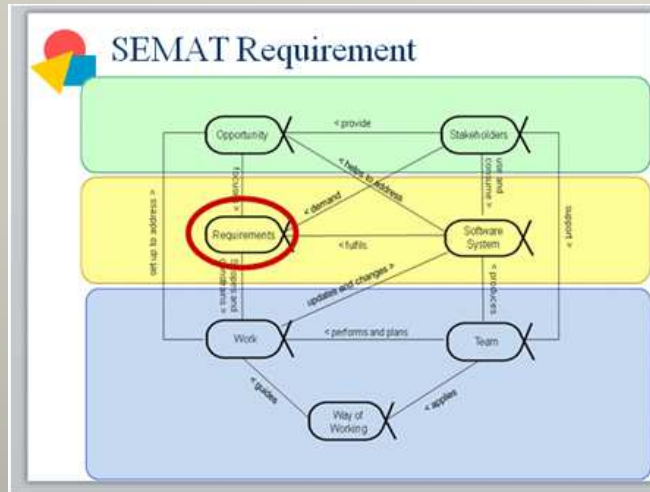
(IT Project, Part 1)

Theoretical part, analytical  
perspective

The main goal: To  
prepare students for  
working with the alphas

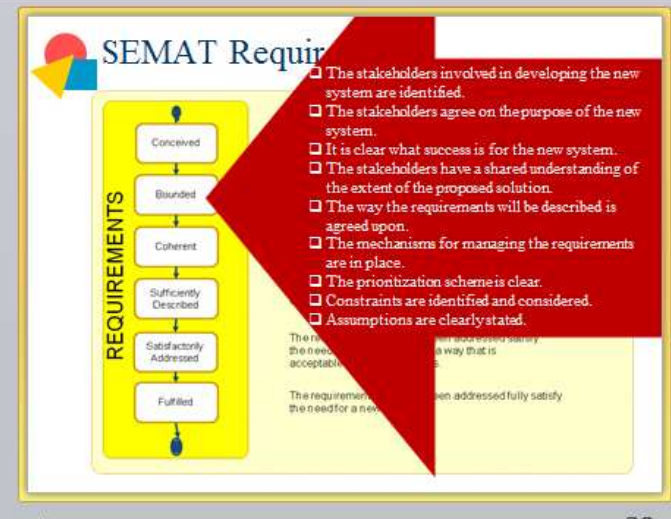
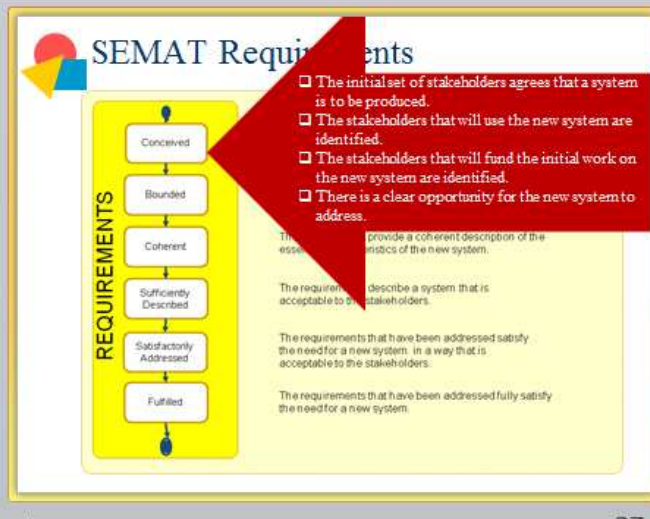
# Course development in 2012, Phase 1

2 weeks



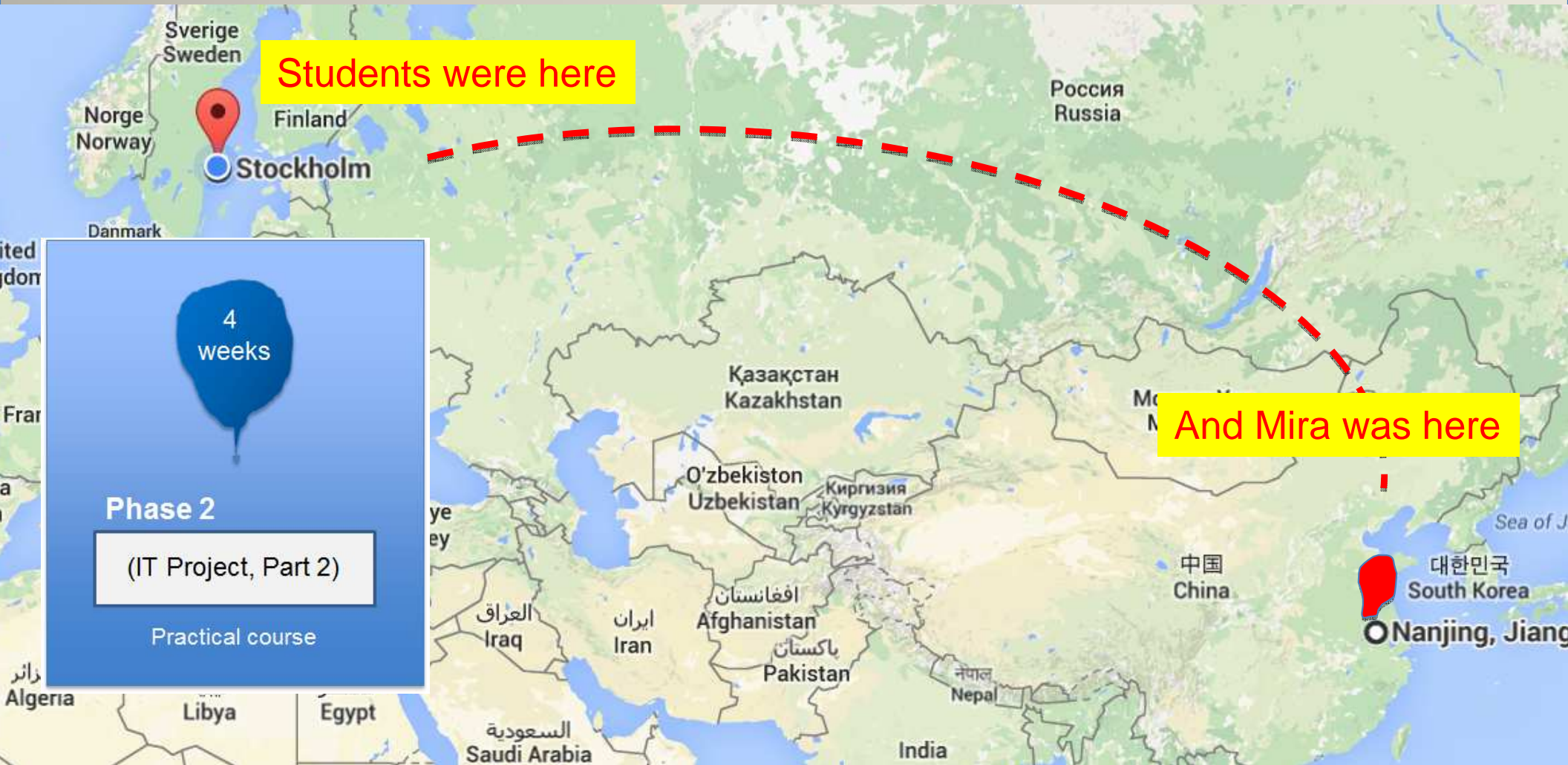
Phase 1

(IT Project, Part 1)



- Presentation of the Kernel alpha by alpha, state by state, checklist item by checklist item.

# At the beginning of Phase 2, 2012



Students were here

And Mira was here

4 weeks

Phase 2

(IT Project, Part 2)

Practical course



TALK ABOUT LOOKING FOR TROUBLE!

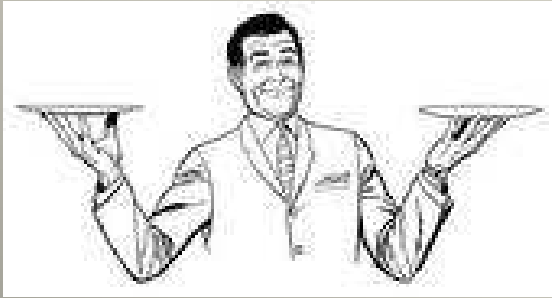
# Development of Greta's Corner Story



# Problems at Greta's Corner

- All the guest reservations are done manually
- The manual reservation system has shown to be very error-prone.
  - Guests do not only book restaurant seats, they cancel them, change booking times, change the number of guests and the like.
  - The guests are unintentionally removed from the list, or they are booked on the wrong day, or they simply do not come.

# Stakeholders



Bengt



Sven Svensson – the manager  
The famous Swedish chef



Guests



John with high  
restaurant experience



Goran

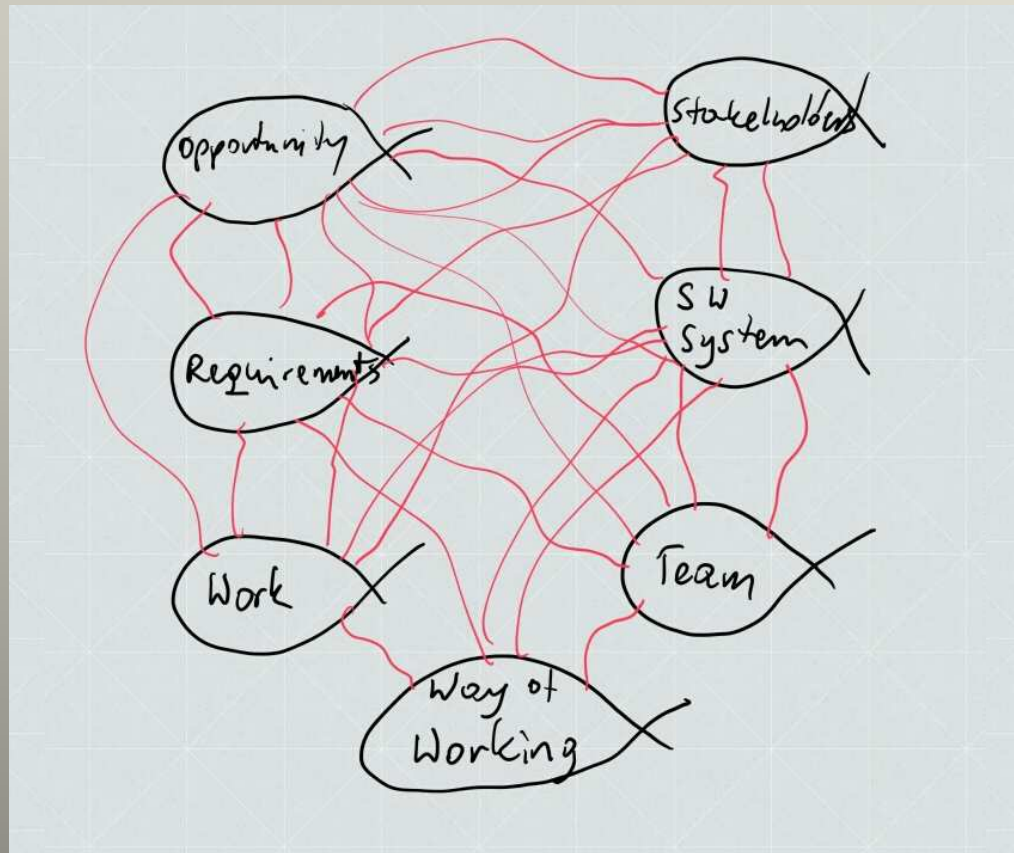


Fredrik

# Solution

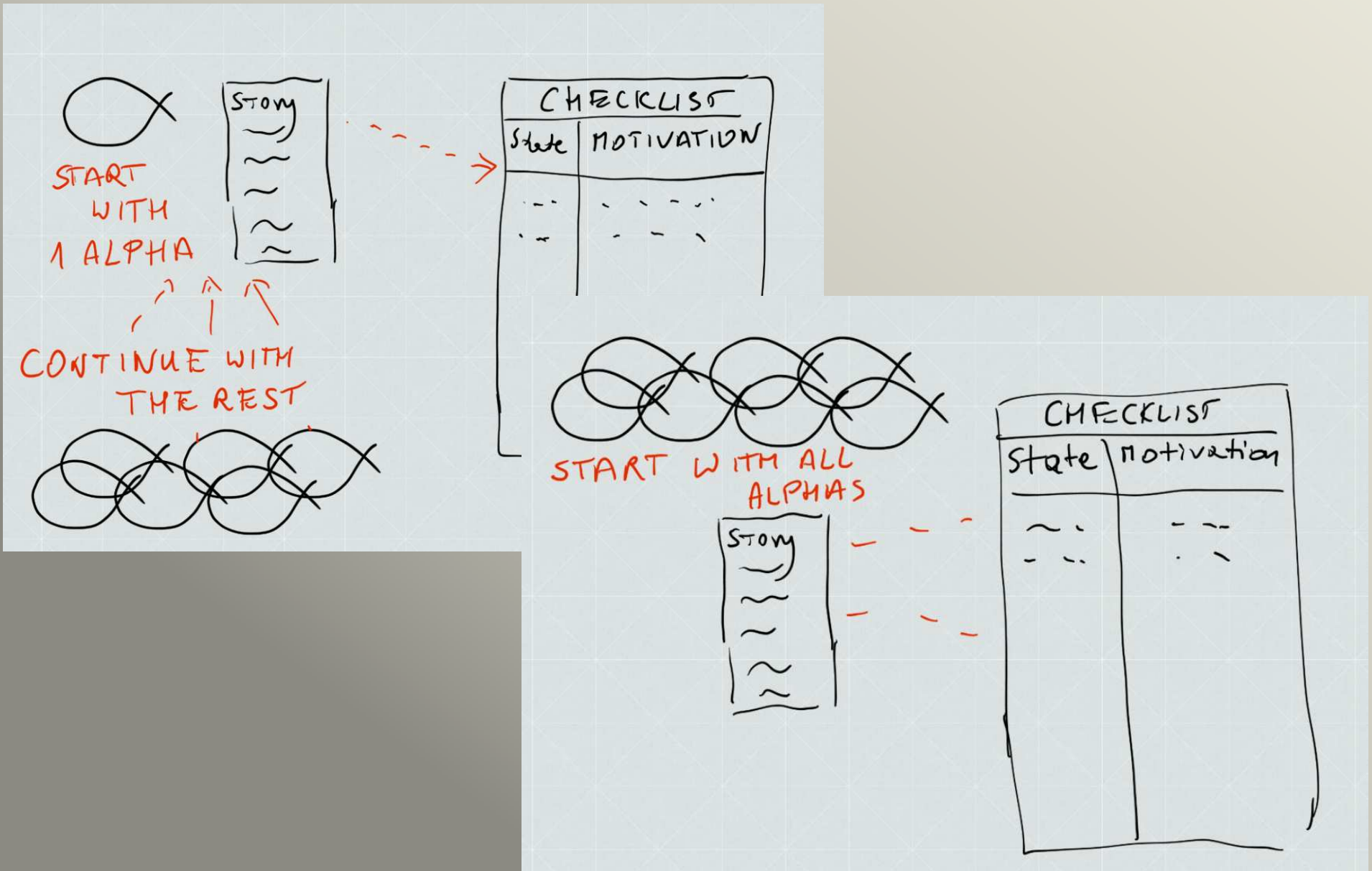
- A simple restaurant reservation system that would remedy the problems is going to be developed.
- Adam will develop it.
- A hand-shake agreement
- It was also agreed that John would assist Adam with answering questions about the restaurant.

# Experience of writing the story



- The alphas are highly cohesive and **HIGHLY** coupled.
- High coupling is not a benefit of OO but it is a great big benefit of ESSENCE.
- The Greta's Corner story was my last resort in 2012.

# Strategy for writing the story



# Result

Status	Checklist	Yes/No	Explanation
<b>Conceived</b>	The initial set of stakeholders agrees that a system is to be produced.	Yes	All the restaurant staff and the owner have agreed that a computerized restaurant reservation system should be produced.
	The stakeholders that will use the new system are identified.	Yes	Yes, the restaurant staff will use the system.
	The stakeholders that will fund the initial work on the new system are identified.	Yes	Yes, it is Sven – the restaurant owner who will fund the initial work on the system.
	There is a clear opportunity for the new system to address.	Yes	Everybody agreed that there was a clear opportunity to be gained from developing a new system. Less booking mistakes would be made and the customers would be much happier.
<b>Bounded</b>	The stakeholders involved in developing the new system are identified.	Yes	It was only Adam who would develop the system. So, yes they have been identified.
	The stakeholders agree on the purpose of the new system.	Yes	Adam knows the purpose of the system. It is to manage restaurant bookings.
	It is clear what success is for	Yes	The success has not been explicitly stated. However,

# Years 2013-2014

- We simply improved the material.
- Meanwhile, we developed educational material with other SEMAT members.

## Scenario 1

### A Scenario on Kick-Starting a Project

Mira Kajko-Mattsson

Paul E. McMahon

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## Scenario 2

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*Purpose of the Scenario*  
By reading this scenario, the reader will understand how to kick-start a project. The approach is advanced by identifying and solving pain points.

*Pre-conditions*  
To get the most out of this scenario, the reader should have a basic understanding of the Essence kernel and its use.

*When to apply*  
The approach presented in this scenario is intended to be used at the start of a project. It can be used to check the current state of a project.

*Essence Scope*  
This scenario focuses on the Essence kernel and its use in project management.

*Reference Cards*  
The Alpha cards are used to support the training objectives.

### A Scenario on Solving Pain Points

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*Purpose of the scenario*  
By reading this scenario, the reader will understand how to solve pain points. The approach is advanced by identifying and solving pain points. The scenario is not intended to give you a complete picture of the Essence kernel, but rather to provide information needed for supporting the training objectives.

*Pre-conditions*  
To get the most out of this scenario, the reader should have a basic understanding of the Essence kernel and its use.

*When to Apply*  
This scenario illustrates how to introduce Essence incremental meetings. This is done in the context of an existing Essence incremental approach described in this scenario remains applicable.

*Essence Scope*

Paul E. McMahon  
PEM Systems

## Handout 1 for Scenario 2

### Solving Pain Points with Requirements Alpha

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## Handout 1 for Scenario 2

### Solving Pain Points with Team Alpha

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Use the usage of the Essence kernel on the Alpha cards.

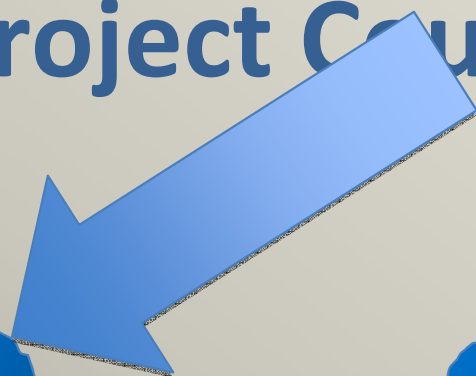
Use the knowledge of the Essence Alpha cards on Solving Pain Points.

at release.

only. Other cards, like Activity Spaces

SEMAT kernel.

# IT-Project Course at KTH in 2015



## Phase 1

(IT Project, Part 1)

Theoretical part, some practical exercises

## Phase 2

(IT Project, Part 2)

Practical course

## Phase 3

(IT Project, Part 1)

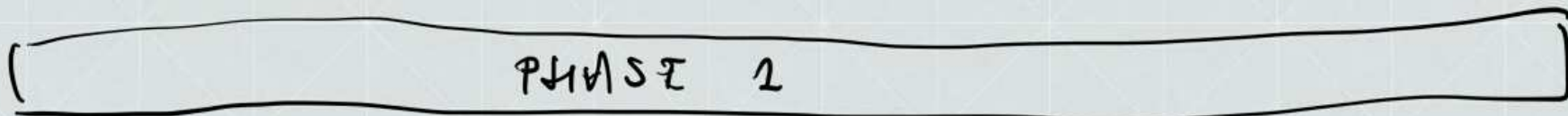
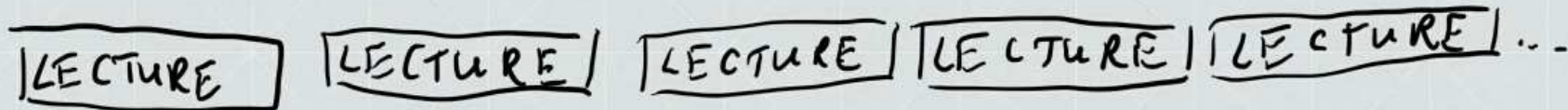
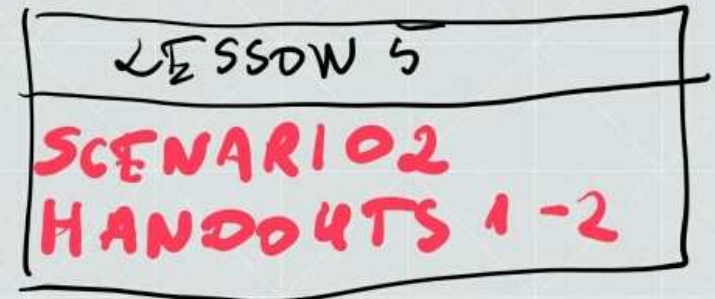
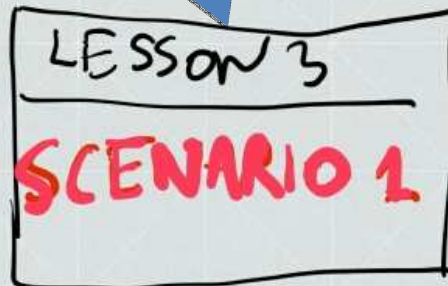
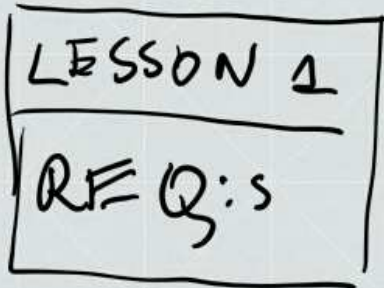
Theoretical part, analytical perspective

time

# Year 2015

(1) to help students understand what the project status evaluation looked like  
(2) to find out whether they had any understanding difficulties.

To exercise the handouts



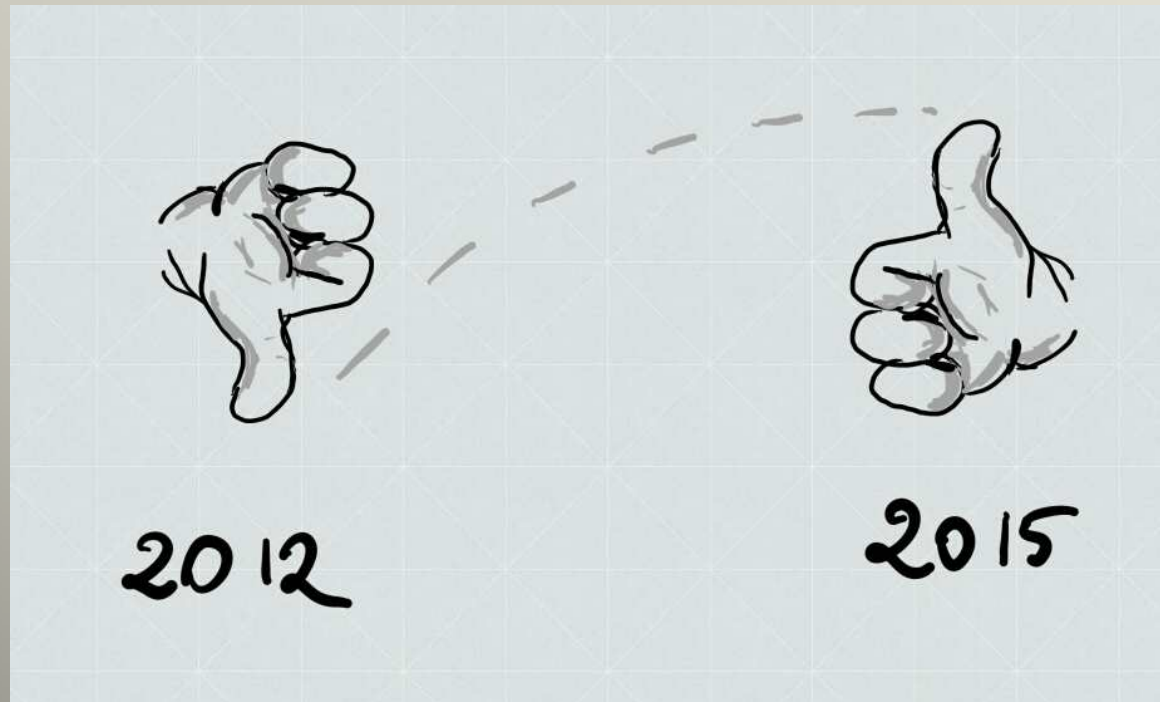
# Outline

- ❑ Problems today
  - ❑ IT-Project Course
  - ❑ Students' opinion about ESSENCE
-

# Year 2015



# Students' attitude towards ESSENCE



- 60 % of the students of the year 2012 were not directly positive.
- They treated it as a burden and as an unnecessary new method.
- They expressed that they felt like guinea pigs.
- Now, about 80-90% of the students are positive.

# Some opinions about ESSENCE

Intuitively understood

superior to other methods thanks to its full coverage of the essential things

provides a stable platform to stand on

enables distribution of work

assurance of project quality

time to learn ESSENCE is well invested

makes project more visible

facilitates project communication

useful in projects lacking any methods

***Having a list of items to be checked off was definitely much better than having nothing and trying to figure out what to do next!***

# Future

- ESSENCE is an excellent tool for squeezing software engineering education within a short period of time, even on an undergraduate level.
- Continue using ESSENCE within the education.
- Continue to develop educational material.

**Anybody interested in  
cooperating with us?**

# Mira Kajko-Mattsson, KTH



- Associate Professor (docent) in software engineering.
- Researcher in industrial software processes.
- Creator of several industrial evolution and maintenance process models.
- Member of SEMAT since 2009.