

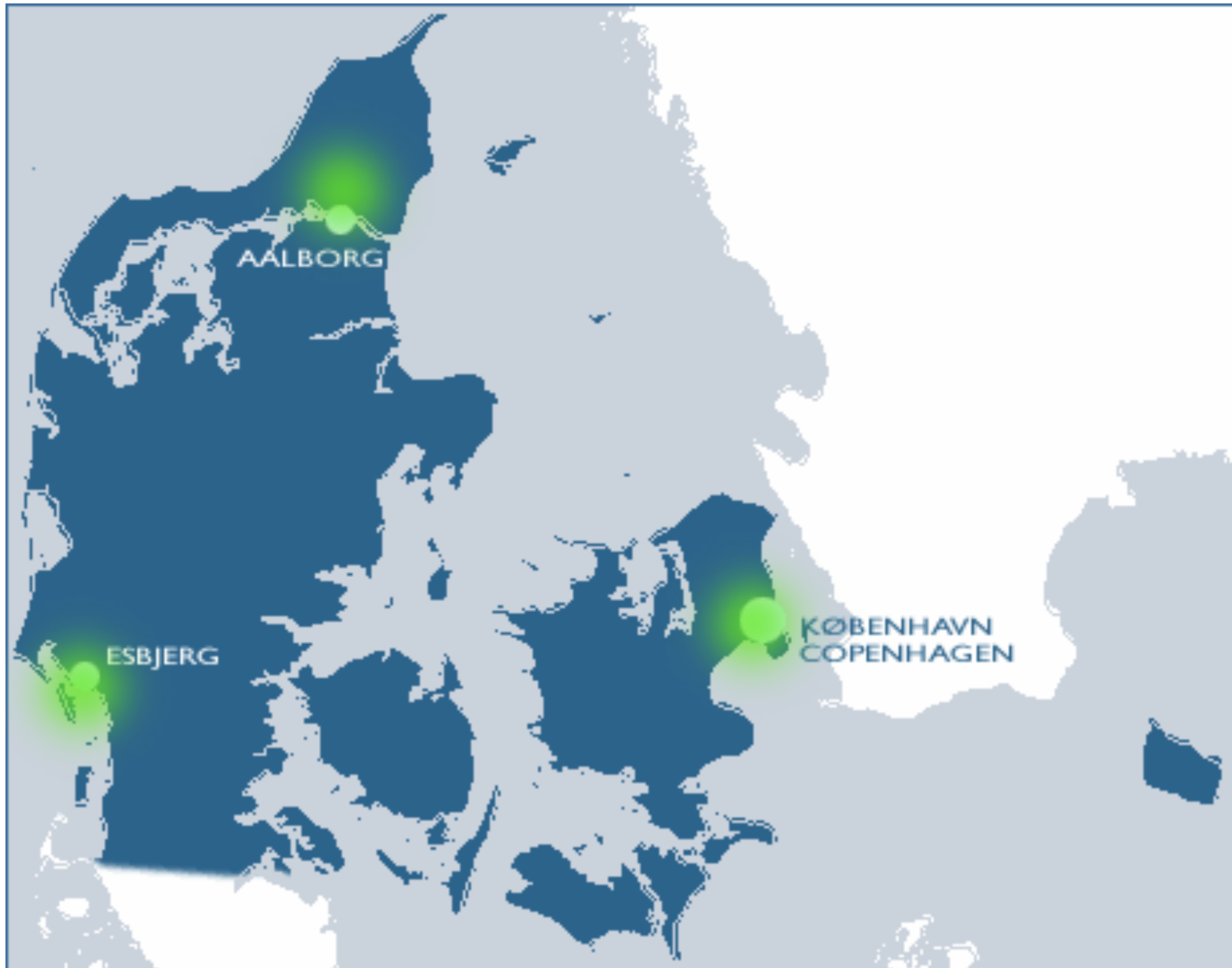
Maintaining and developing problem-based project work

38 years institutional experience

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THIRD ASEM UNIVERSITY-BUSINESS FORUM
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Aalborg University – in Aalborg, Esbjerg and Copenhagen



Aalborg University – Main Campus



Aalborg University – facts

Aalborg University has app. 19.000 students, ranging from students at preparatory courses through master-level candidates

10% are international students coming from 100 different countries all over the world

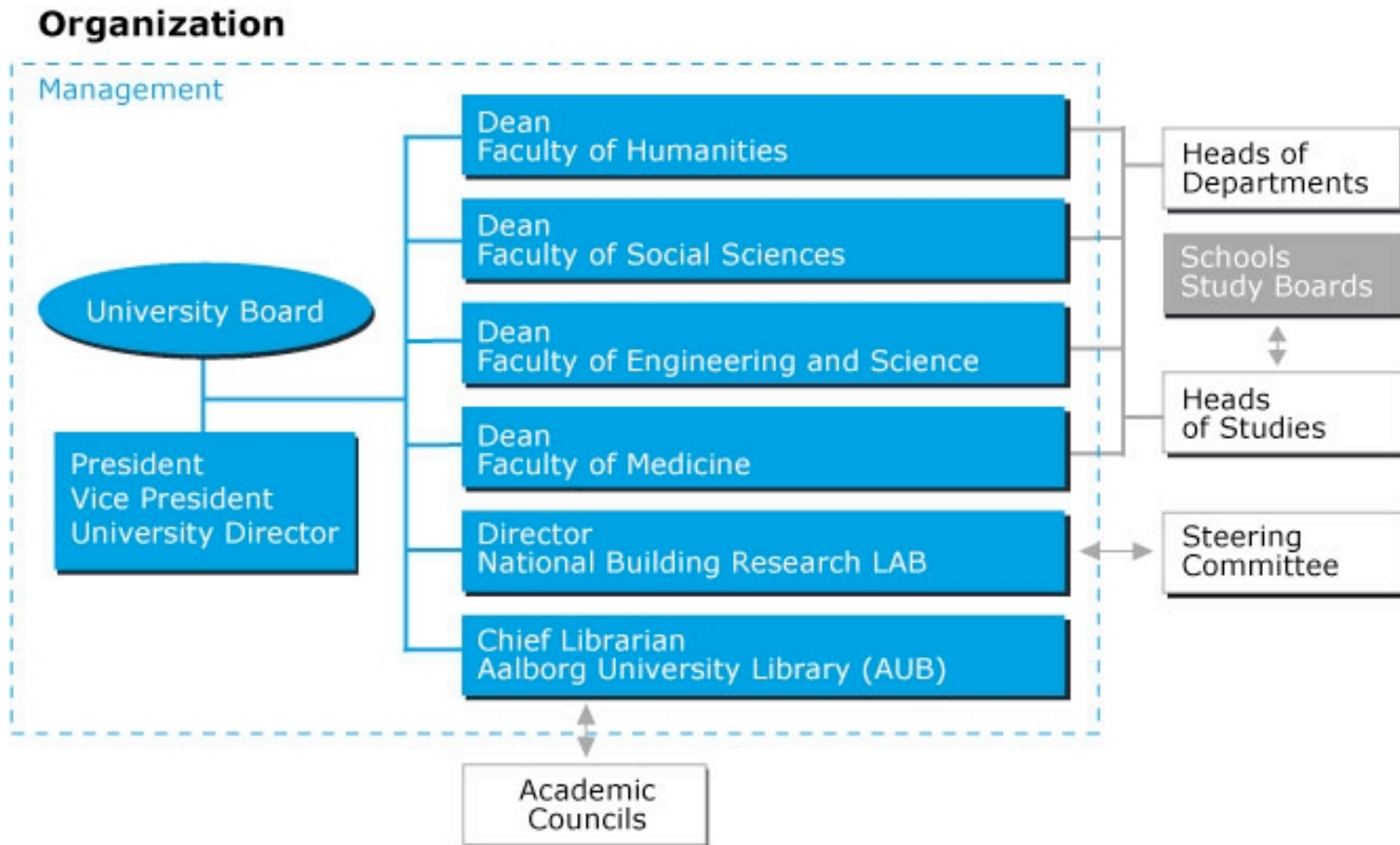
The university employs approximately 1800 faculty and 700 administrative and technical staff

The educational programmes are organized into the university's 4 faculties and departments

Aalborg University has app. 60 programmes taught in English

Annual budget (2012) in excess of € 300 Mill.

Management



The values of Aalborg University

The values that distinguish Aalborg University:

Creativity

Aalborg University goes off the beaten track in research, teaching, administration and in the exchange of knowledge with its surroundings

Openness

Aalborg University is open to dialogue, new ideas and thoughts and to positive criticism and difference of opinions

Co-operation

Aalborg University is characterized by many different types of co-operations -conducted in an atmosphere of mutual trust and respect

The Aalborg Model

Semester themes => problems => questioning and wondering

A project each semester

Group size of 5-8 students first year, 2-4 students the last year

Each group has at least one facilitator/supervisor

Self selected group and projects within themes

Group examination/ individual examination



Aalborg model

I: Project based/organised

Formulation of objectives and problems

Unique and complex tasks

Active searching and writing process which may lead to deeper understanding

Teamwork

Deadlines

Aalborg model

2: Problem based

Problem based – open

Discipline based – narrow

methodical objectives
problem based themes –

subject objectives
methodological/discipline themes
subject understanding

ill defined problems
learner directed
interdisciplinary
exemplarity

“Well defined problems”
learner and teacher controlled
disciplines
exemplarity

What is a problem?

Unsatisfactory or unsettled

A difficulty

A state of affairs needed to be changed

Something that is not working well

Contradiction

Wonder

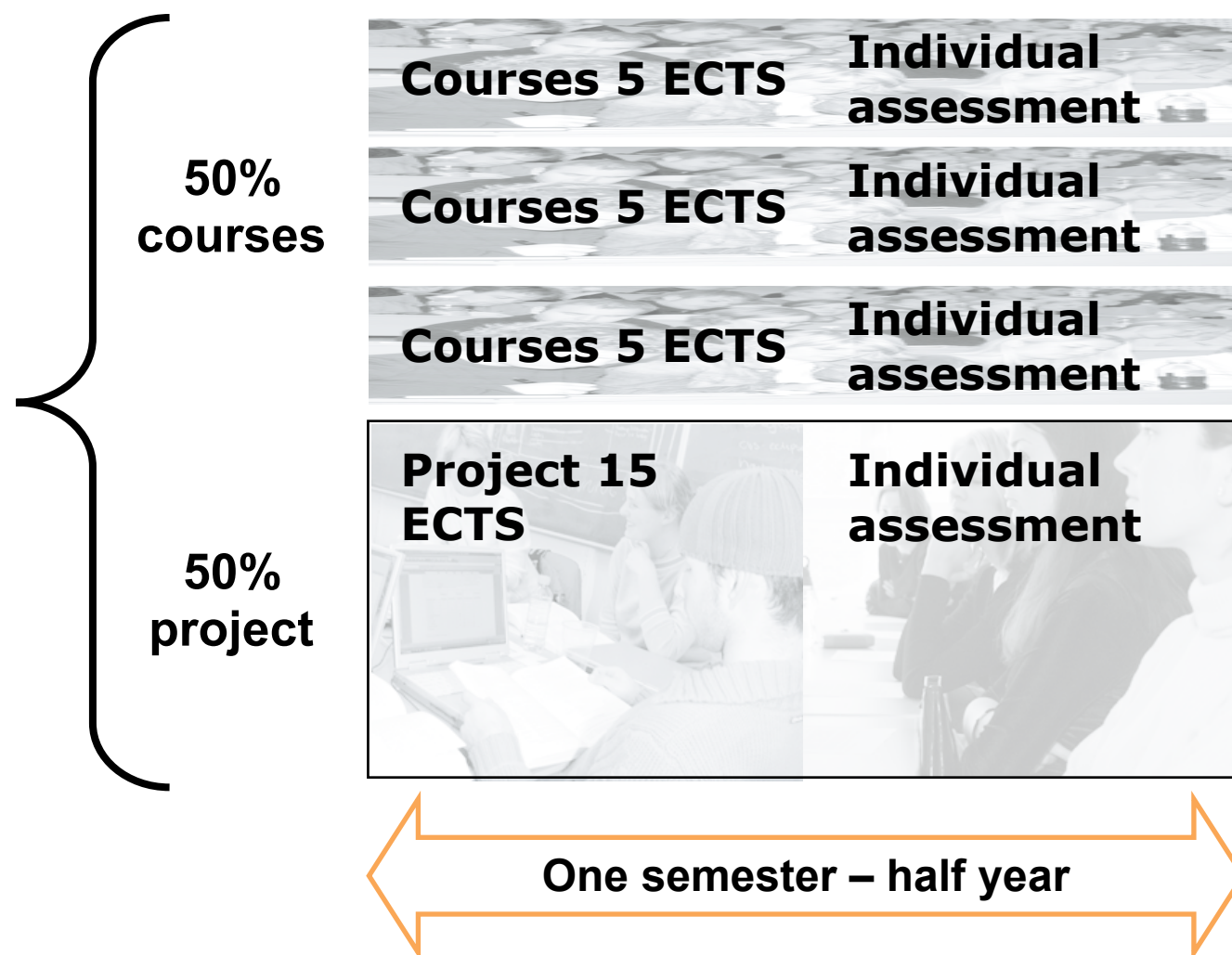
Interest

Something to develop!

Characteristics of good problem

- Feasibility – it can be studied
- Clarity – most people can understand
- Significance – contribute to the pool of existing knowledge

The new Aalborg Model



1 ECTS (European Credit Transfer System) = 30 working hours



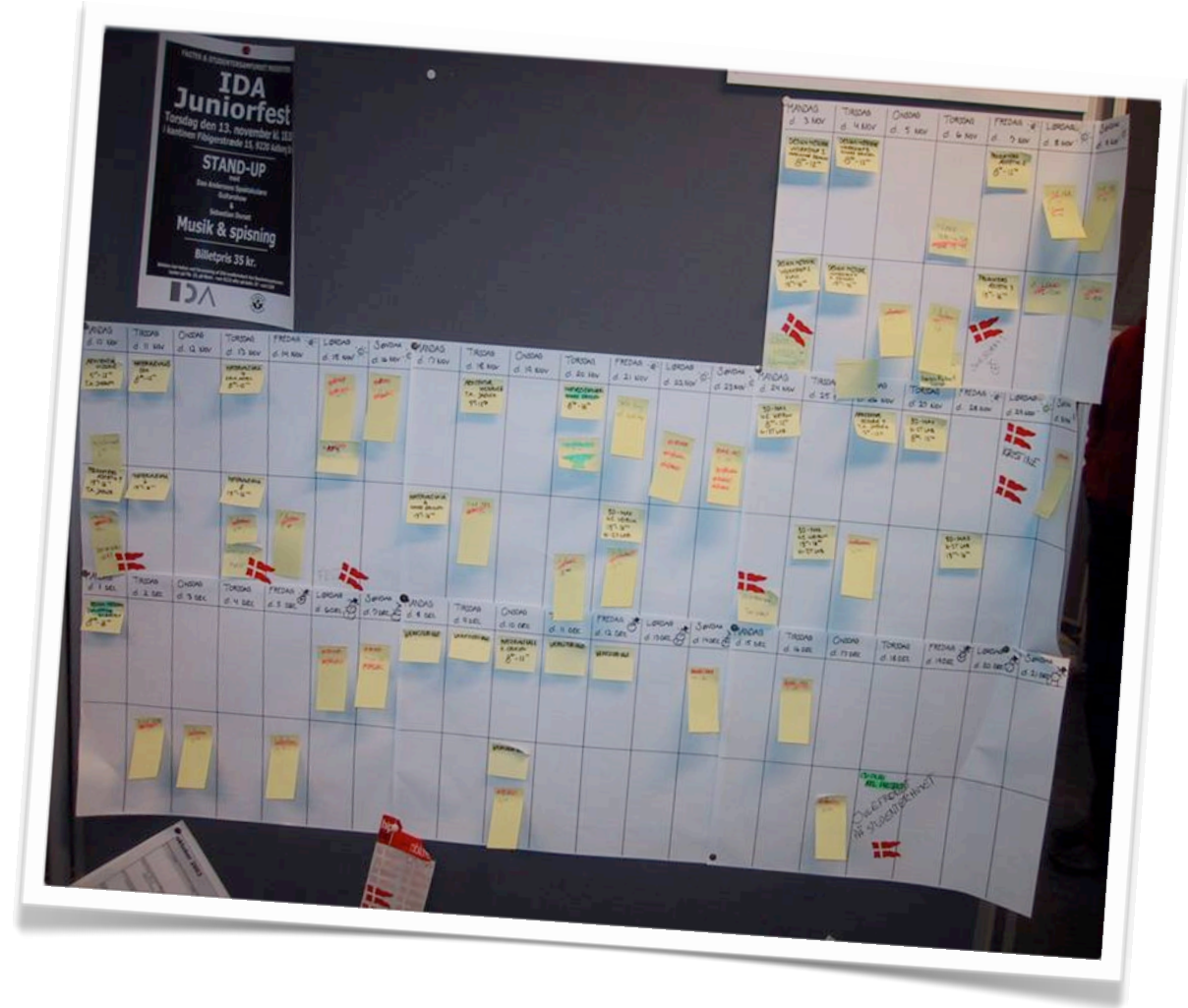
**One project
per semester**

**15 ECTS =
450 hours of
student work**



Diversity of physical facilitation More than 1200 rooms for teams





Self organised groups - Project management

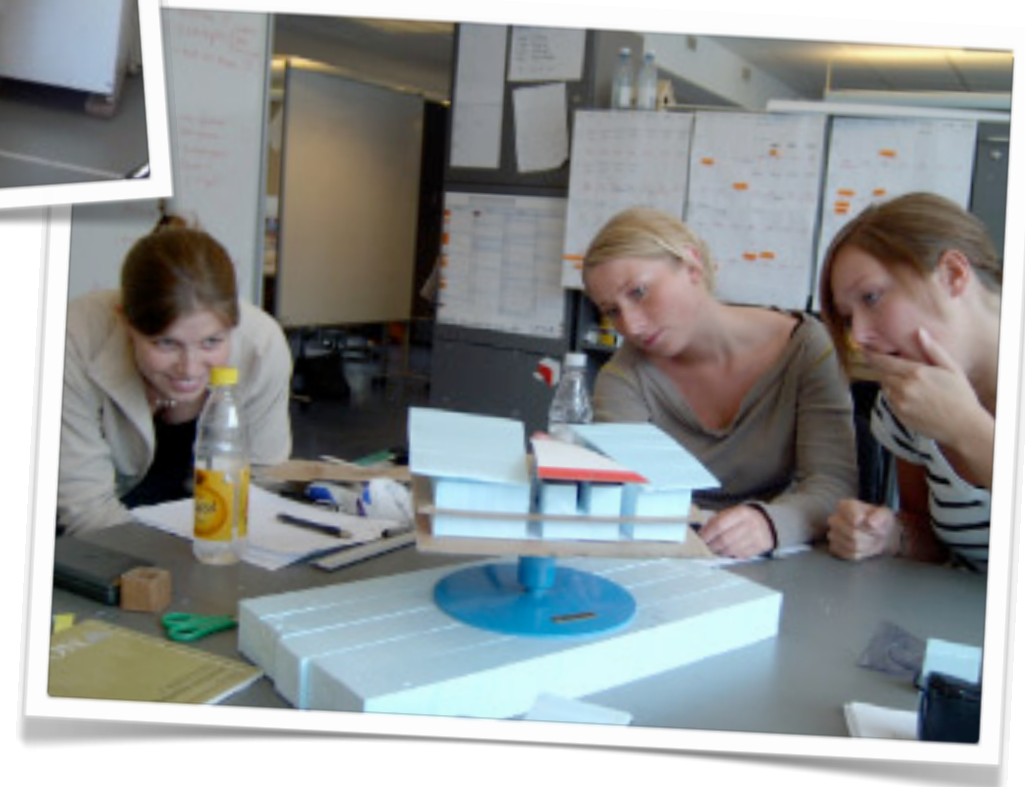
Courses, lectures, seminars



Many different types of projects



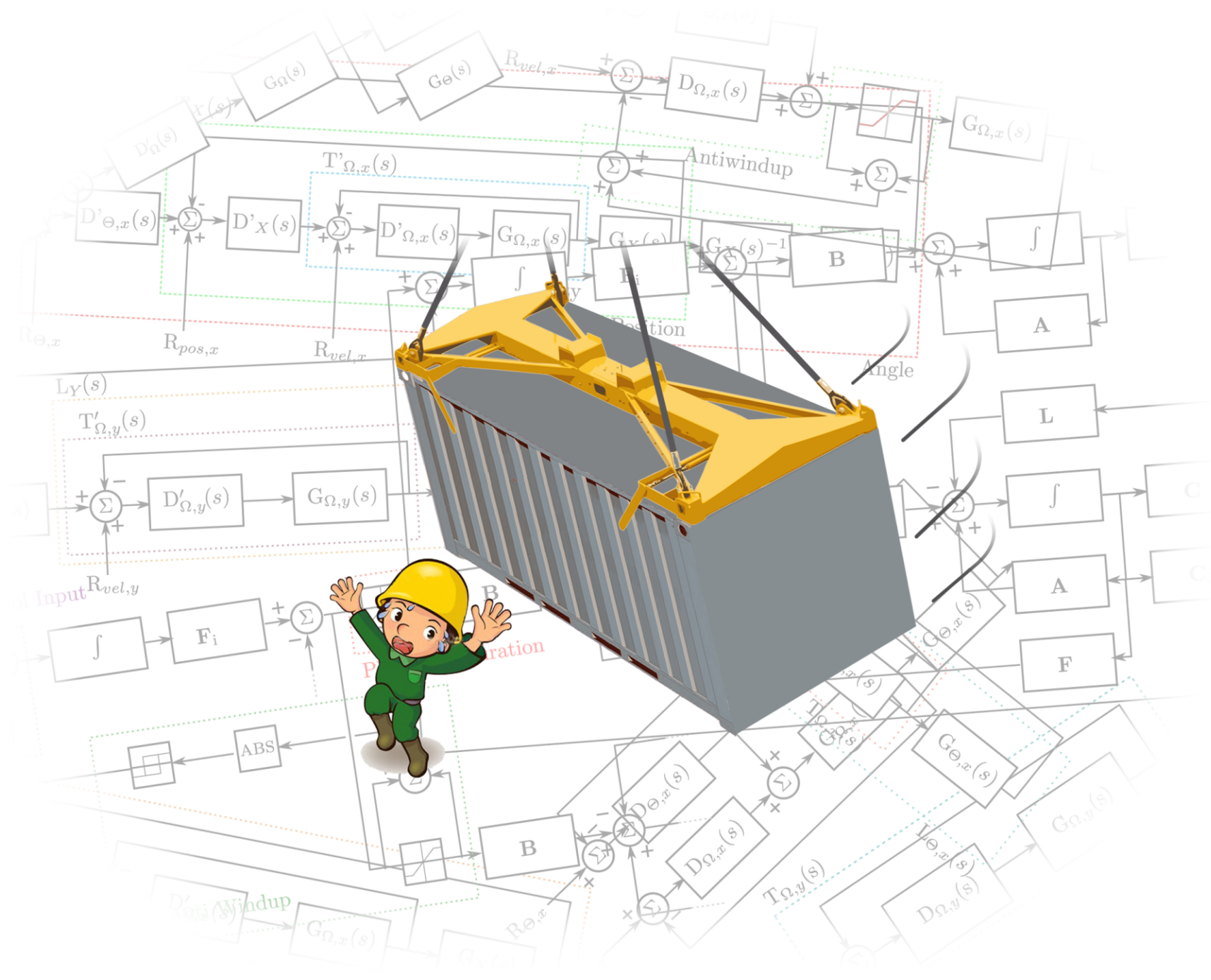
'It is boring to only focus on technical things... I don't want to become nerds by studying engineering. I want to work with technology in a creative way and to do something for people...'



Facilitation and group dynamics



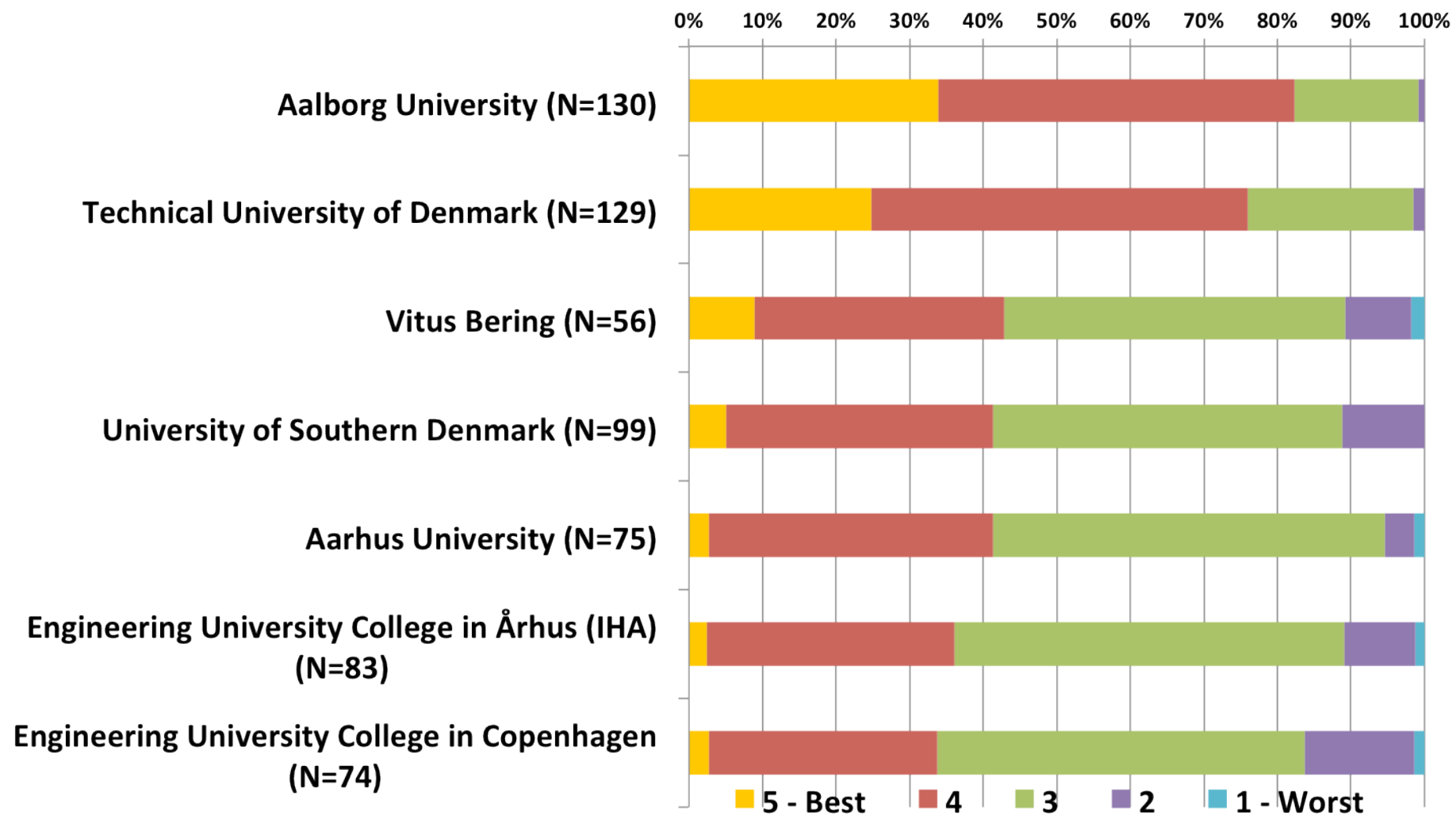
Anti Sway System for a Ship to Shore Crane



Synopsis

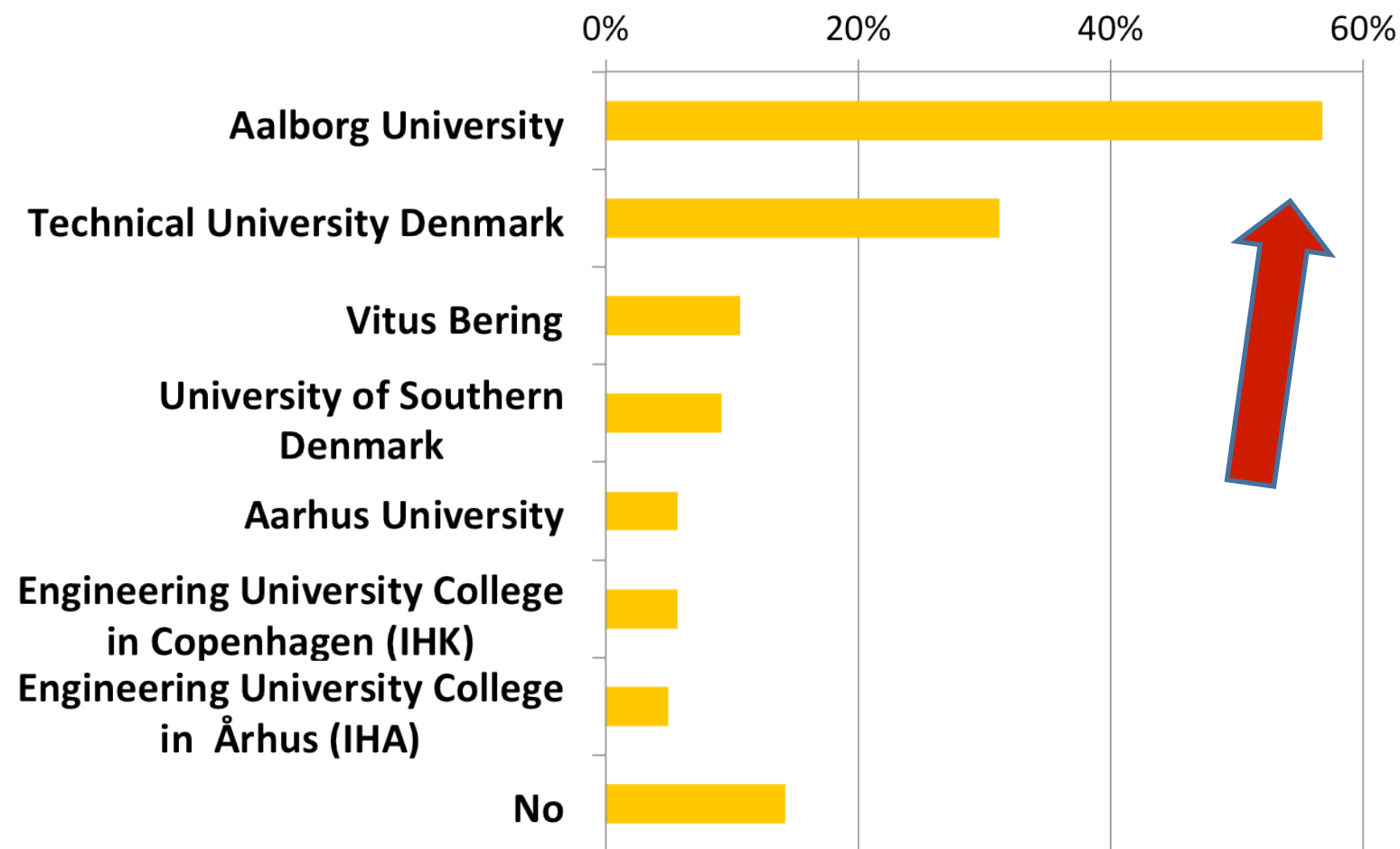
The purpose of this project, is to **design a system to dampen the sway which occurs when a cargo container is moved with a ship to shore crane.** It is determined that system must be able to control both velocity and position of the container. This means that the crane operator must be able to apply a velocity reference to the crane via a joystick, as well as he must be able to operate the crane by entering a specific position to where the container must move. This is the background for the actual controller design. The controllers are implemented as both classic and state space controllers. The classic controllers are implemented as four separate controllers: Position and velocity controllers in vertical and horizontal direction. The two directions are controlled separately

Overall assessment of Danish Engineering Institutions by companies (Ingeniøren, 2008)

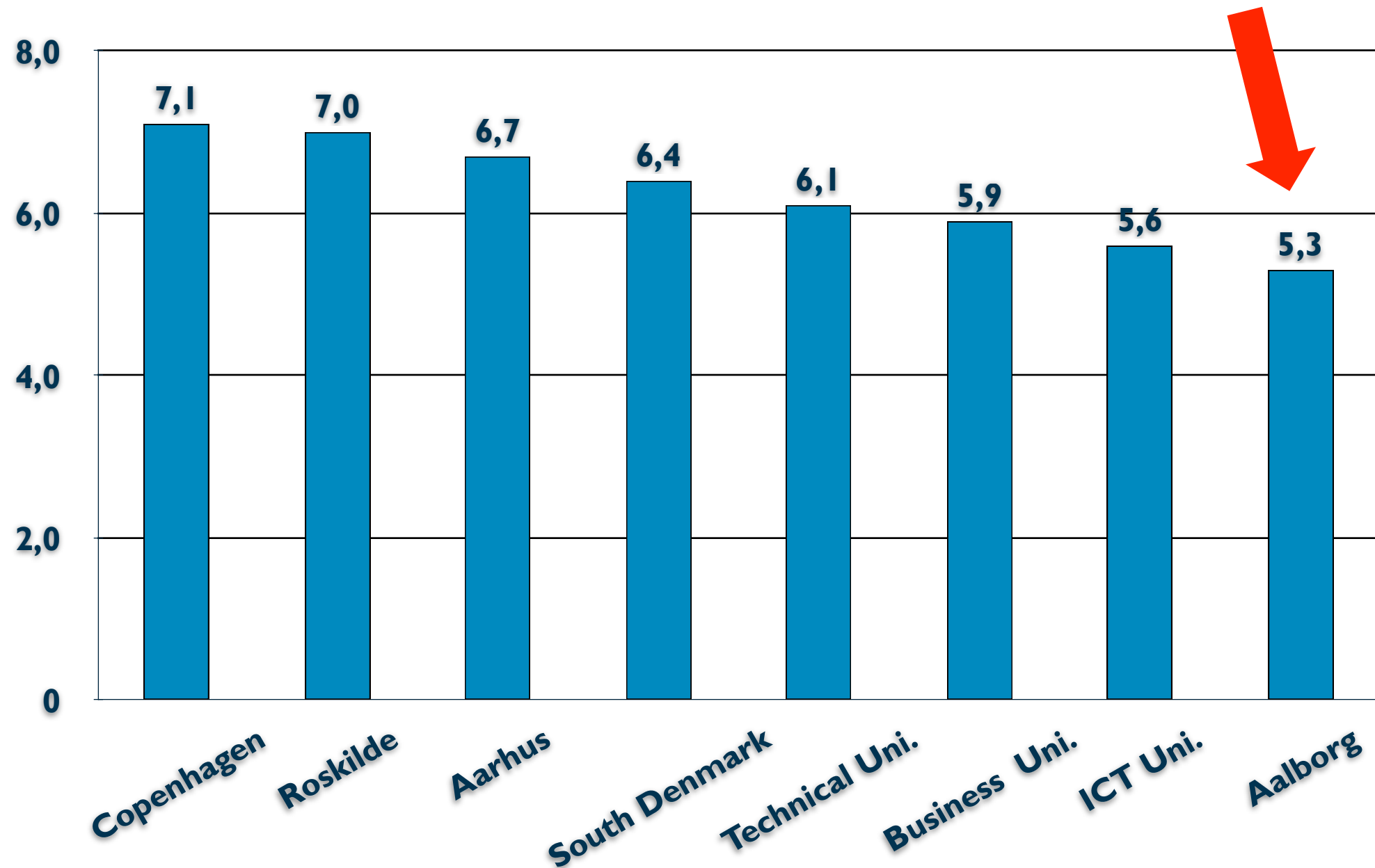


Are there one or more institutions which you find particular good at developing engineering education according to the needs of society and companies?

(Ingeniøren, 2008)



Duration rates for Danish universities 2007, Official statistics



Research on Problem and project – PBL programmes

More motivated

Deeper learning

Increased skills and competences

Higher grades

Employability increased – relevant skills process skills: collaboration,
project management... etc.

Higher retention

Faster duration

Higher salary after ten years from enrollment



Applying for a UNESCO Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability

Research

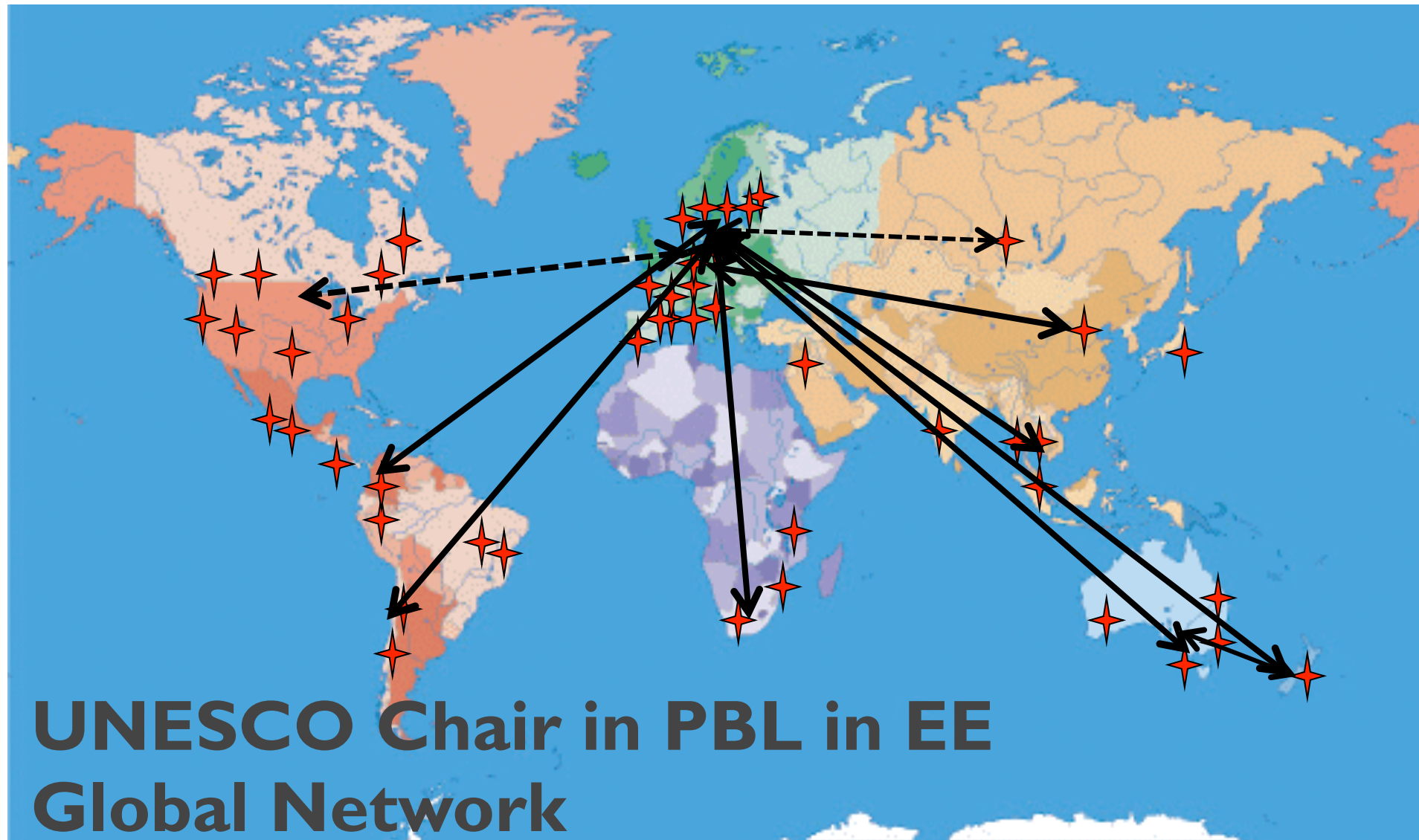
15 PhD students

- Creativity and mega projects (satellit)
- Organisational change to PBL
- PBL and the subject identity
- Design of PBL curricula in Thailand, India og Malaysia
- Intercultural learning in teams
- PBL and sustainability – strategies for implementation

Research projects

- External: research council projects on engineering practice, sustainability, curriculum construction
- Internal projects evaluation of the new PBL model – ongoing
- Group assessment and PBL

Collaboration agreements: staff training and PhD



Master in Problem Based Learning

Research Symposium Kuala Lumpur July 2-3, 2013

Thank you for your attention!