

Developing VET Practice- and work-based higher education

- within a lifelong-learning framework

Vocational education and training in Europe: Taking stock and looking ahead
Vienna, November 2018

Practice based reflection

Professor of Industrial Design (on creative merits - as a non-linear, lifelong learner)

Formerly:

- Industrial design professional
- Guest lecturer teaching real work-world connected design & development projects.
- Establishing practice-oriented studies, BA & MA level, industry and research cases
- Dean; managing higher education

Presently:

- Teaching EPS; cross-disciplinary & multi-national, industry- and research connected, Erasmus+ exchange study employing PBL
- Entrepreneurship in creative studies
- Research group for lifelong learning
- Developing dual education solutions for engineering studies

Based on my experience, I'll present a development path for HE VET for discussion, with a main focus on higher education.

Lifelong Learning perspective

Situation snapshot:

- *Oil price fall 2014-2016 sends 40.000 employees from the highly specialized Norwegian oil-industry into a job-market with just 2.7 million jobs increasing the unemployment rate with 1,5%*
- *Immediate need for offering competence adjustments; as for instance:*
 - ***Up-qualifying existing competences – to move to positions in other industry***
 - ***Re-qualifying to change direction – for instance to become teachers.***

Build on existing competence, add new, change problem to value creation!

Respond to change

More people will need re- or up-qualification at different levels in their careers and at different ages.

Calls for a new perspective to lifelong learning that might lead to more mixed student groups.

Group-internal learning and experience exchange might be activated as a core value and challenge the traditional thought curriculum in favour of mediated and coached group-learning.

Three cases and a concept proposition

Move from novice to expert combined with scientific, research-based approaches

- Possible?
- Necessary?

What are the characteristics of increasing specialisation:

T-shaped specialist

deep

focused

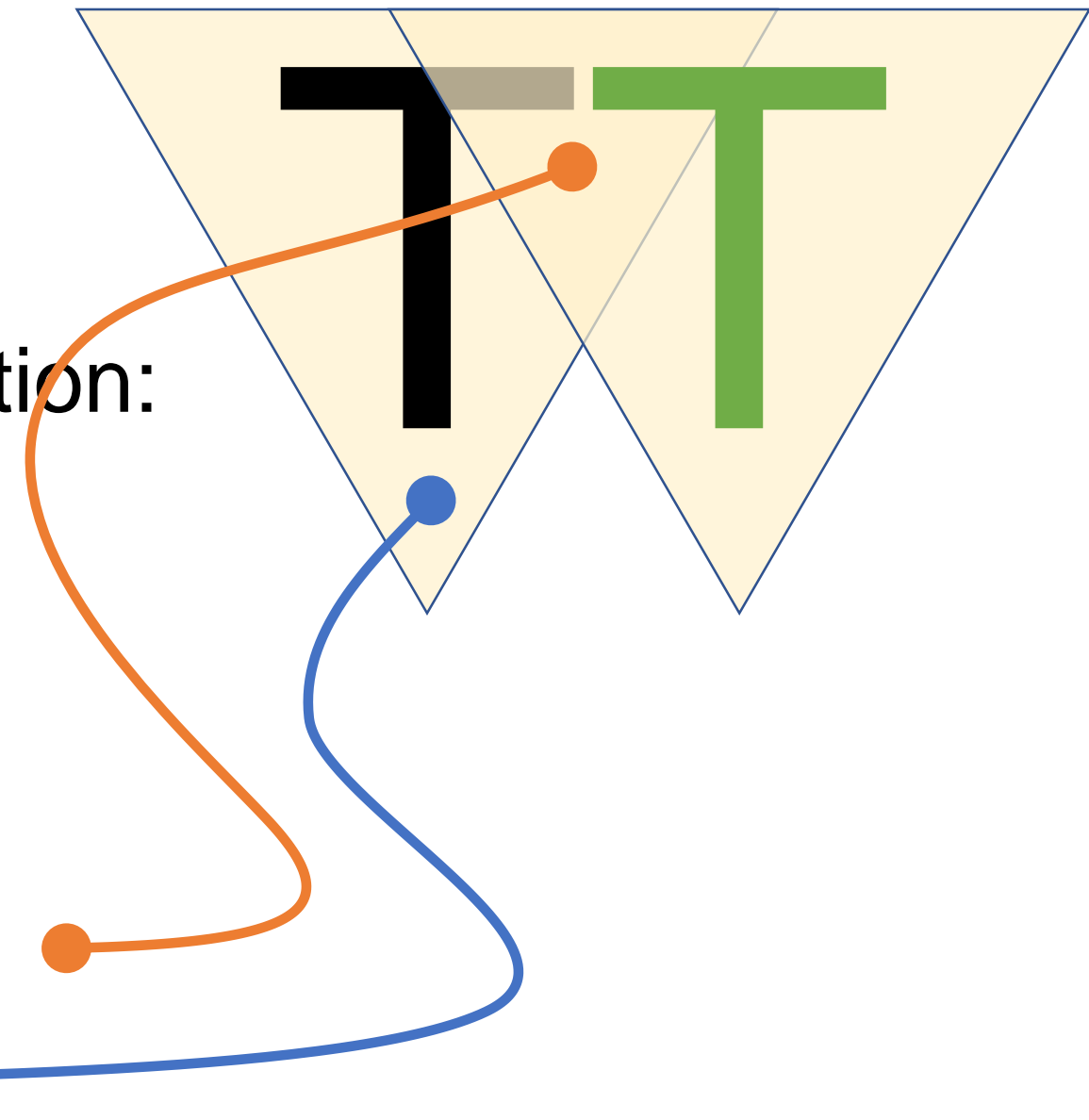
Delta shaped specialist

wide

diversified

Strong need for communication and interaction skills

Continuous competence development



Case 1; professional

Oslo Airport express train Ticket pay-point

Design of pay-as-you-go touch-screen

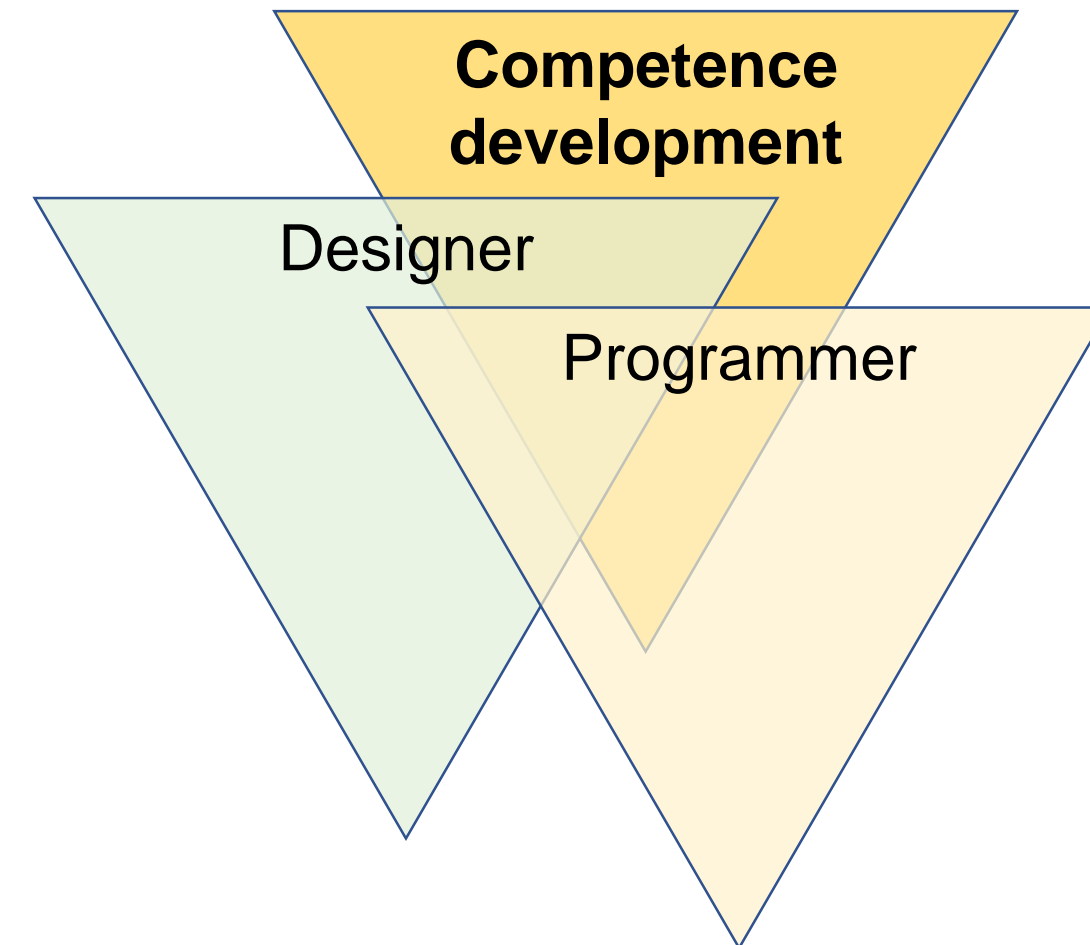
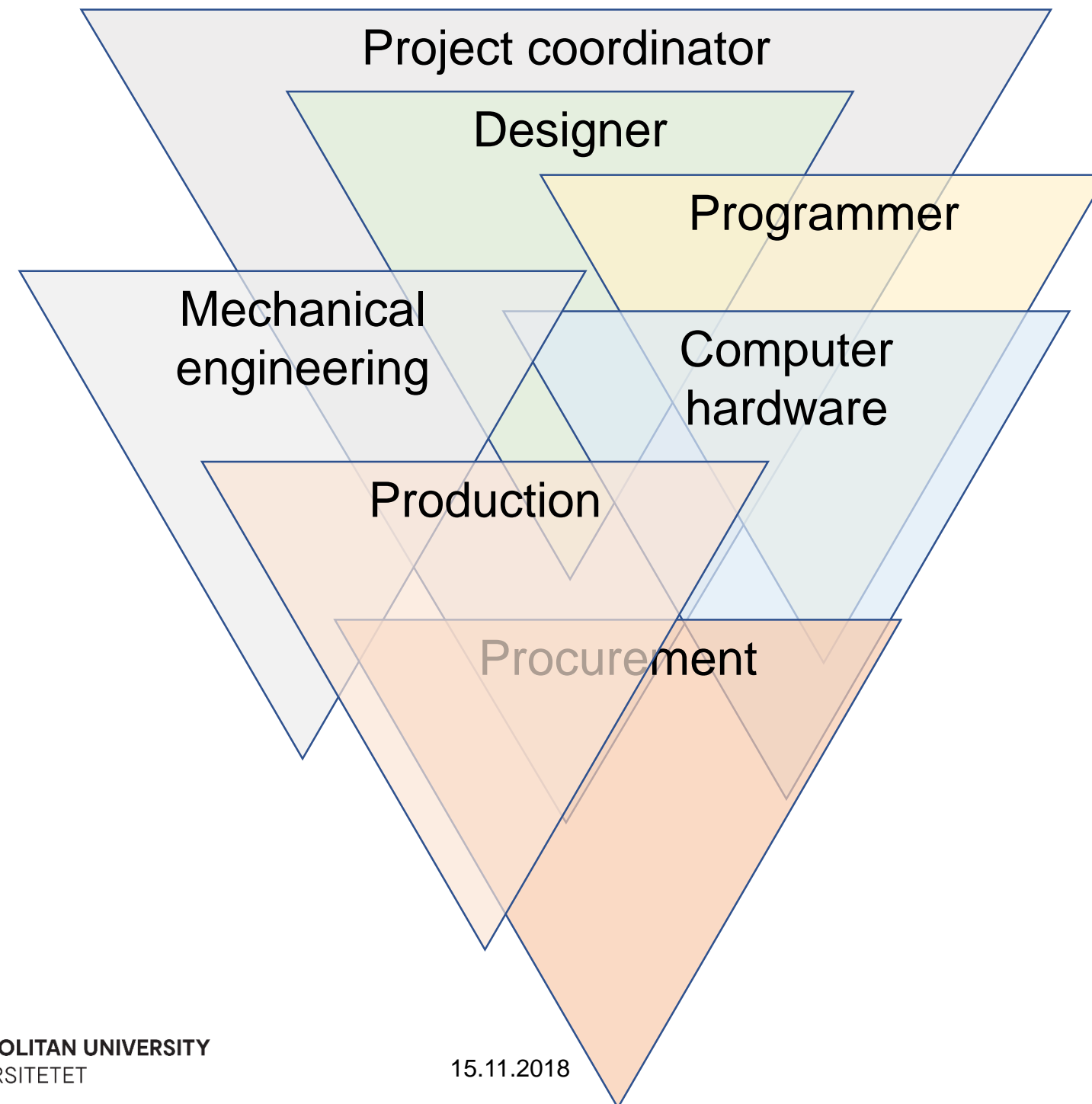
Competence development was needed on areas such as:

- use of touch screens
- user interaction requirements for a new and not yet familiar technology (1999)
- readability
- reduction of situational stress
- multi-disciplinary teamwork needed



Multi-disciplinary teamwork model from industry practice

Supports competence exchange and collective learning



Case 2; educational

Student participation in Shell Eco Marathon

To build a car, students needed to:

- identify practical challenges
- acquire theoretical competence
- apply it directly

Project characteristics:

- teambuilding (up to 62 students)
- coordination of all necessary competences
- technology
- logistics
- marketing

Success factors were:

- supportive, multi-competence teacher teams
- integration of courses
- high level of student responsibility



Shell Eco Marathon – practice & problem based learning

Industry interaction:

- Engine and parts
- Materials
- Carbon monocoque moulding
- Sponsoring

Students engage in extended self-learning:

- Wide - new subjects
- Deep - special competences
- Teamwork and collaboration – soft skills
- Documenting acquired extra-curricular competences

Complexity:

- Commitment & full student project responsibility
- Structured, cross-disciplinary, multi competence teams
- Absolute deadline; race in France (3000 km from campus)
- Media exposure

Teaching requirements:

- create team of dedicated teachers
- commitment
- entrepreneurial skills
- planning & re-planning
- risk tolerance
- improvisation
- coaching
- financing

Student workload individual:

- Min. 3 ECTS, one obligatory assignment
- Max. 50 ECTS, 2 complete courses + bachelor thesis

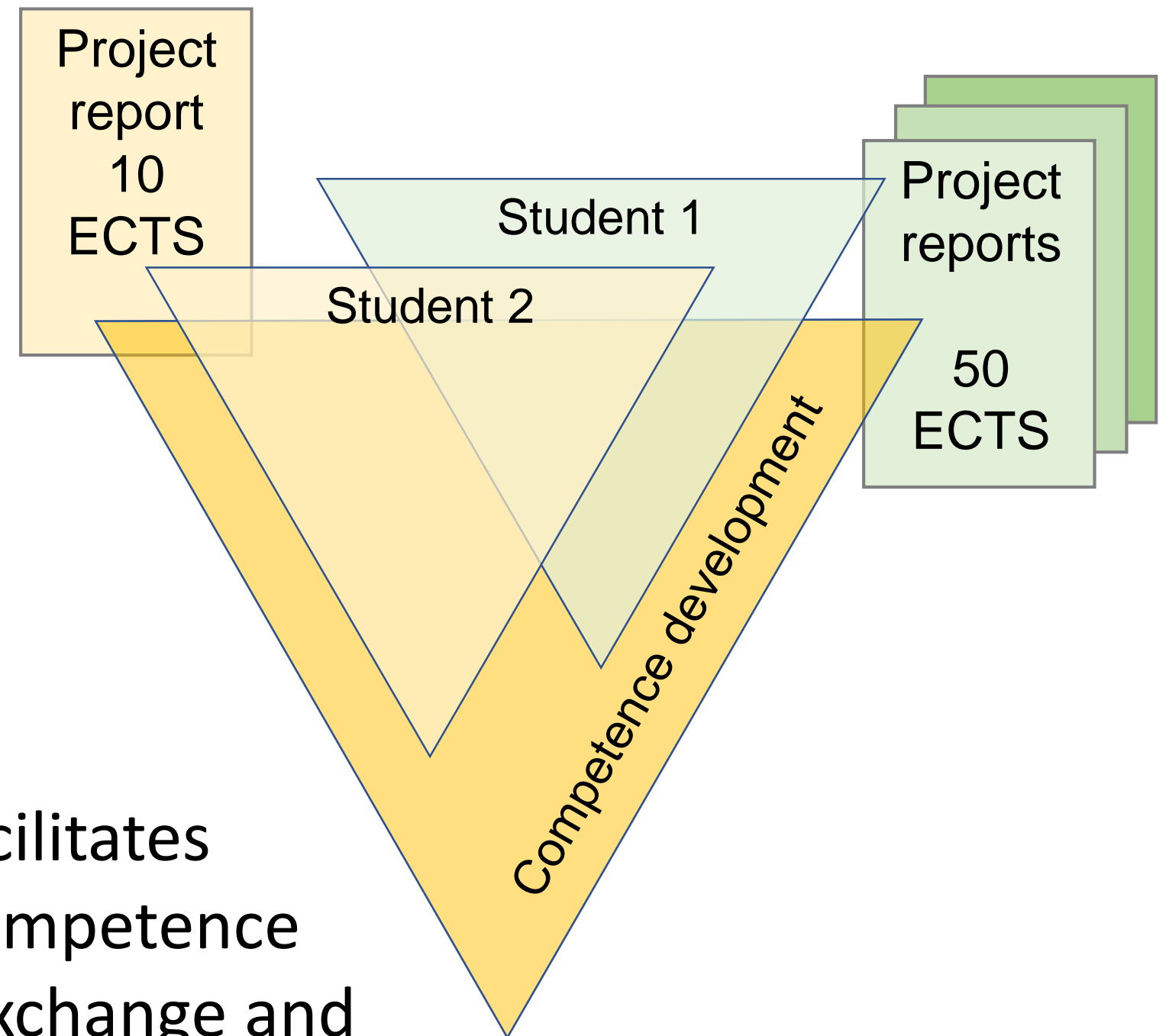
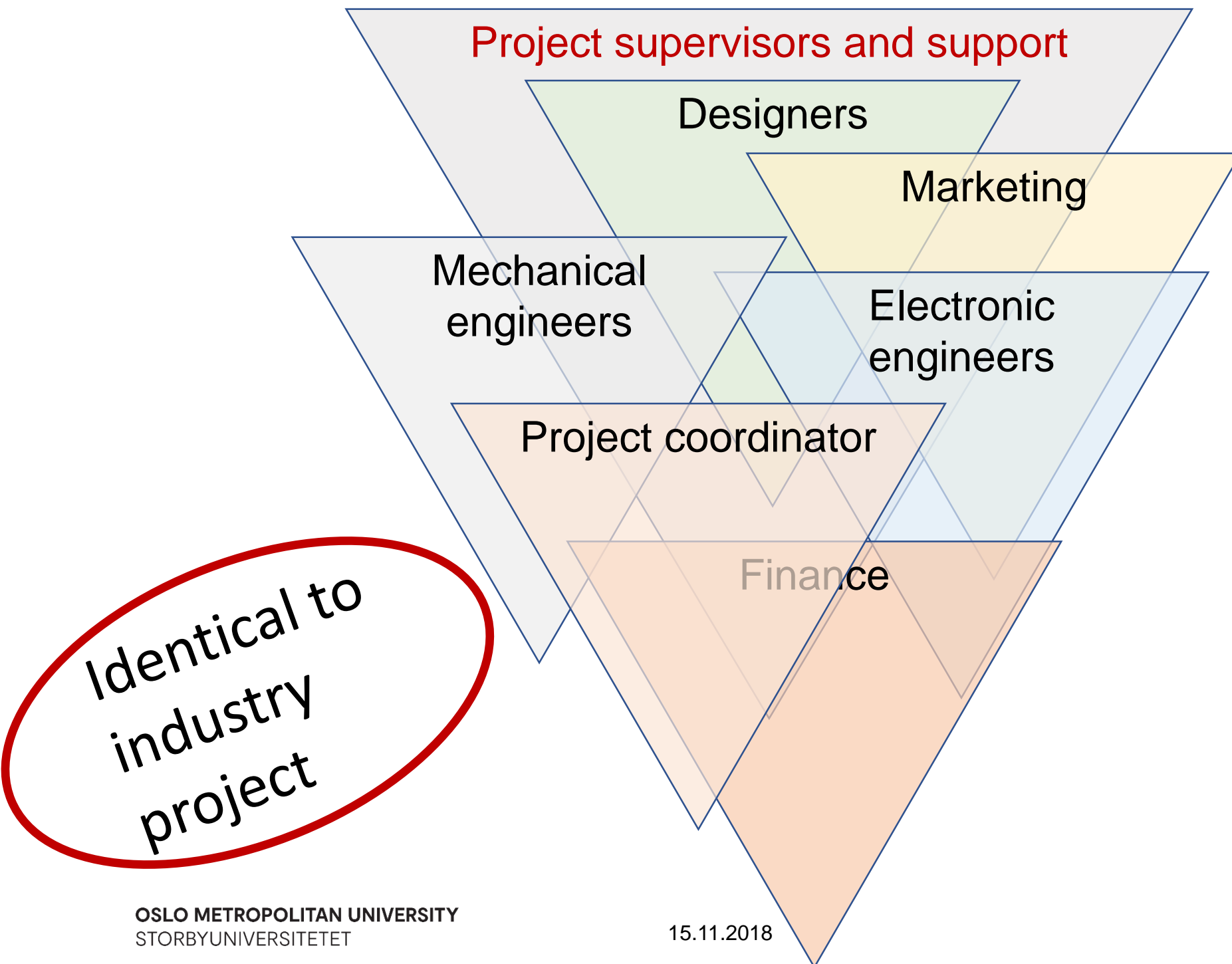
Career opportunities:

- Prestigious master studies
- Strong job applications

Collaborations:

- AHO Research Project; “Rapid Prototyping”
- Collaboration with NMBU & Eidsvoll VGS

Project group for car project set up as a professional project organisation



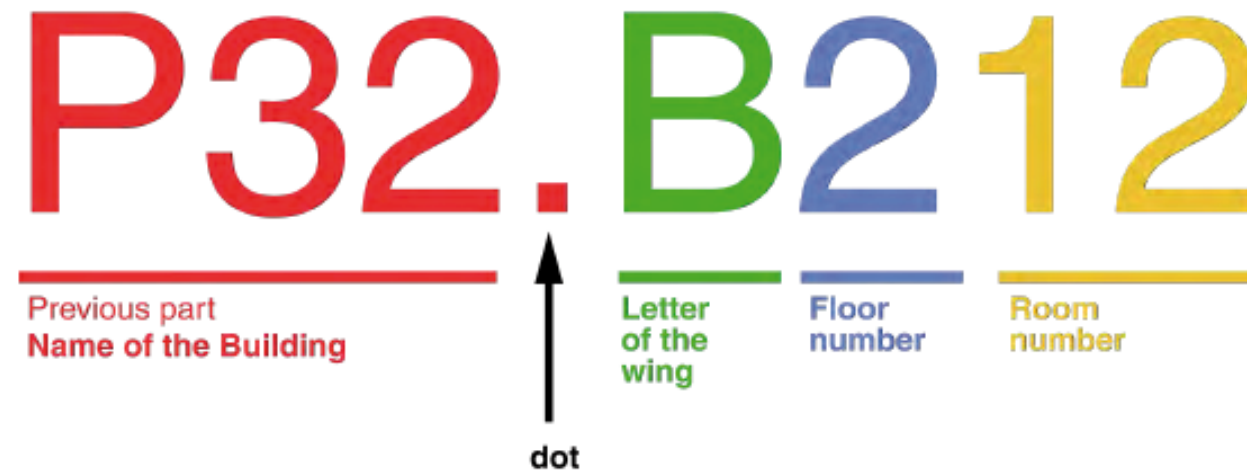
European Project Semester

Case 3; educational

Annex 9 - Hi-Fi prototype screens

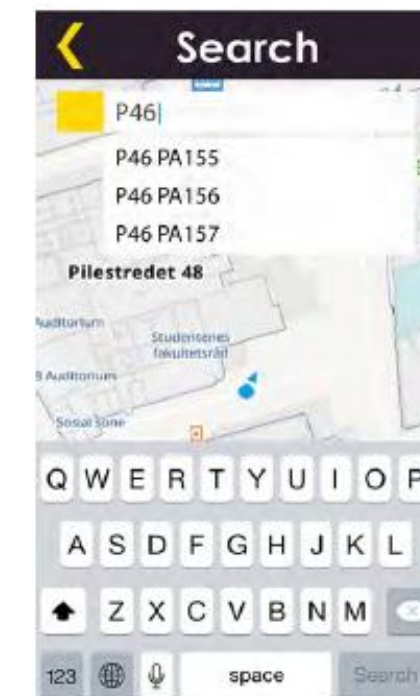
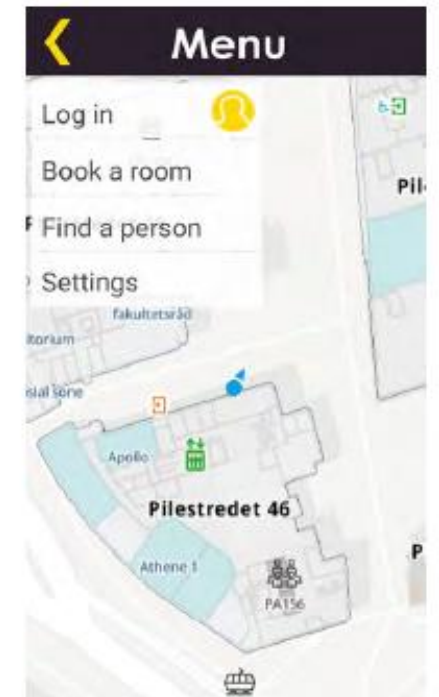
WAYFINDING APPLICATION GUIDELINES

Following this rules, the numbering system created to name a room is :
Name of a building + . + **Letter of the wing** + **Number of the floor** + **Number of the room**
 For example, the general classroom number 12 located in the wing B in the second floor of the P32 building has the name "P32.B212" (Figure 55).



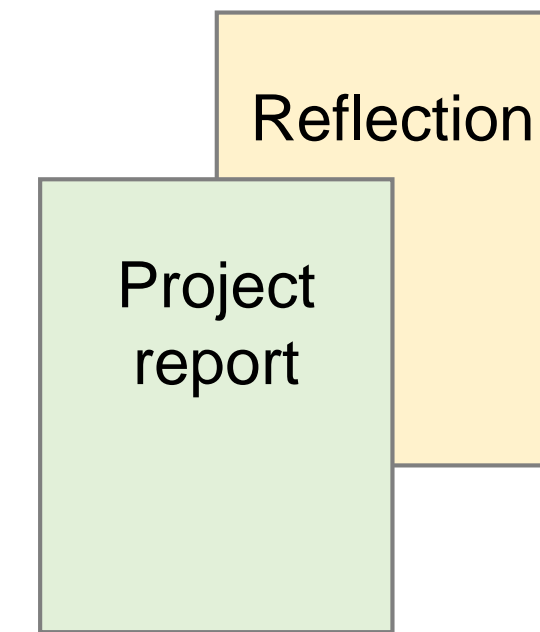
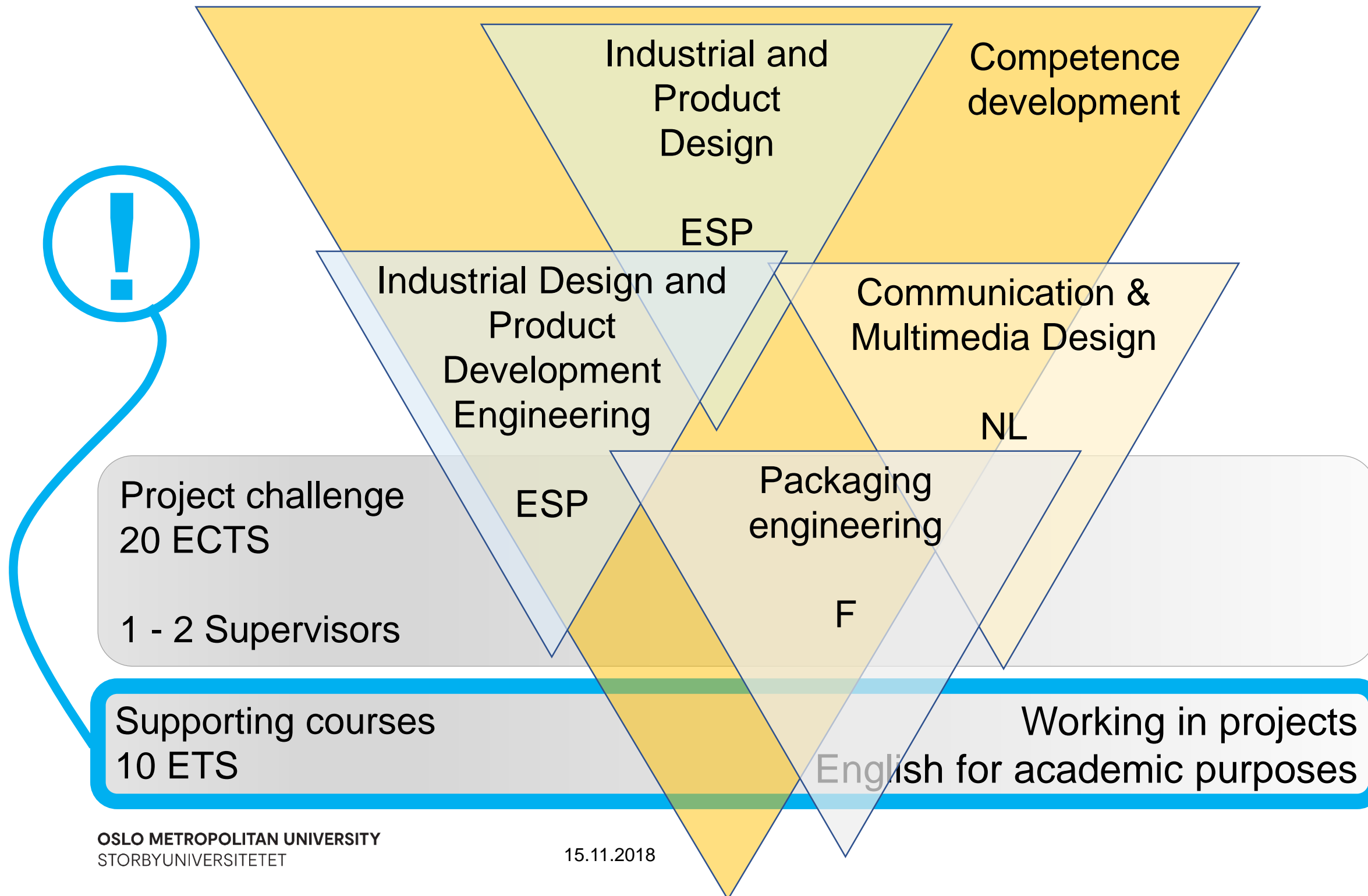
EPS is:

- realistic projects
- industry relevant
- problem solving
- research focused



Project group setup for European Project Semester

Cross-disciplinary, multi national, Problem Based Learning



The “Supporting Courses” provides a fixed curriculum, and in addition a flexible coaching and support function that is delivered when needed to groups as well as to individual students.

Summing up the cases;

The experiences from practice- and work-based education cases indicate that HE can accommodate for the VET learning challenge.

Success factors in work-life projects correspond to student projects:

- Collaboration across disciplines
- Well functioning multi-competence teams
- Responsibility for own learning
- Industry collaboration provides relevance
- Realistic challenges motivates
- PBL motivates

Courses needs to be designed for for practice- and work-based higher education

Supporting courses may offer the flexible solutions necessary to help students succeed.

Combining practice- and work-based education with theory development is manageable.

Strengthening the cooperation and permeability between the HE-sector and the work-world

Mind-set needs to open up to think different and create creative solutions:

- Strengthen the dialogue between the world of work and the HE-sector
- Increase competitiveness for the private sector as well as HE-partners
- Establish business relevant research
- Contribute to product development based on current theory and knowledge
- Entrepreneurship & innovation integrated in the studies
- Students also develop «Worklife Skills»

- Recruiting: fast transition from studies to productive work
- Employees from partner enterprises can update their own competence and contribute to the education with professional practice

Challenges:

- Establish long-term, dedicated work-life relationships
- Establishing mutual confidence
- Training the trainers

Prepare for an increasing number of non-linear students

We are facing educational challenges:

- the employment landscape is increasingly dynamic
- demands constant competence development and re-qualification

Facilitate for different entering competences

Provide for an individualized study progress

View students with different

- backgrounds
 - age
 - competence mix
- as a value for learning

Provide students opportunities to learn:

- what is needed
- when it's needed
- as an individual
- as an employee within the work-context
- as re-qualification
- expanding and deepening knowledge

Challenge students with the opportunity to perform!

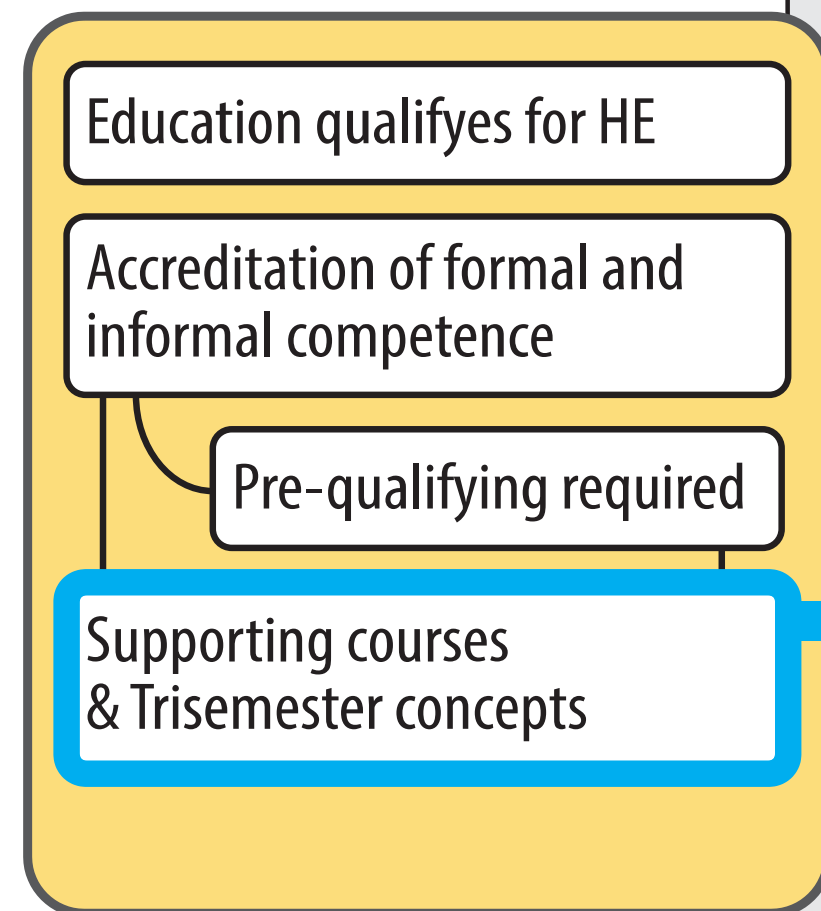
Set up the HE-VET education to provide a research inspired project organisation:

- HE provides individual learning paths for students
- Problem Based Learning; theory and hypothesis driven action
- Learning the research approach by working in projects
- Increasing complexity step by step to move from entrance level to expert
- Facilitating the students' learning experiences through feedback and iterations



Build a HE-VET ecosystem... - for integrated, university level work-based learning

Formal
Informal
Non-formal



Up-qualifying
opportunities

