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15-16 NOVEMBER

TeachHy

Teaching Fuel Cell and Hydrogen Science and Engineering Across Europe within Horizon 2020

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Co-funded by
the European Union

Project Overview

Call year: 2017

Call topic:

FCH-04-3-2017

European Higher
Training Network
in Fuel Cells and
Hydrogen

Project dates:
11/2017 - 10/2022

Total project budget:
1,448,529 €

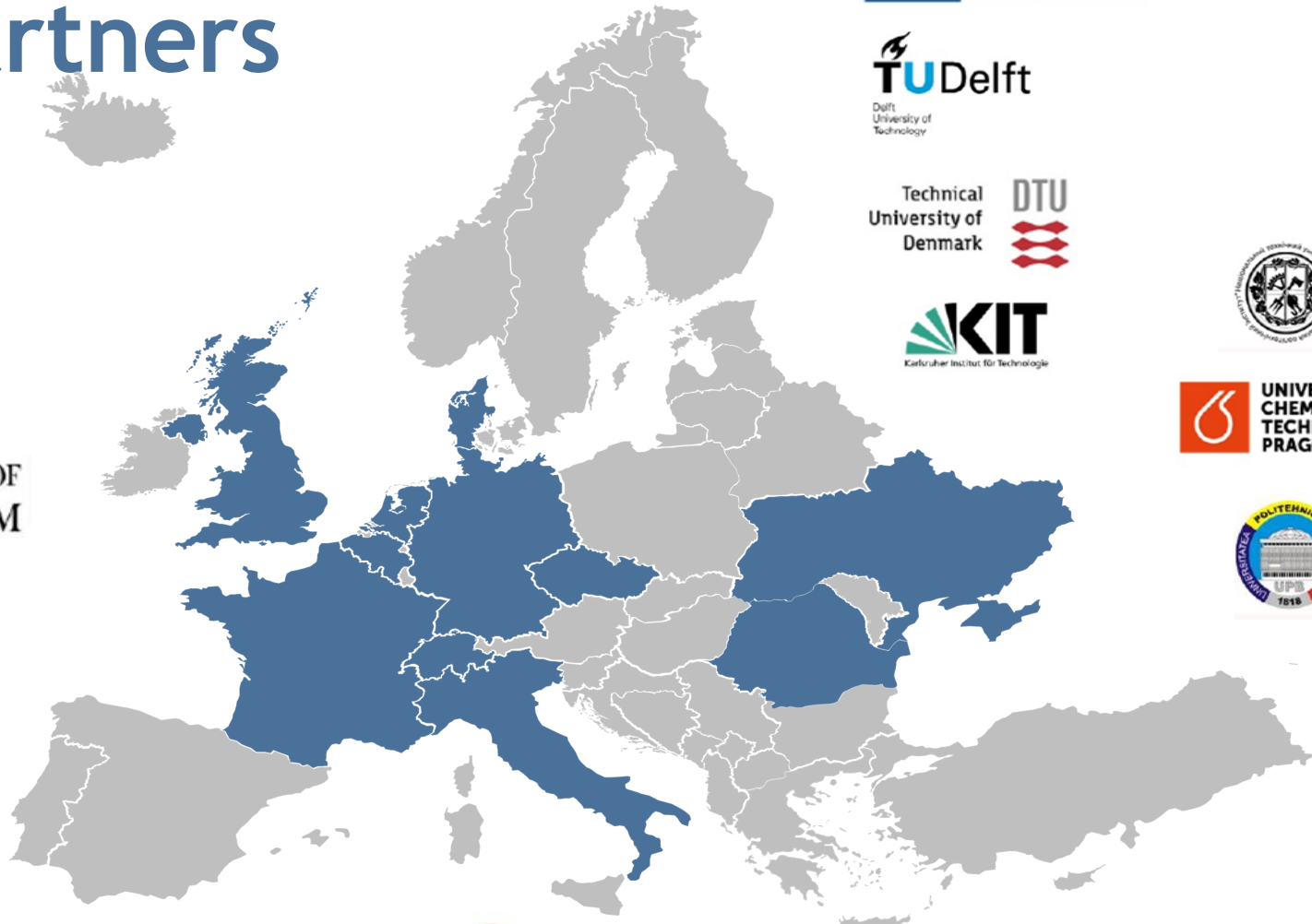
TeachHy

% stage of implementation
100 %

**Clean Hydrogen Partnership max.
contribution: 1,248,529 €**
**Other financial contribution: 200,000€
(EIT-KIC and UoB)**

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Partners



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Synergies With Other Projects And Programmes

CDT

EPSRC, 2013-22 - PhD training programme
action: use of module material and LMS structure



TrainHy

FCH JU, 2010-12 - JESS Summer School, curriculum
action: use of curriculum in TeachHy programme development



KnowHy

FCH JU, 2013-17 - Level 6 blended learning CPD courses
action: know-how and experience with blended learning CPD modules used in TeachHy



KICStartH2

EIT-KIC InnoEnergy, 2022-24 - 4 modules in H2 topics for university & CPD use
action: alignment of 2x (3x) module content with TeachHy

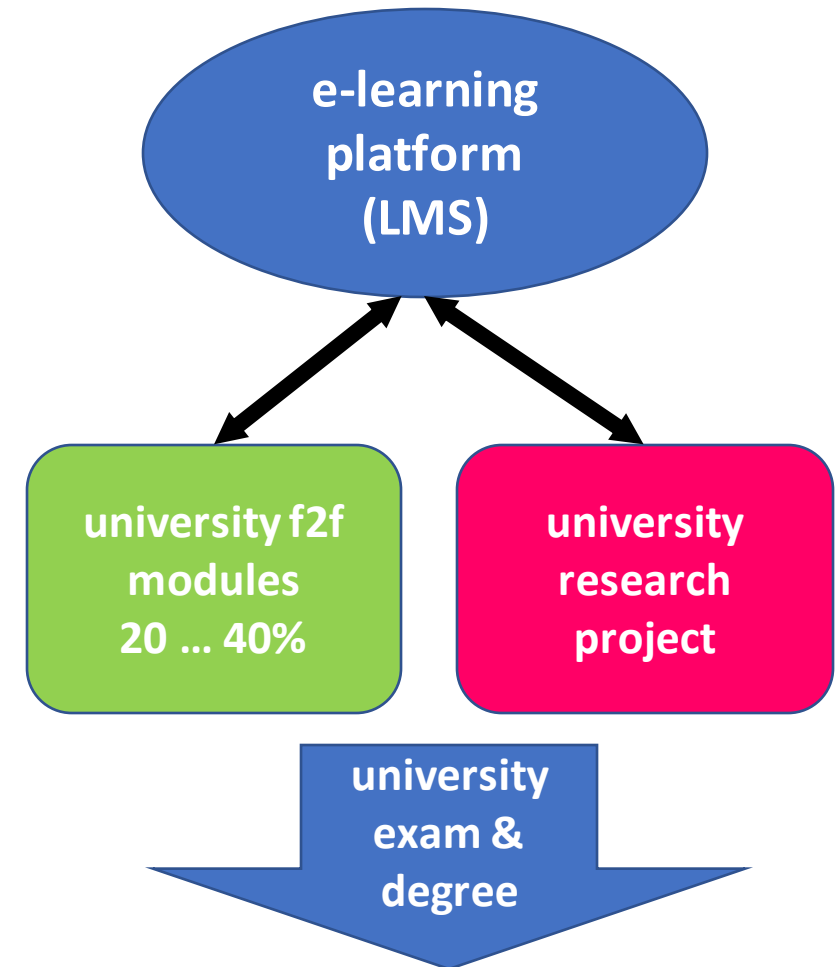
JESS

private funding (UoB, DTU, FZJ) - platform for PhD and CPD training
action: alignment of 2x module content with TeachHy



Project Motivation and Approach

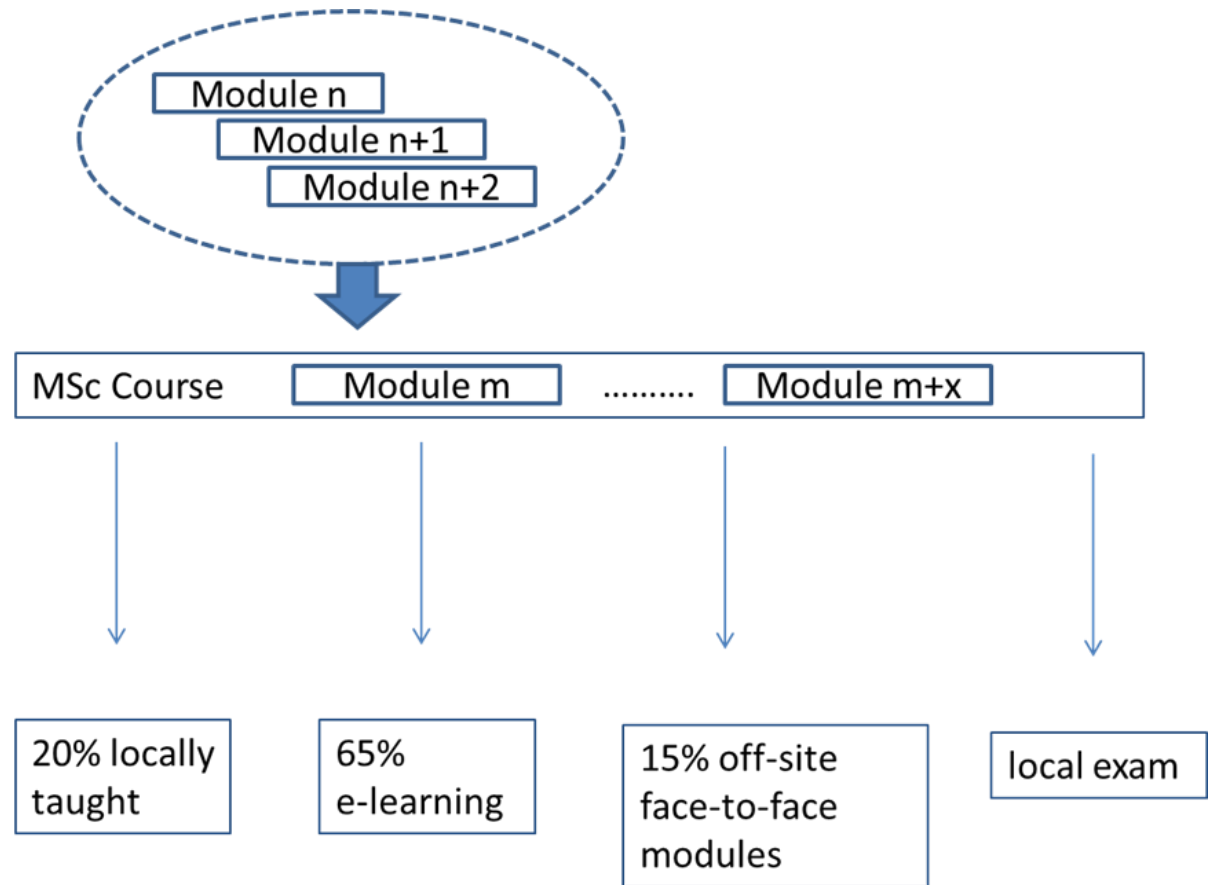
- there is a complete lack of specialised university degrees in FCH technologies
- on the other hand, ~50,000 engineers will be required in the industry by 2030
- TeachHy has built a ‘blended’ approach in which 20 to 40% of teaching content occurs in face2face teaching and the remainder is offered online
- project is still ‘ahead of the curve’ in responding to increasing demand for education and training in FCH technologies and in online education



Project Methodology

- courses may differ considerably across partners

- modules can be picked and mixed according to specialisation and/or orientation:
 - * basic sciences, practical lab work, applied topics
 - * can include compulsory and optional modules
- large degree of freedom to shape courses
- courses can be built for 12, 18 or 24 months
- student workload can be adapted to university expectations for credit points (additional reading, amount of coursework)



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MSc Programme Structure

	Introductory modules (15 ECTS)	Core modules (20 to 25 ECTS)	Optional modules (20 to 25 ECTS)	
Fuel Cells	<ul style="list-style-type: none"> Electro-chemistry Fuel Cell Technology Hydrogen & Hydrogen-Based Fuels 	<ul style="list-style-type: none"> Modelling Characterisation FCH Lab Hydrogen Safety (10 ECTS, Ulster) or <ul style="list-style-type: none"> Hydrogen Safety (5 ECTS, UoB) 	<ul style="list-style-type: none"> Low / High Temperature Fuel Cells Fuel Cell Systems Energy Storage Renewable Energy Systems Hydrogen Policies and Standards Advanced Electrochemical Applications Electrolysers Hydrogen Infrastructure Fuel Cell Electric Vehicles Innovation Management and Business Development 	Research Project 30 ECTS
Hydrogen				
Low temperature technology (PEFC, AFC, DMFC)				
High temperature technology (SOFC)				
Fuel Cell Systems, energy systems and storage				



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Project Status

- third cohort currently studying in Birmingham
- 16 modules implemented and in operation, 4 more in preparation (electrolysis, H2 infrastructure, innovation management, e-fuels)
- complete programme successfully transferred to UCTP / VSCHT, start date 2024/25
- all MSc modules have been registered for CPD use
- working with KICStartH2 and its partners to upgrade and implement modules
- TeachHy partner POLITO has established a H2-themed MSc programme with a.o. Universities of Catalunya and Eindhoven

Lessons Learnt

- reluctance of universities to take over external materials due to issues of
 - * ownership of teaching material (copyright)
 - * stewardship of teaching material (who 'delivers' it locally)
 - * lack of dedicated lab space
 - * setting of exam papers
- universities will have their own LMS and need to use this (instead of using a centralised server)
 - * this creates issues of transferrability
- partner universities will have to have a licence for
 - * course content, and for
 - * access to LMS
 - * but are not inclined to pay licence fees

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Lessons Learnt

- languages - translate:
 - * captions only / captions and audio / captions , audio, and slides
 - * learners outside the UK have issues with accents
- differences in national and individual university regulations on accreditation, degrees, exams etc. require adjustments
- a favourable balance has to be held between online and in-person content
- tutorials are extremely important to participants / students
- a blended module / course for students looks different from a CPD course in the way of
 - * tutorials
 - * length
 - * assessment

Future Plans & Impact

Future Plans

HyAcademy.EU

- expansion of activities to a network of 100 universities, 500 schools, and 5 teaching labs
- supply of 12 open access textbooks for teaching and studying
- online platform to give access to educational resources, incl. detailed information on degrees and qualifications available
- train-the-trainer and teach-the-teacher courses



Impact

Project achievements

- 12 universities using TeachHy materials across Europe
- growing network of institutions working together in university and vocational training (TeachHy, KnowHy and KICStartH2 consortia, adding H2Academy.EU in the future)
- better understanding of requirements of blended teaching and upskilling

Thank you for your attention!
Any questions?

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