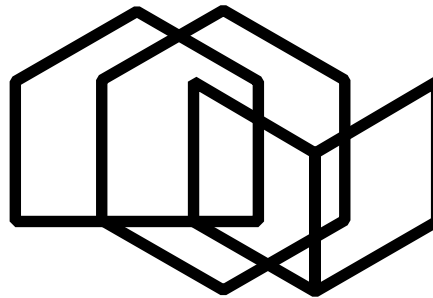


PROF / TRAC:
PROFessional multi-disciplinary
TRaining and Continuing
development in skills for NZEB
principles

General Introduction

WS2 CLIMA2016, Aalborg, Denmark



PROF / TRAC



Peter Op 't Veld, PROF / TRAC coordinator
Huygen Engineers & Consultants, Maastricht, The Netherlands

Why PROF/TRAC:

barriers to NZEB construction and retrofitting

- **Mismatch between the available and needed skills** as well as managerial capacity of professionals due to a lack in specific training and education
- Many professionals in the buildings sector have only **limited training and skills** in energy efficient building design and nZEB principles.
- **Collaboration** between the different disciplines and building professionals is still **not very common**.
- The involved building professionals are lacking the right information on available qualifications and training materials.
- There are **no mappings** and qualifications available **of the needed skills** for the specific target groups. Most of the trainings available focus on one specific target group and on one technique or concept.
- **Training materials** for education and post-initial education are now created **on an ad-hoc basis** without consensus on an underlying qualification framework.
- **Training materials** for education and post-initial education are available but **should be maintained and updated** in order to make the training sustainable and suitable for a life- long- learning process



What is the PROF/TRAC overall goal?

Overall goal of PROF/TRAC is to offer a solution for these barriers by developing and maintaining **an Open Education Platform for Continuing Professional Development** for professionals in the building sector.

This platform addresses **technical experts, architects and managers** > middle and senior professionals

The developed **European qualification scheme** will be part of a life-long-life learning process for continuing development and up-skilling of professionals.



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The four main PROF/TRAC objectives

1. Mapping of the required skills and current skill gaps of professionals in nZEB

This includes the mapping and assessment of:

- The professions involved in nZEB construction and retrofitting and comparing the required skills versus present skills.
- The existing qualifications, knowledge sources, education programmes, post-initial training supply and accreditation structures.
- For the mapping of the skill gaps the methodologies, developed national BuildUp skills actions, will be adapted.

2. Development of an Open Training Platform and methods for a systematic and sustainable access to knowledge

Core of project is the development of an easily accessible and open training platform with the following functionalities:

- Information pool about the European training programme, trainers and training organisations.
- Information about professional profiles needed for NZEB construction.
- Information pool of certified buildings professionals
- European Mutual Learning Platform for building professional with online training tools.

3. Development of a Train the Trainers programme for the developed qualification schemes

A central Train the Trainers programme will be organised on an international scale by EU umbrella organisations representing the building sector, engineers (REHVA), architects (ACE) and managers, endorsed by Housing Europe. PROF/TRAC will enable massive up skilling by training a large group of 'frontrunners' in order to create a snowball effect.

4. Development of a repository of the training material for use in education and post-initial education

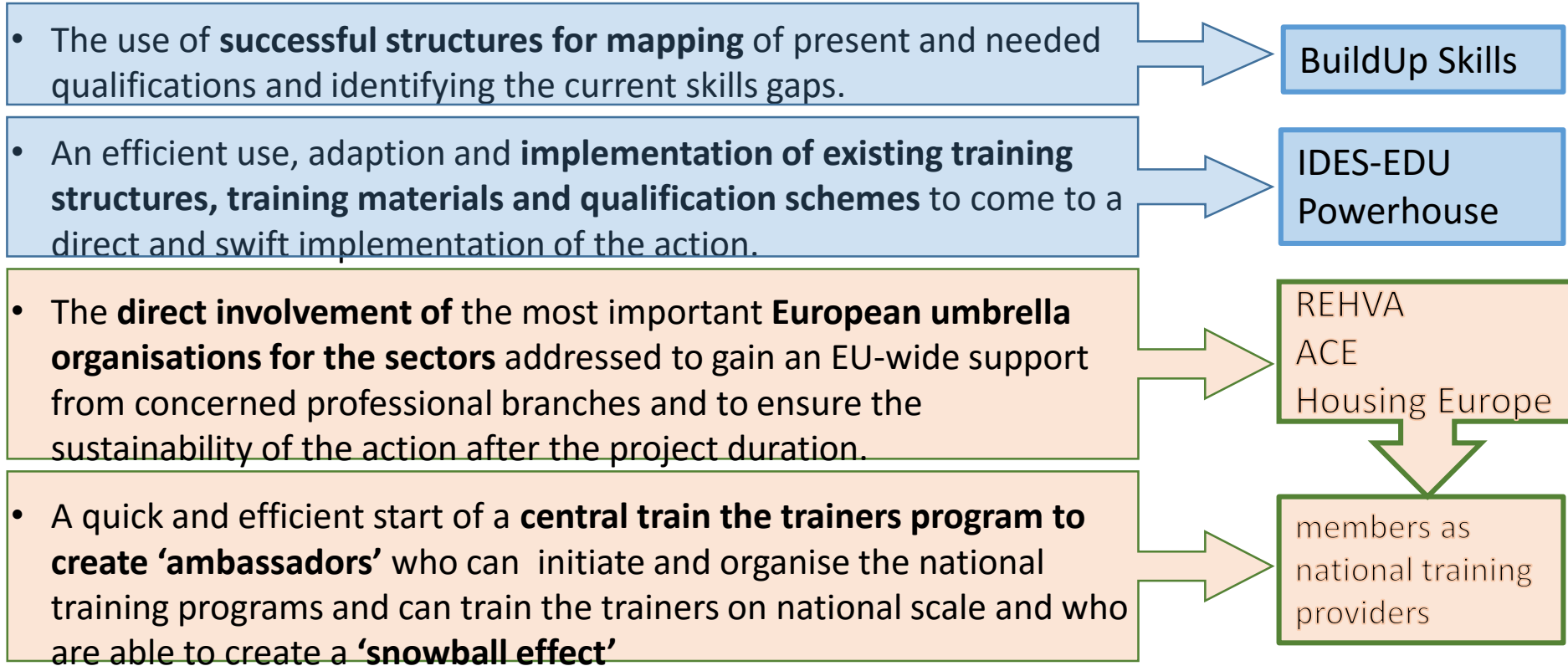
In order to make the PROF/TRAC action sustainable after the project duration a repository will be created in the Open Training Platform to store, update and maintain the training material.



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The overall approach of PROF/TRAC

The overall approach is based on the following four pillars:



Who are we ?

The PROF/TRAC consortium

	Participant organisation name			
1	Huygen Installatie Adviseurs	HIA	NL	Coordinator
2	Federation of European Heating, Ventilation and Air Condition Associations	REHVA	EU	EU associations representing their branch
3	Architects' Council Europe	ACE	EU	
4	Housing Europe	HE	EU	
5	ISSO	ISSO	NL	Knowledge and methodology providers
6	Valencia Institute of Building	IVE	ES	
7	Czech Technical University Prague	CVUT	CZ	
8	Aalborg University	AAU	DK	
9	DANVAK	DANVAK	DK	Training providers
10	Croatian Chamber of Mechanical Engineers	HKIS	HR	
11	Spanish Technical Association of HVAC and Refrigeration	ATECYR	ES	
12	TVVL	TVVL	NL	
13	Czech Chamber of Chartered Engineers and Technicians	CKAIT	CZ	
14	Chamber of Architecture and Spatial Planning of Slovenia	ZAPS	SI	
15	Italian Chamber of Architects	CNAPPC	IT	



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Mapping of Skills and Qualifications

- Devising a common methodology for the mapping of skills and qualifications, based on the BuildUp skills experiences
- The start of the PROF/TRAC approach:
 - mapping of professions and professionals involved in NZEB construction and retrofitting, the present skills and skills needed.
 - mapping of existing qualifications, knowledge sources, education programmes , post-initial training supply and accreditation and certification structures
 - using the methodologies as developed in BuildUp Skills projects
 - common methodology which will be applicable on national scale and will be actually applied in the seven pilot countries.



Development of a European Training and Qualification Platform

The core of the project where the *European open training platform* for Continuing Professional Development is organised :

- design and setup the IT structure of the platform
- development and promotion of a European qualification scheme
- sharing free access and up-to-date information on the training programmes, professional profiles, training providers and certified trainers
- a sustainable platform for mutual learning, knowledge exchange and networking
- creating a virtual pool and data base with trained and skilled experts on the PROF/TRAC open training platform and repository



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Train the Trainers Programme

PROF/TRAC will organize a central 'Train the Trainers' program to set the common framework and to train and create ambassadors for the project.

- 1st TtT event in Prague, February 15 – 17, 2016
- 2nd TtT event in Croatia, September 19 – 21, 2016
- 3rd TtT event in Valencia, spring 2017
- 4th and 5th events will be webinars

The ambassadors (trained trainers) will be qualified and equipped with skills to start up training programs on a national level and 'train trainers' on a national scale, creating a snow ball effect.

After having followed the EU level Train the Trainers program, the trained trainers, together with the training providers, will develop and implement the national training programs for their pilot country, based on the specific training and qualification needs as mapped for each pilot country.



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Pilots

- Seven pilots in Denmark, The Netherlands, Spain, Italy, Czech Republic, Slovenia and Croatia
- Trainers/experts from each pilot country have composed a specific training program (i.e. In the national pilots), based on the specific training and qualification needs as mapped for each country during the 1st TtT session in Prague



Why pilots?

- The specific role of the pilots is to monitor and to evaluate the approach of the project. It should give feedback to the central training program and to the training material collected in the repository

Who should attend the national trainings?

- Engineers, architects and managers



Exploitation and Replication

- Creating a snowball effect and devising a business plan for continuation of the platform after the project duration

PROF-TRAC training scheme and impact				WP4	WP5	WP6		
				Trainers TtT	Professionals PROF-TRAC pilots	further exploitation other REHVA/ACE countries		
Year	Quarter	Activity						
2015	1	mapping of skills						
	2	preparation						
	3	TtT training #1: 7 * 3 experts for pilots		21 face-to-face				
	4	preparation pilot 1						
2016	1	national pilots 1	7 * 30		210			
	2	TtT training #2: 4 * 3 experts for 4 new locations		12 face-to-face				
	3	TtT training #3: 4 * 3 experts		12 face-to-face				
	4	preparation for 8 new locations 8 * 35						
2017	1	national pilots 2	7*30		210 year 2	280 year 1		
	2	TtT training #4: 4 * 5 experts by webinar		20 TtT webinar				
	3	TtT training #5: 4 * 5 experts by webinar		20 TtT webinar				
	4	preparation for 8 new locations						
Impact during the project				85	420	280		785
2018	1	national pilots 3			210 year 3	280 year 2	280 year 1	
	2	TtT training # 6		12				
	3	TtT training #7						
	4	preparation for 8 new locations						
Impact of the project one year after project duration				97	630	560	280	1567

11

First outcomes:

PROF/TRAC skills mapping methodology and app

CODE	TECHNOLOGY, INTERDISCIPLINARY SKILLS AND PROFESSIONS	Architect							
		current	nZEB	Gap	1	2	3	4	5
M	ENERGY MANAGEMENT								
EM1	Smart grid systems	1	1	0					
EM2	Domotic systems	1	3	2					
EM3	Building management systems	1	2	1					
P	ENERGY PRODUCTION (on-site and nearby								
EP1	Geothermal energy	0	1	1					
EP2	Biomass	0	1	1					
EP3	Biogas	0	1	1					
EP4	District heating and cooling	1	2	1					
EP5	Heatpumps	1	2	1					
EP6	Solar power systems for electricity generation	2	3	1					
EP7	Solar thermal systems for cooling generation	1	1	0					
EP8	Solar thermal systems for domestic hot water	2	1	0					
EP9	Mini wind power	0	1	1					
EP10	Combined Heat and Power (CHP)	0	1	1					
R	ENERGY REDUCTION								
ER1	Insulation	3	4	1					
ER2	Air tightness building	3	4	1					
ER3	Micro climates	2	4	2					
ER4	Envelope systems								

Skills levels can be estimated from level 0 to 5, and with

Skills levels can be estimated from level 0 to 5, and will automatically be coloured.

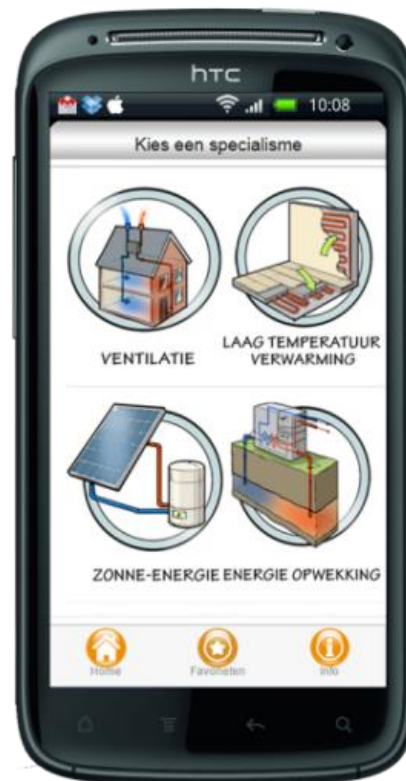
Explanation of the levels 0 - 5:

0	Not applicable / no knowledge and skills required
1	Has little knowledge and skills with respect to the relevant field / technology
2	Understands basic knowledge and has practical skills within the field, is able to solve
3	Has comprehensive, factual and theoretical knowledge, is capable of solving problems
4	Has advanced knowledge involving a critical understanding of theories and principles and
5	Has specialised knowledge and problem-solving skills, partly at the forefront of

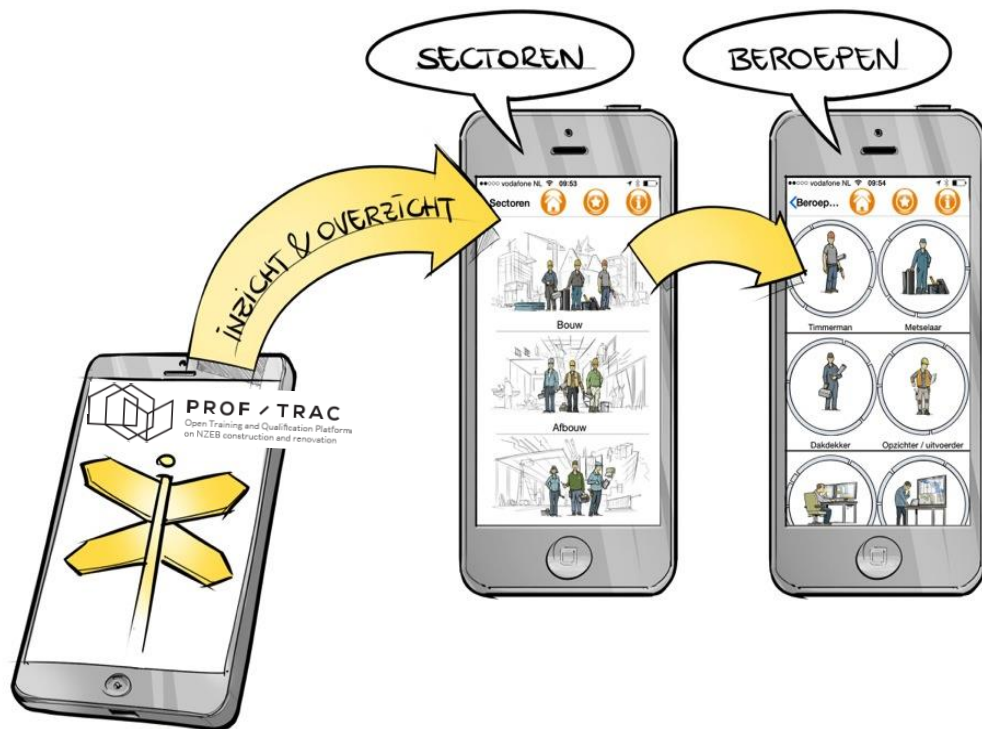


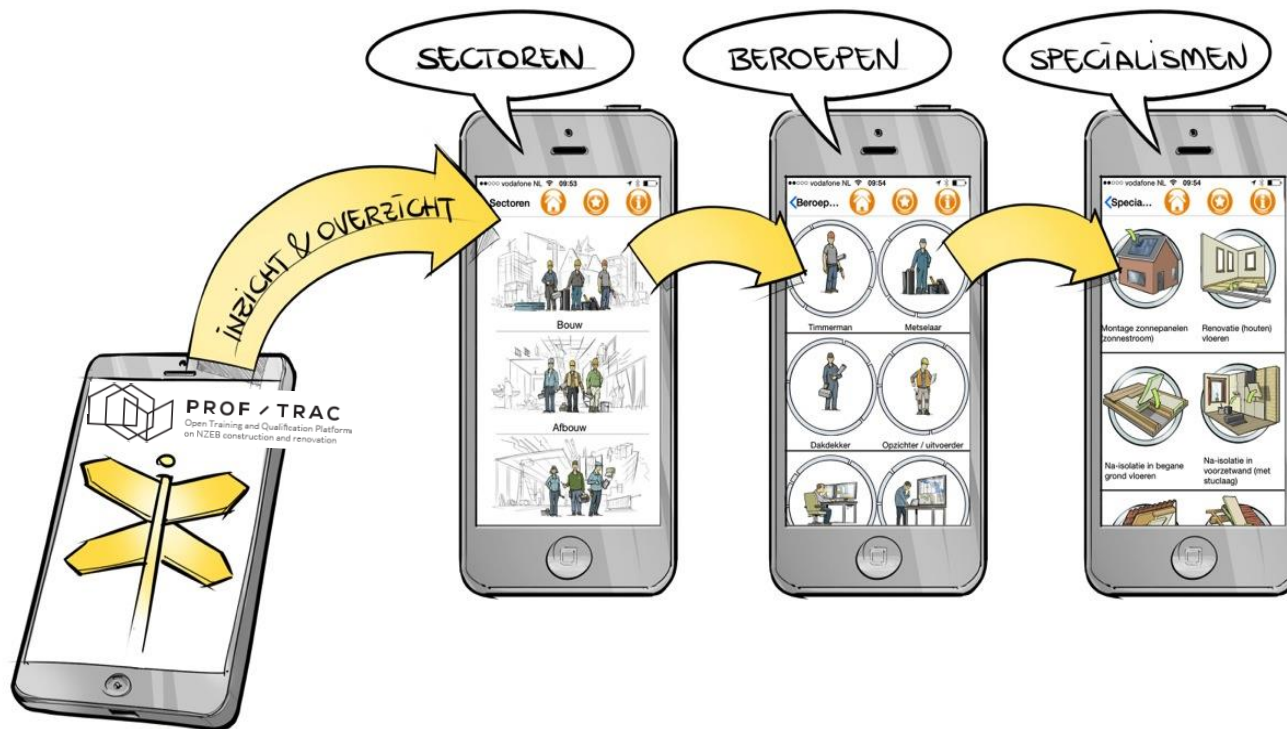
PROF / TRAC

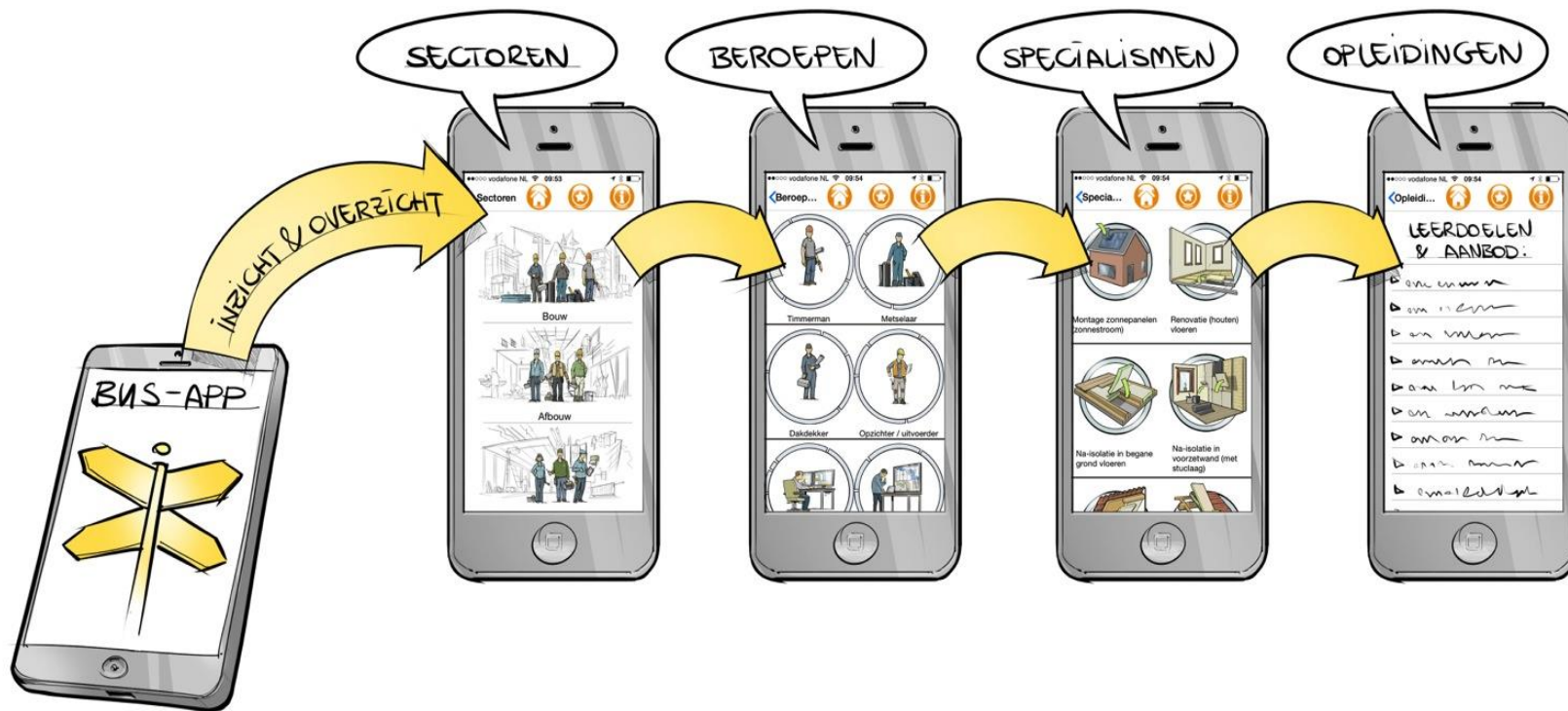
The PROF/TRAC skills mapping app

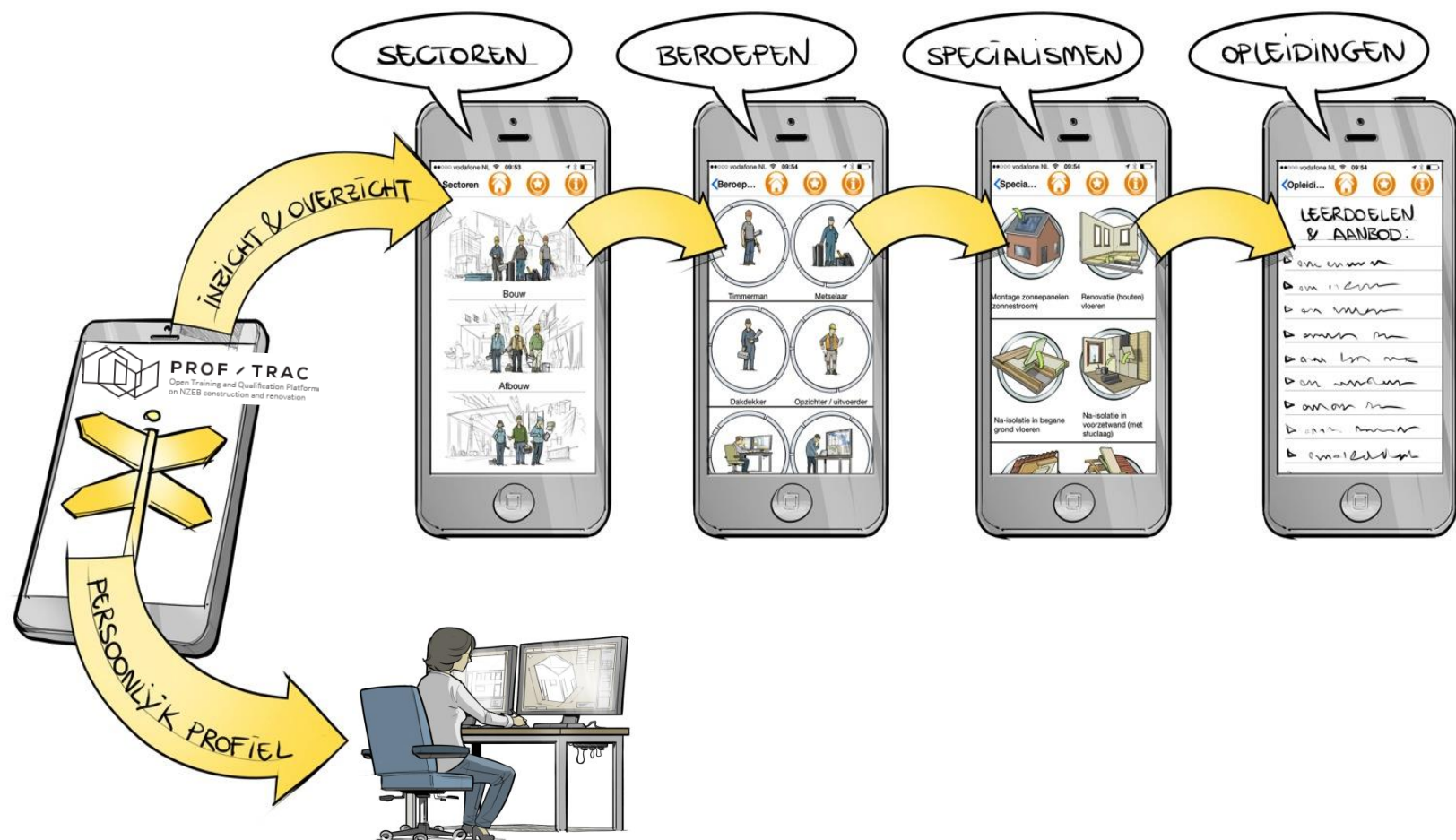


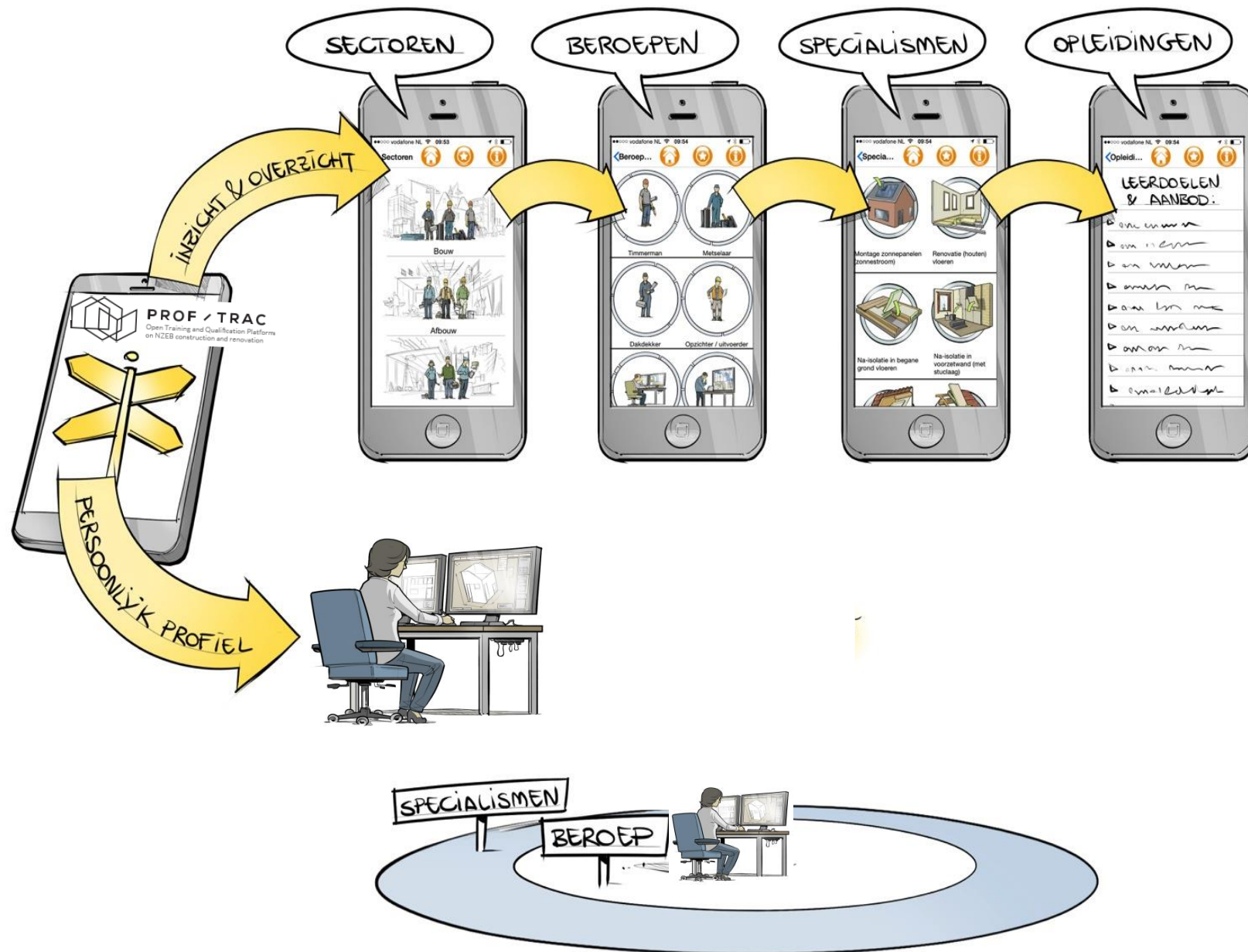


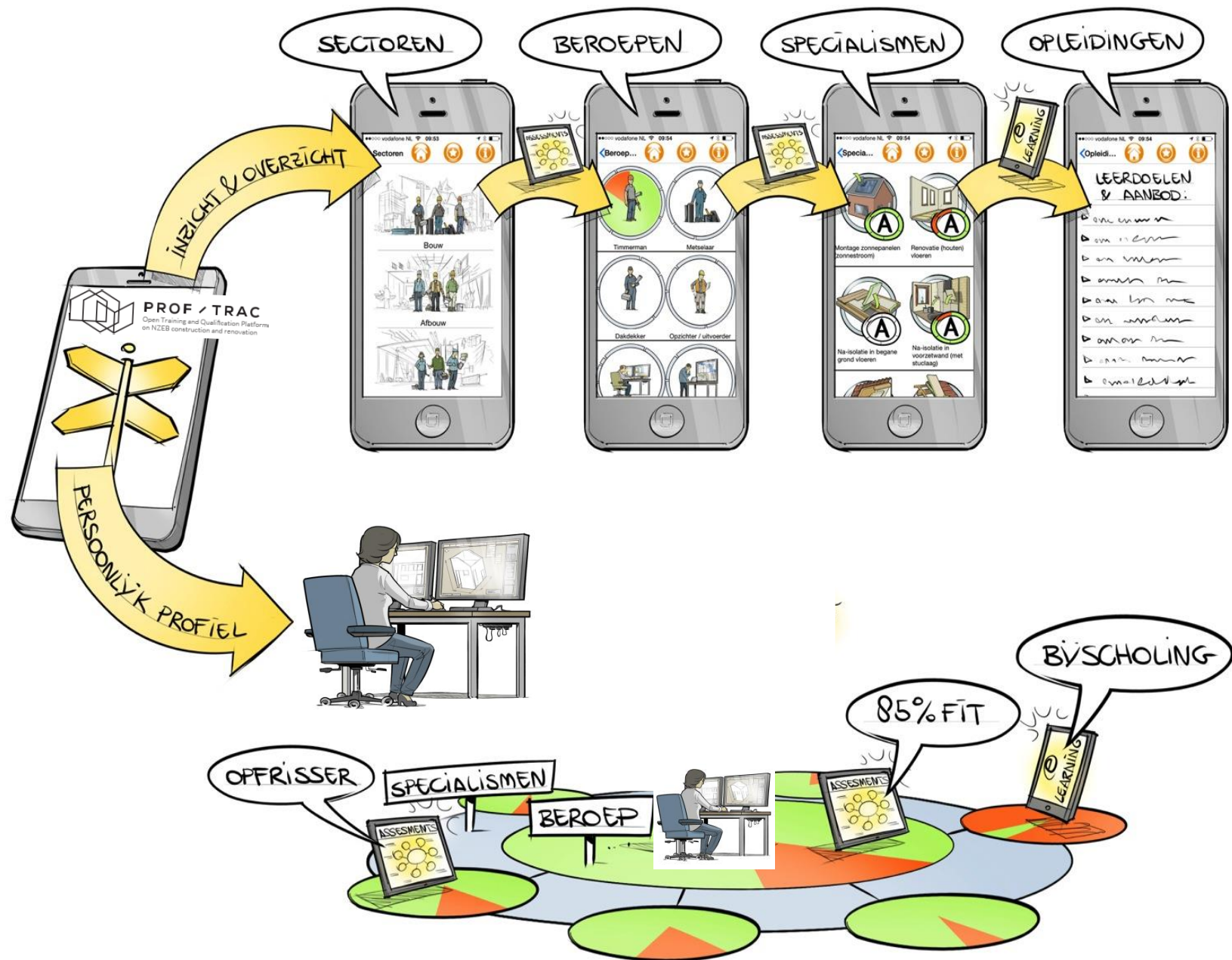








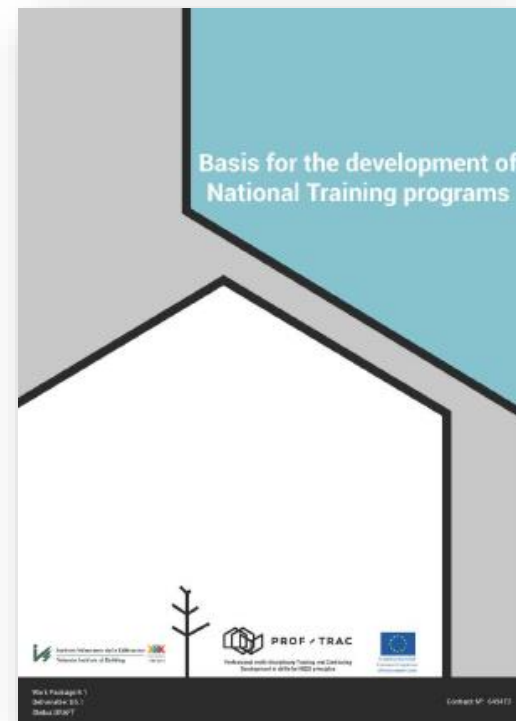




First outcomes:

PROF/TRAC Guide: Basis for the development of National training programs

- Guide: Basis for the development of National training programs
- This educational guide will be available for training providers to be used as a support to design the pilot actions (courses)



PROF / TRAC

First outcomes:

PROF/TRAC Database – keyword structure

Profession	Code	Topic(T)	Subtopic	Code	Type of project	Code	Building use	Code	Type of the material	Code	Language	Code
Architect	P1	Energy management		EM	New construction	E1	Office buildings	B1	PPT	M1	Danish	L1
Engineer	P2		Smart grid systems	EM1	Renovation	E2	Apartment houses	B2	Lecture notes	M2	Dutch	L2
Project manager	P3		Domotic systems	EM2			Single-family houses	B3	Reports/publications	M3	English	L3
Project developer	P4		Building management systems	EM3			Educational building	B4	Video tutorials	M4	French	L4
Building manager	P5	Energy production		EP			Other	B5	Workshops	M5	German	L5
Building owner	P6		Geothermal energy	EP1			Hospitals	B6	Guidelines/Toolkits	M6	Italian	L6
Financial manager	P7		Biomass	EP2			Wholesale and retail	B7	Software	M7	Spanish	L7
Procurer	P8		Biogas	EP3			Sport facilities	B8	Case studies	M8	Bulgarian	L8
PROF-TRAC trainer	P9		District heating and cooling	EP4					Databases/resources	M9	Croatian	L9
			Heatpumps	EP5					MOOCs	M10	Czech	L10
			Solar power systems for electricity generation	EP6							Estonian	L11
			Solar thermal systems for cooling generation	EP7							Finnish	L12
			Solar thermal systems for domestic hot water and/or heating generation)	EP8							German	L13
			Mini wind power	EP9							Greek	L14
			Combined Heat and Power (CHP)	EP10							Hungarian	L15
		Energy reduction		ER							Irish	L16
			Insulation	ER1							Latvian	L17
			Air tightness building	ER2							Lithuanian	L18
			Micro climates	ER3							Maltese	L19
			Envelope systems	ER4							Polish	L20
			Hot water systems	ER5							Portuguese	L21
			Window and/or glazing systems	ER6							Romanian	L22
			Heating and cooling emission systems	ER7							Serbian	L23
			Electric heating systems	ER8							Slovak	L24
			Artificial lighting systems	ER9							Slovenian	L25
			Ventilation systems	ER10							Spanish	L26
		Interdisciplinary skills		IS							Swedish	L27



First outcomes:

PROF/TRAC Database - Online

<http://proftrac.eu/training-materials.html>

FIND RELEVANT PROJECTS



On this page you can find all relevant projects of PROF / TRAC. Use the filter form on the left to narrow the results.

Topic
Select topic ▼

Type of project
Select one... ▼

Building use
Select one... ▼

Type of material
Select one... ▼

Language
Select one... ▼

Filter result >>

◆ Relevant report	◆ Topic	▼ Project	
 The Comfort Houses: Measurements And Analysis Of The Indoor Environment And Energy Consumption In 8 Passive Houses 2008-2011	Energy reduction	ZEB	More details
 Energineutralt Byggeri – Definition og fremtidig rolle i samfundet	Energy management	ZEB	More details
 Energineutralt Byggeri – Designprincipper og byggede eksempler for enfamiliehuse	Energy management	ZEB	More details
 Energineutralt Byggeri – Tekniske løsninger	Energy management	ZEB	More details
 Zero Energy Buildings – DESIGN PRINCIPLES AND BUILT EXAMPLES	Energy management	ZEB	More details
 Survey Findings Report	Awareness of energy efficiency	TRB	More details
 Final conclusions report	Awareness of energy efficiency	TRB	More details



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PROF/TRAC database:

For example access to all material from the IEE IDES-EDU project (100 lectures, 22 seminars)

- **Fundamental Educational Packages**

- Sustainable Building
- Architectural Quality
- Indoor Environment
- Outdoor environment
- Integrated Design Approach
- Whole Building and Renewable Energy Concepts
- Marketing, cost-benefit analysis
- Understanding of the EPBD

- **Theoretical Educational Packages**

- Heating and Cooling
- Lighting
- Ventilation
- Energy Production

- **Practical Educational Package**

- Cross Disciplinary Teamwork



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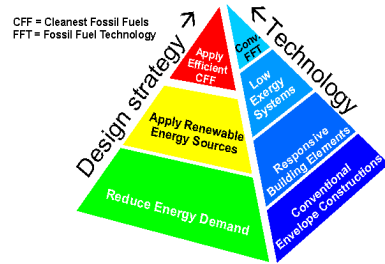


IDES-EDU
MASTER AND POST GRADUATE EDUCATION
AND TRAINING IN MULTIDISCIPLINARY TEAMS

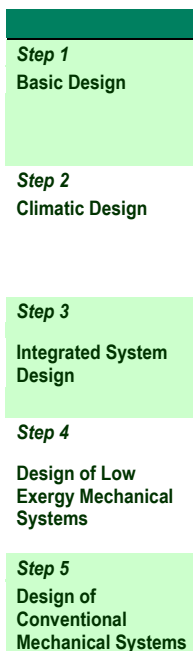
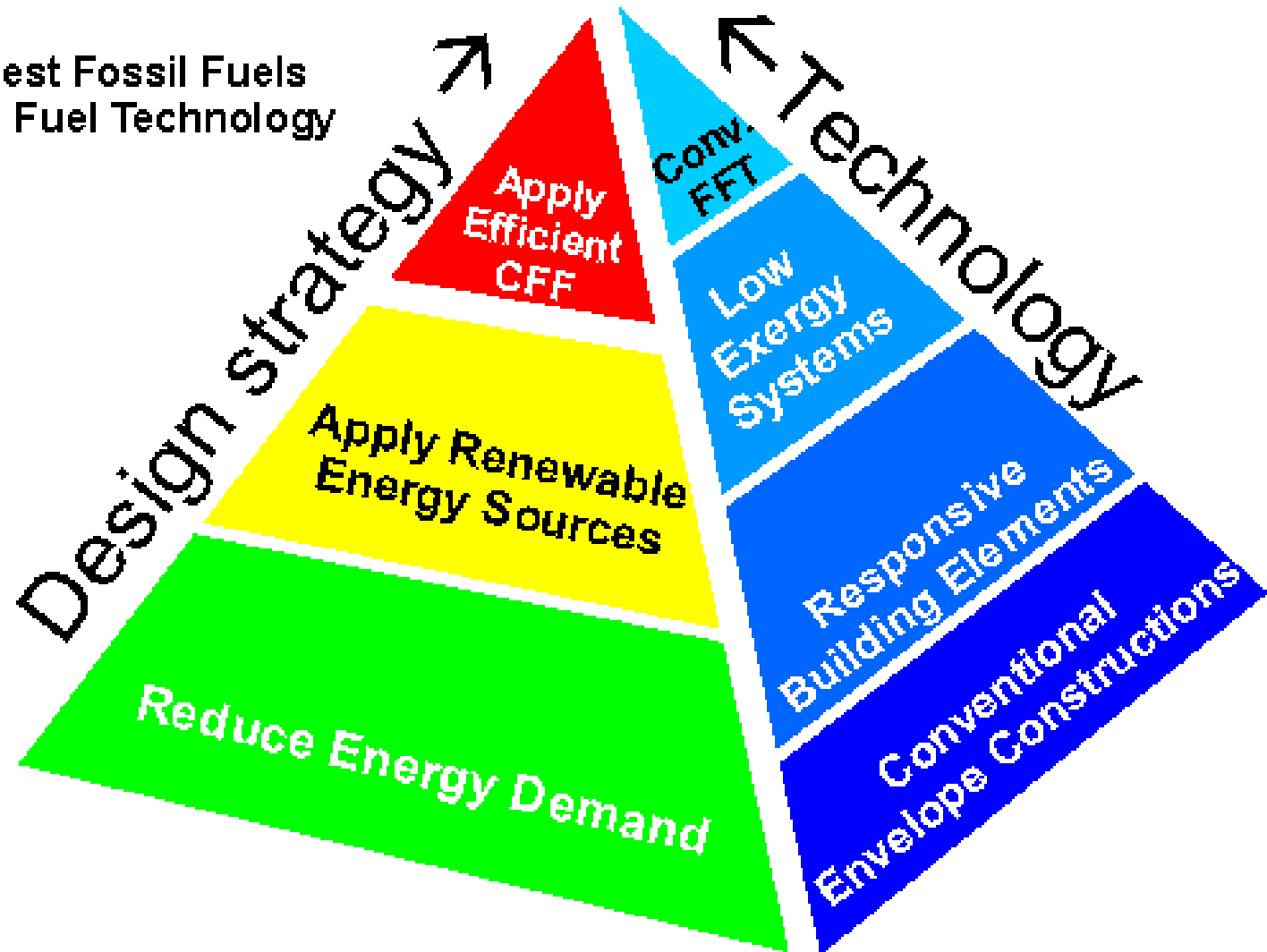
IDES-EDU: Structure of the Education

How to translate a design strategy into training and education?

from a strategy...



Apply Efficient CFF
Cleanest Fossil Fuels
Fossil Fuel Technology



Example of course description (WBREC)

General Description:

Whole building and renewable energy concepts can be defined as design solutions where the building and its building construction elements together with building services and renewable energy systems are integrated into one system in order to reach an optimal environmental performance in terms of energy performance, resource consumption, ecological loadings and indoor environmental quality. This educational package will provide students with the necessary knowledge and skills to take part in a professional and interdisciplinary collaboration on design of whole building and renewable energy concepts

Main objectives: At the end of this course, the student will:

- Must be able to take part in a professional and interdisciplinary collaboration on design of whole building and renewable energy concepts
- Must be able to handle complex and research-oriented cases related to development of low-energy, energy-neutral and energy-producing buildings

Intellectual skills: At the end of this course, the student will be able to:

- Must have knowledge about the integrated building energy design strategy as well as whole building and energy solutions
- Must be able to understand the interplay between microclimate, buildings and their services
- Must be able to understand the interplay between sustainable energy system, building energy demand and renewable energy production
- Must have knowledge on utilization of passive energy technologies in relation to choice of building construction and envelope system solution
- Must have knowledge on building integrated renewable energy systems and their integration with building services

Professional/practical skills: At the end of this course, the student is able to:

- Must be able to apply and combine design methods for passive energy technologies and for energy efficient building design
- Must be able to apply, combine and evaluate advanced methods for analysis of the interplay between renewable energy systems, architectural concepts, building design, building use, outdoor climate and HVAC systems
- Must be able to apply both simple and advanced calculation methods for analysis and simulation of building energy performance under dynamic load conditions

Suggestion for pedagogical approach: Lectures, etc. supplemented with instructions, workshops, presentation seminars, etc.



Whole Building and Renewable Energy Concepts

- **Lecture 1: Whole Building and Energy Solutions**
 - Introduction to the educational package including definition of future challenges to the building sector in relation to design and operation of very low energy buildings.
- **Lecture 2: Design Strategies for Reduction of Energy Demand**
 - Design considerations and application of a design strategy.
- **Lecture 3: Design Strategies for Utilization of Climatic Principles**
 - Description of climatic design principles and strategies for utilization of passive energy technologies.
- **Lecture 4: Energy Use Control and Occupant Impact**
 - Occupant behavior and practices and their influence on building energy performance and indoor environment.
- **Lecture 5: Building Integrated Renewable Energy**
 - Examples and development stage of renewable energy solutions for buildings.
- **Lecture 6: Whole Building Design and Simulation Tools**
 - Building simulation and its role in the design process.
- **Lecture 7: Built Examples**
 - Description of a number of built examples worldwide to illustrate the building concepts and design strategies.
- **Seminar 1:** The aim of this seminar is to identify the factors related to climate, building layout and façade design that may have any influence to final energy performance
- **Seminar 2:** The aim of this seminar is to create a total energy concept of the building from the previous seminar to reach a net zero energy performance.



PROF/TRAC coming activities

- First seven national pilots (Denmark, Netherlands, Czech Republic, Spain, Italy, Slovenia, Croatia) mid 2016
- Release of the PROF/TRAC skills mapping app
- Promotion of the PROF/TRAC database on training materials to use in other training and education projects
- Next round of trainings (REHVA and ACE members, not presented in PROF/TRAC); 2nd Train the Trainer session in Zagreb, Croatia, September 19 -21



- Training for managers in other sectors (social housing)
- Collaboration with other Construction Skills projects > MEnS



PROF / TRAC

COLOFON

www.profrac.eu



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