SUSTAINABLE PLACES 2017 JUNE 28 – 30, 2017 MIDDLESBROUGH, UK

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PROFessional multi-disciplinary TRAining and Continuing development in skills for NZEB principles

Presenting: a novel and rapid nZEB skills mapping and qualification framework methodology

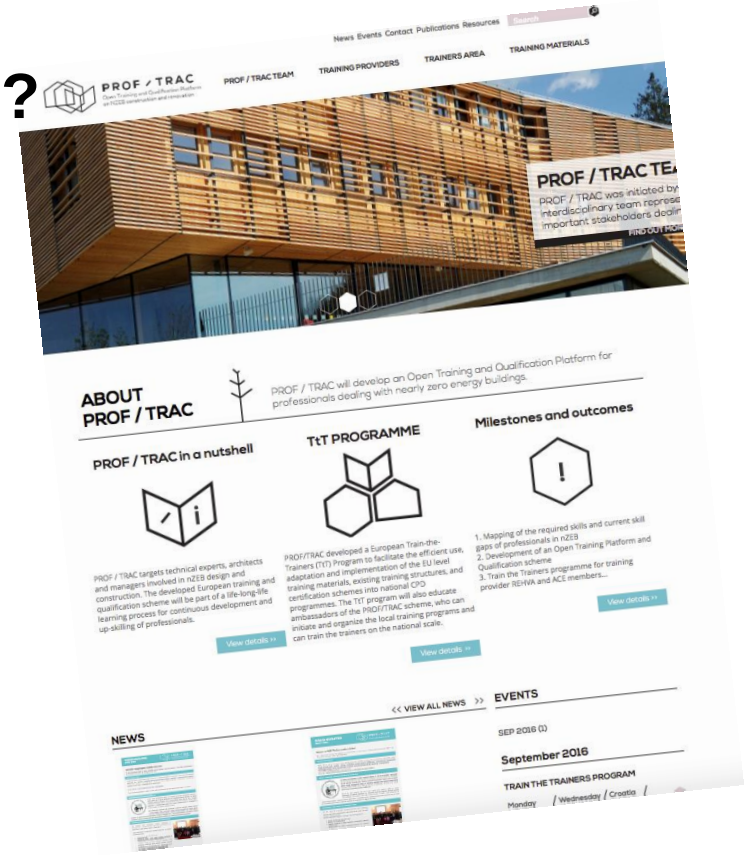
Jan Cromwijk, ISSO, the Netherlands

What is the PROF/TRAC overall goal?

- Develop and maintain an **Open Education Platform for Continuing Professional Development** for professionals in the building sector.

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

- Developed **European qualification scheme** as part of a life-long learning process for continuing development and up-skilling of professionals.



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THE OVERALL APPROACH OF PROF/TRAC:

The overall approach is based on the following four pillars:

- The use of **successful structures for mapping** of present and needed qualifications and identifying the current skills gaps. → BuildUp Skills
- An efficient use, adaption and **implementation of existing training structures, training materials and qualification schemes** to come to a direct and swift implementation of the action. → IDES-EDU Powerhouse
- The **direct involvement of** the most important **European umbrella organisations for the sectors** addressed to gain an EU-wide support from concerned professional branches and to ensure the sustainability of the action after the project duration. → REHVA, ACE, Housing Europe
- A quick and efficient start of a **central train the trainers program to create 'ambassadors'** who can initiate and organise the national training programs and can train the trainers on national scale and who are able to create a **'snowball effect'** → members as national training providers

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WHO ARE WE?:

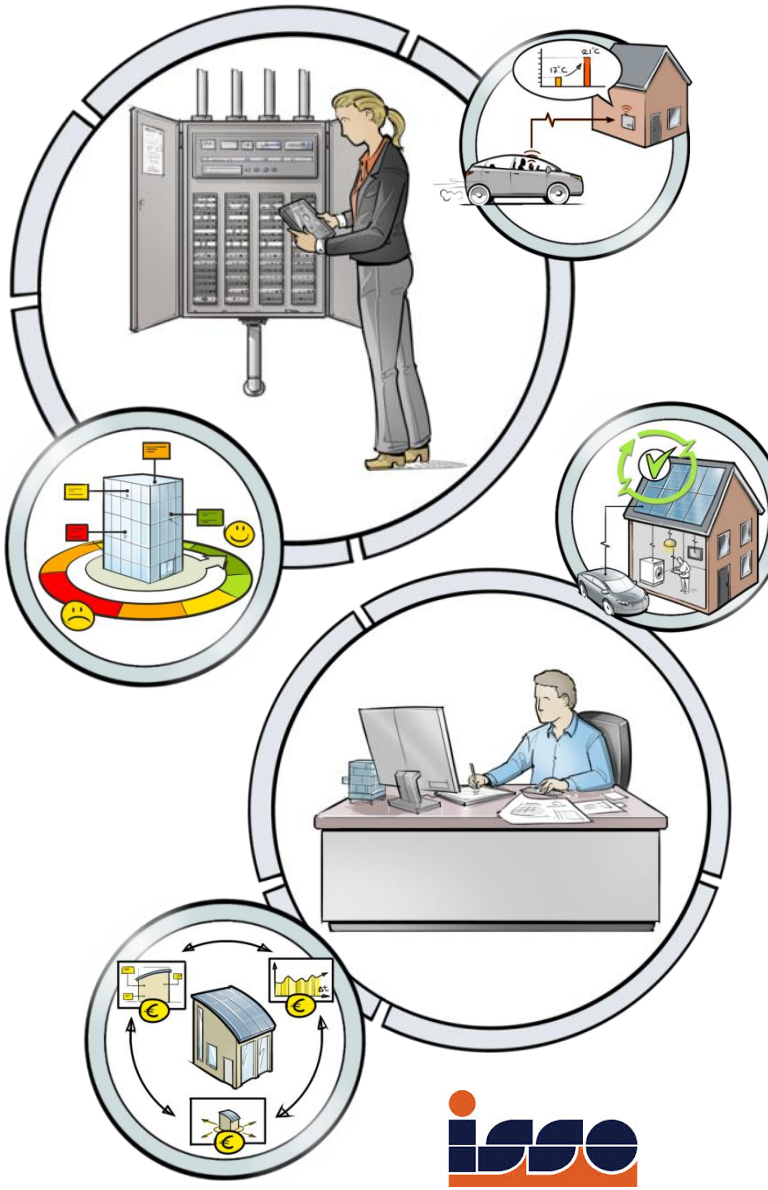
The PROF/TRAC consortium

Participant No	Participant organisation name		Country	Role
1	Huygen Installatie Adviseurs	HIA	NL	Coordinator
2	Federation of European Heating, Ventilation and Air Conditioning Associations	REHVA	EU (NL)	EU associations representing their branch
3	Architects' Council Europe	ACE	EU (BE)	
4	Housing Europe	HE	EU (BE)	
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	

Introduction of the developed skills mapping methodology

Mapping of the skills and current skill gaps in nZEB

- Adapting methodologies of national BUILD UP Skills actions
- Developed by ISSO, REHVA and ACE members
- Methodology available on www.proftrac.eu/publications/reports
- Done in 7 member states



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Development of the PROF/TRAC nZEB skills mapping

Definition

- Relevant professions
- Skills levels
- Relevant nZEB technologies (energy management, production, reduction)
- Interdisciplinary skills

Inventory

- Mapping of current skills levels and the number of professionals
- Done by national, interdisciplinary expert team

Skills gaps

- Identifying skills gaps at the defined skills levels for all the involved professions

Roadmap development

- Matching the need for professionals by 2020 and beyond with the current status
- Training action plan according the identified training need

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Some results

Professional

Skills

Skills gap from level 2 to 3

CODE	TECHNOLOGY, INTERDISCIPLINARY SKILLS AND PROFESSIONS	Mechanical Engineer								Building aut. Engineer							
		current	nZEB	Gap	1	2	3	4	5	current	nZEB	Gap	1	2	3	4	5
M	**ENERGY MANAGEMENT**																
EM1	Smart grid systems	2	2	**0**						4	4	**1**					
EM2	Domotic systems	2	2	**0**						4	5	**1**					
EM3	Building management systems	2	3	**1**						4	5	**1**					
P	**ENERGY PRODUCTION (on-site and nearby**																
EP1	Geothermal energy	3	3	**0**						2	3	**1**					
EP2	Biomass	2	2	**0**						1	2	**1**					
EP3	Biogass	2	2	**0**						1	2	**1**					
EP4	District heating and cooling	3	4	**1**						2	3	**1**					
EP5	Heatpumps	3	5	**2**						3	3	**0**					
EP6	Solar power systems for electricity generation	3	2	**0**						3	3	**0**					
EP7	Solar thermal systems for cooling generation	2	4	**2**						2	2	**0**					
EP8	Solar thermal systems for domestic hot water	3	4	**1**						2	2	**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 problems by selecting and applying basic methods, tools, materials and information
3	Has comprehensive, factual and theoretical knowledge, is capable of solving problems within the field
4	Has advanced knowledge involving a critical understanding of theories and principles and skills, required to solve complex and unpredictable problems in the field and is aware of the boundaries
5	Has specialised knowledge and problem-solving skills, partly at the forefront of knowledge in the field, in order to develop new knowledge and procedures and to integrate knowledge from different fields

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Usage of the results in developing a Roadmap

- Roadmaps have been developed on a national and EU-wide level.
- The national roadmaps focus on successful national implementation of nZEB trainings for professionals.
- The EU roadmap does the same for the EU, but focuses on similarities or corresponding outcomes of the member states

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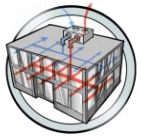
Creating an **EU-Qualification framework** for **C**ontinuing **P**rofessional **D**evelopment (CPD)

Technology

EP5	**Planning and design of heat pump installations** 	energy production for heating, cooling and potable hot water, making use of an energy source with low temperature and bringing it to a higher temperature.

Workfields

Skill-levels

Tasks

Task description

Task-owner

Project phase	General description and subtasks	Workfield						
		Architecture	Mechanical Engineering	Electrical Engineering	Structural energeering	Construction management	ng and procurement	g management
General	**General knowledge of heat pumps, design and application**	**1**	**4**	**2**	**1**	**1**	**1**	**1**
Pre design	**Performance of a feasibility study**	**2**	**5**	**3**	**1**	**1**	**1**	**-**
	Can make an inventory of available heat sources and identify possibilities or restraints		x					
	Can estimate the heat loss of the building, to perform feasibility study of heat pumps		x					
	Inventory of possible heat pumps and available sources (e.g. outdoor air, exhaust air, soil, rivers)		x					
	Estimate the needed electrical power and oversee consequences for electrical installation		x	x				
	Can determine construction boundaries e.g. needed space, weight.	x	x	x	x			

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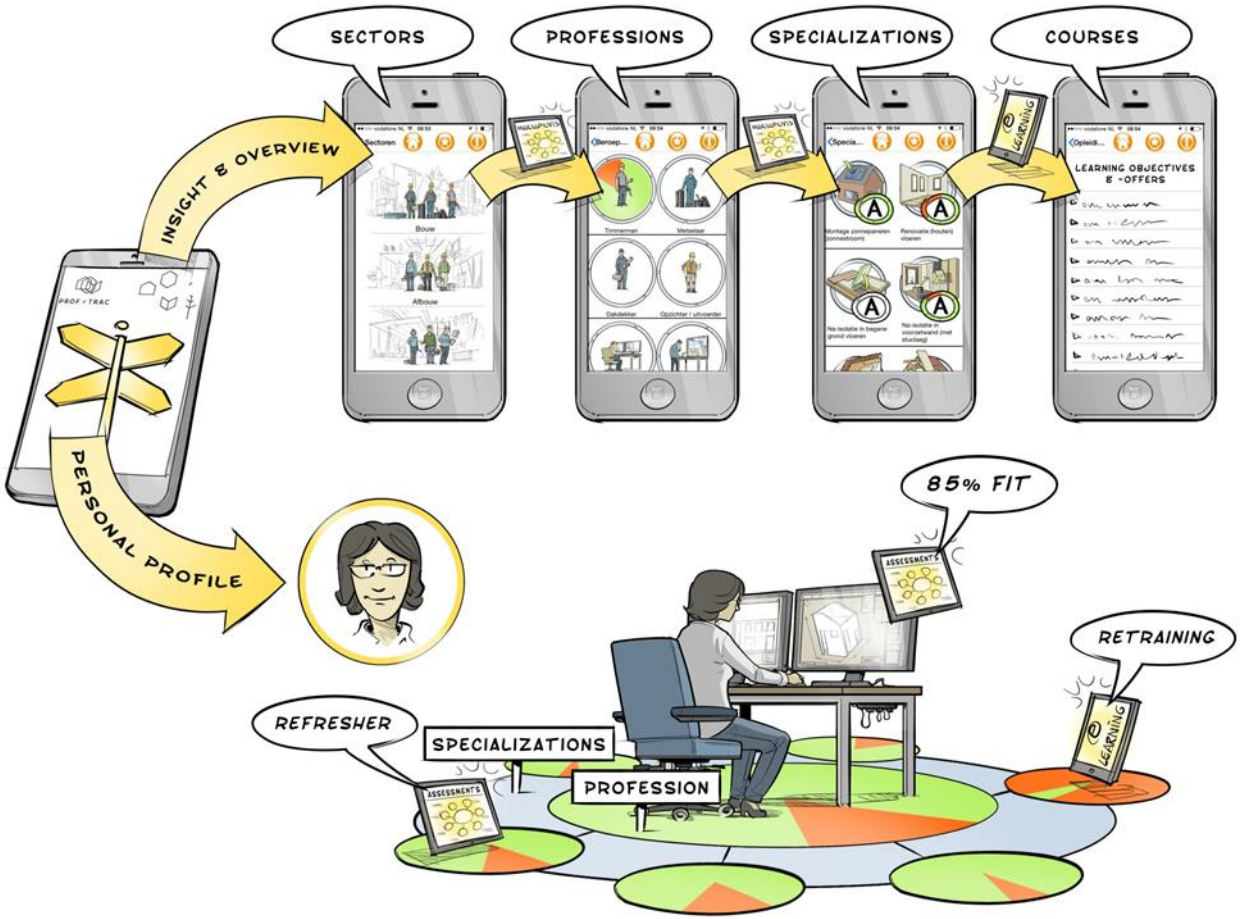
Integration of the skills mapping and the EU-Qualification Framework in the **BUILD UP Skills advisor-app**



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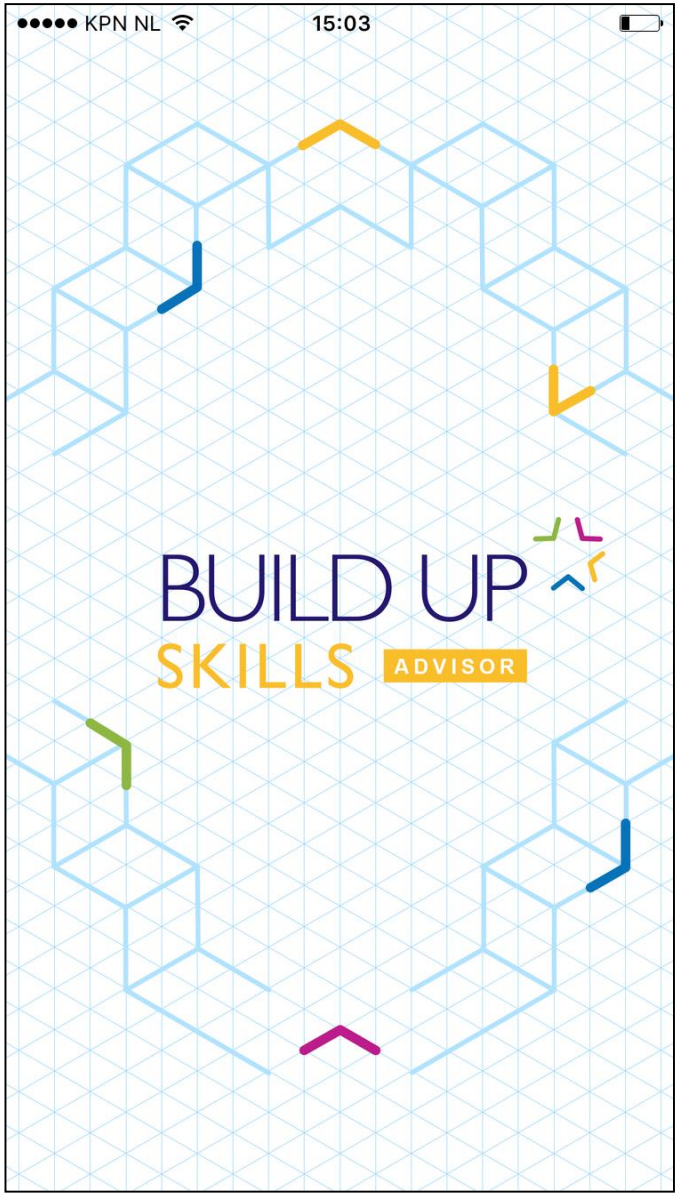

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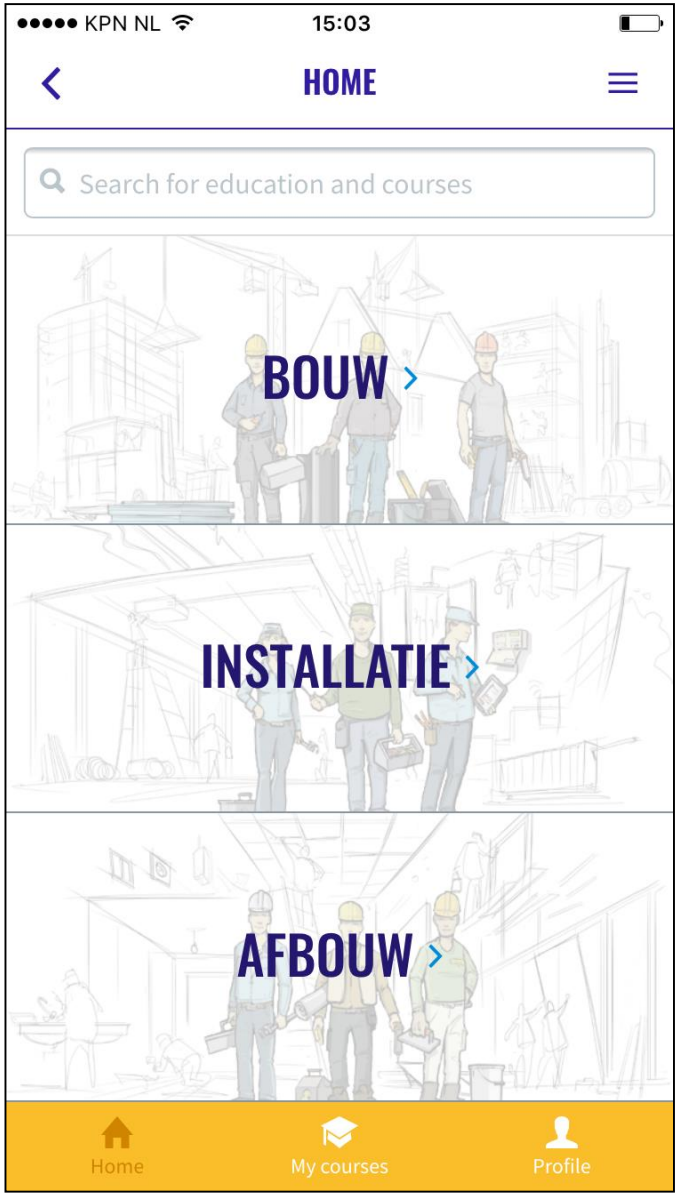
KPN NL
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HOME
Search for education and courses
BOUW
INSTALLATIE
AFBOUW
Home
My courses
Profile

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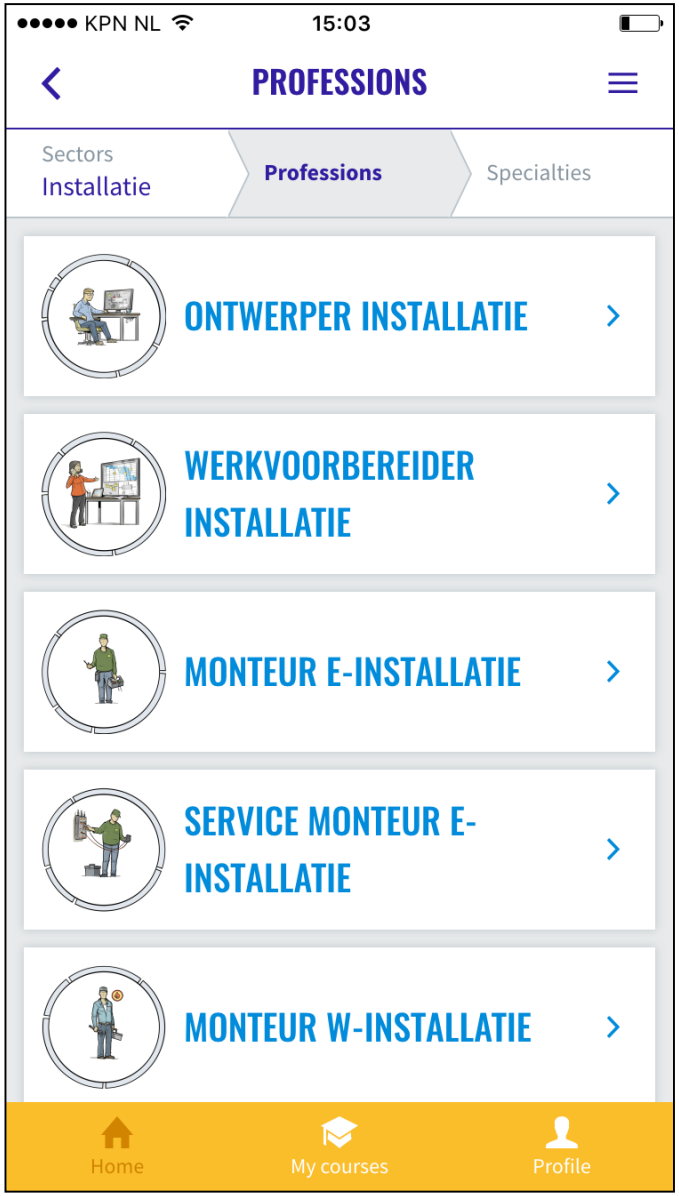
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PROFESSIONS
Sectors
Installatie
Professions
Specialties
ONTWERPER INSTALLATIE
WERKVOORBEREIDER INSTALLATIE
MONTEUR E-INSTALLATIE
SERVICE MONTEUR E-INSTALLATIE
MONTEUR W-INSTALLATIE
Home
My courses
Profile

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16:01
SPECIALTIES
Sectors
Installatie
Professions
Monteur E-…
Specialties
Notify for new courses in: Monteur E-installatie
On
ZONNESTROOM
100
THERMOGRAFIE BIJ INSTALLATIES
MONTAGE ZONNEPANELEN (STROOM)
100
MONTAGE KLEINE WINDMOLENS
Home
My courses
Profile

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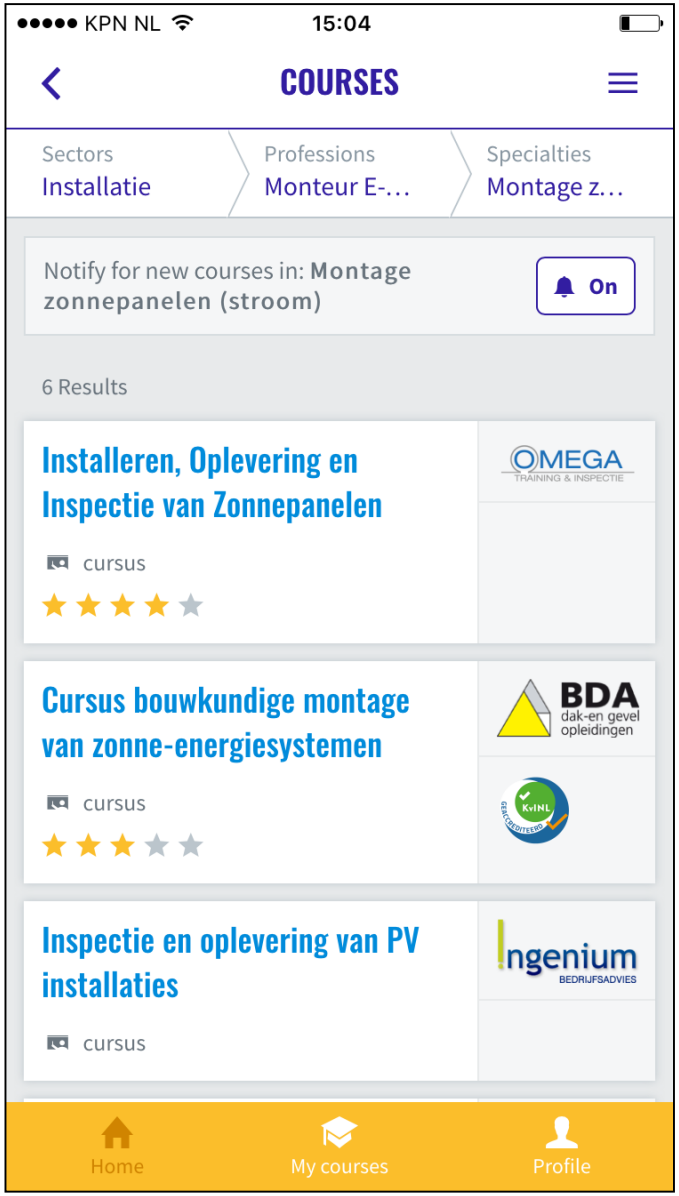
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15:04
COURSES
Sectors
Installatie
Professions
Monteur E-…
Specialties
Montage z…
Notify for new courses in: Montage zonnepanelen (stroom)
On
6 Results
Installeren, Oplevering en Inspectie van Zonnepanelen
cursus
OMEGA
TRAINING & INSPECTIE
Cursus bouwkundige montage van zonne-energiesystemen
cursus
BDA
dak-en gevel opleidingen
Inspectie en oplevering van PV installaties
cursus
Ingenium
BEDRIJFSADVIES
Home
My courses
Profile

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OTHER APPLICATIONS OF THE SKILLS MAPPING RESULTS

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		Biogass	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

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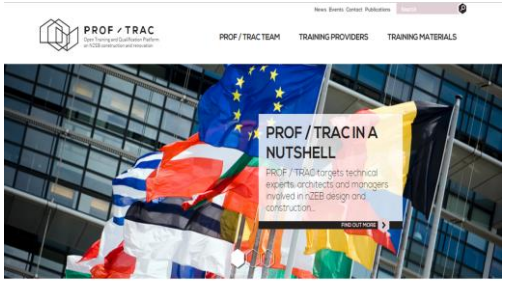
PROF/TRAC Database – Online

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



TRAINING MATERIAL REPOSITORY

On this page you can find all relevant training materials on NZEB. 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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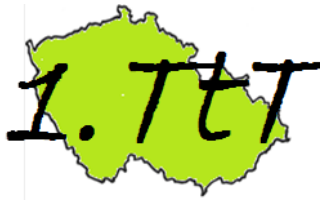
USAGE OF THE SKILLS MAPPING IN:

PROF/TRAC Train the Trainer sessions



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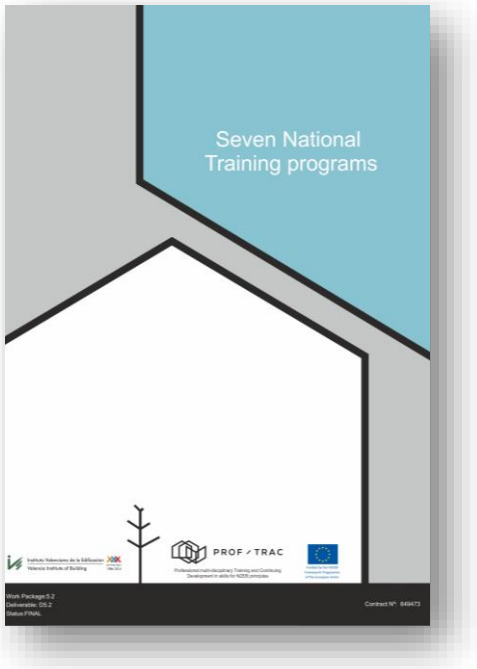
OUTCOMES:

PROF/TRAC Seven national training programs
Denmark, The Netherlands, Spain, Italy, Czech Republic, Slovenia and Croatia



Lessons learned & Discussion

- Crystal clear definitions of the professions involved are needed
  - Depending on the country the same profession can have different roles and tasks (even if it is a regulated profession)
- Work with groups of professions in fields of work or workfields
  - Such as architecture, construction and mechanical engineering.
- The definition of skill levels happens to be vital
  - Usage of the right EU-terms according to the Bologna declaration (2010) as a foundation

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Lessons learned & Discussion

- Accessibility of data on professional registrations
  - None of the countries involved has a registration system for all professions involved in nZEB, except for architects

- The level of present skills is difficult to assess correctly
  - It depends on the expertise and objectivity of the experts, who undertake the mapping. Our recommendation is to:
    - Train experts more intensively before conducting a skills mapping in the future
    - Make use of better digital survey tools, instead of Excel

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COLOFON

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The information in this publication does not necessarily represent the view of the European Commission.

Thank you for your attention

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