



Dieses Projekt wird gefördert mit
Mitteln der Europäischen Union



*Research Institute
for Vocational
Education and
Training in the
Crafts Sector at the
University of
Cologne*



ZDH
ZENTRALVERBAND DES
DEUTSCHEN HANDWERKS



dena
Deutsche Energie-Agentur

ZENTRALVERBAND
DEUTSCHES
BAUWERBE



ZWH

German Build up Skills (BUS) actions

Current activities and regional initiatives on „smart builders“ (Qualergy2020 and Qualitrain)

Dublin, 2014-10-15
Rolf Richard Reibold

Das DHI e.V. wird gefördert vom Bundesministerium für Wirtschaft und Energie aufgrund eines Beschlusses des Deutschen Bundestages sowie von den Wirtschaftsministerien der Bundesländer und vom Deutschen Handwerkskammertag.

Agenda – Key Questions

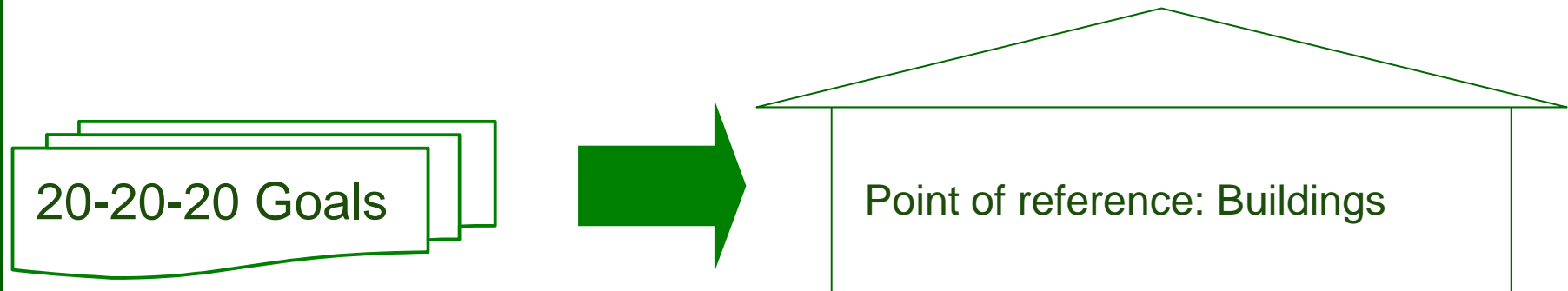
Results of the German BUS Pillar I - Project „Qualergy2020“

Tasks ahead in the German BUS Pillar II - Project „Qualitrain“

**Focus: Cross-trade CVET-Program
(„interfaces“ & „system thinking“)**

Concepts for quality ensurance on a regional level

QUALERGY 2020: Key Questions



First Step: Status Quo Analysis and Gap Analysis:

- *Which qualifications are needed?*
- *How many skilled workers are needed?*
- *How can the current situation of skilled workers be described?*
- *Which offers do we have in the fields of initial and continuing VET?*
- *Where are gaps to be found?*

Second Step: Development of National Roadmap

Qualergy2020: Quantitative Results concerning workforce supply

- 26.6 billion of additional investment into refurbishment needed between 2014 and 2020
- 2014-2020: 90.000 additional skilled blue collar workers will be needed
- Till 2020 there won't be any nationwide shortage, BUT
 - on regional level
 - concerning certain professions (electricians, metalworkers, installers and fitters....)
- After 2020 nationwide shortage expected

Qualergy2020: Development of Analytical Grid for the qualitative Questions

Building Envelope

- Building Shell
- Roof
- Facades

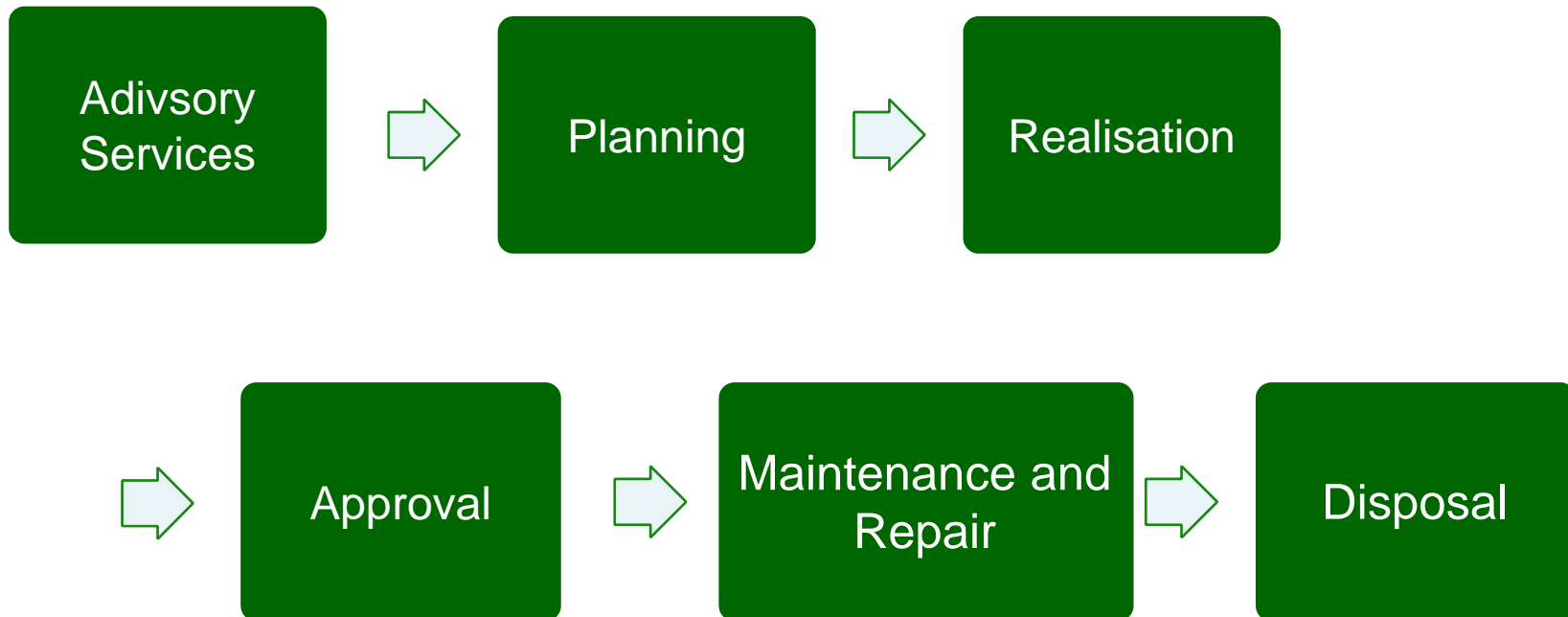
Infrastructure of Buildings

- Interior Fitting
- Electrotechnology
- Heat Technology
- Ventilation and Air Conditioning

Energy Supply

- Geothermal Energy
- Biomass
- Solar Heat
- Photovoltaics
- Block Heat and Power Plant
- Wind Engine

Qualergy2020: Development of Analytical Grid for the qualitative Questions



QUALERGY 2020: Refinement of the process and needed Qualifications

Processes																			
Advisory Services		Planning			Realisation							Approval	Maintenance and Repair		Disposal				
Reception of customer wishes	Customer information	Considering conditions	Planning procedure	Coordination with other involved	Preparation of the site / choice of material	Preparatory work at the building	Preparation of the material	Processing of material	Assembly of parts	Connection of systems	Protection and insulation of parts and systems	Commissioning of systems	Documentation and inspection of completed tasks	Clearing of the site	Approval	Assesment of maintenance needs	Execution of maintenance activities	Documentation of maintenance activities	Disposal

Qualergy2020: Development of Analytical Grid for the qualitative Questions

First Step: One Table for every profession

		Processes (construction and reconstruction of buildings)					
		Advisory Services	Planning	Realisation	Approval	Maintenance and Repair	Disposal
Relevant technological sectors	Building envelope	Building shell					
		Roof					
		Facades					
		Windows and doors					
	Infrastructure of buildings	Interior fitting					
		Electrotechnology					
		Heat technology					
		Ventilation and air conditioning					
	Energy supply	Geothermal energy					
		Biomass					
		Solar Heat					
		Photovoltaics					
		Block heat and power plant					
		Wind engine					

Question:
Which qualification bundles are covered by the profession concerning fields of technology and processes within the technologies?

Qualergy 2020: Qualitative Analyses

Second Step: Reorganisation of the tables
=> One Table for each field of Technology



Processes: Advisory Services – Planning – Realisation...



Occupations

Grid indicates for every field of technology

- which occupation is involved?
- which occupation covers which of the different processes of the value chain?

Just for an impression...

Wallpapering the offices with huge tables

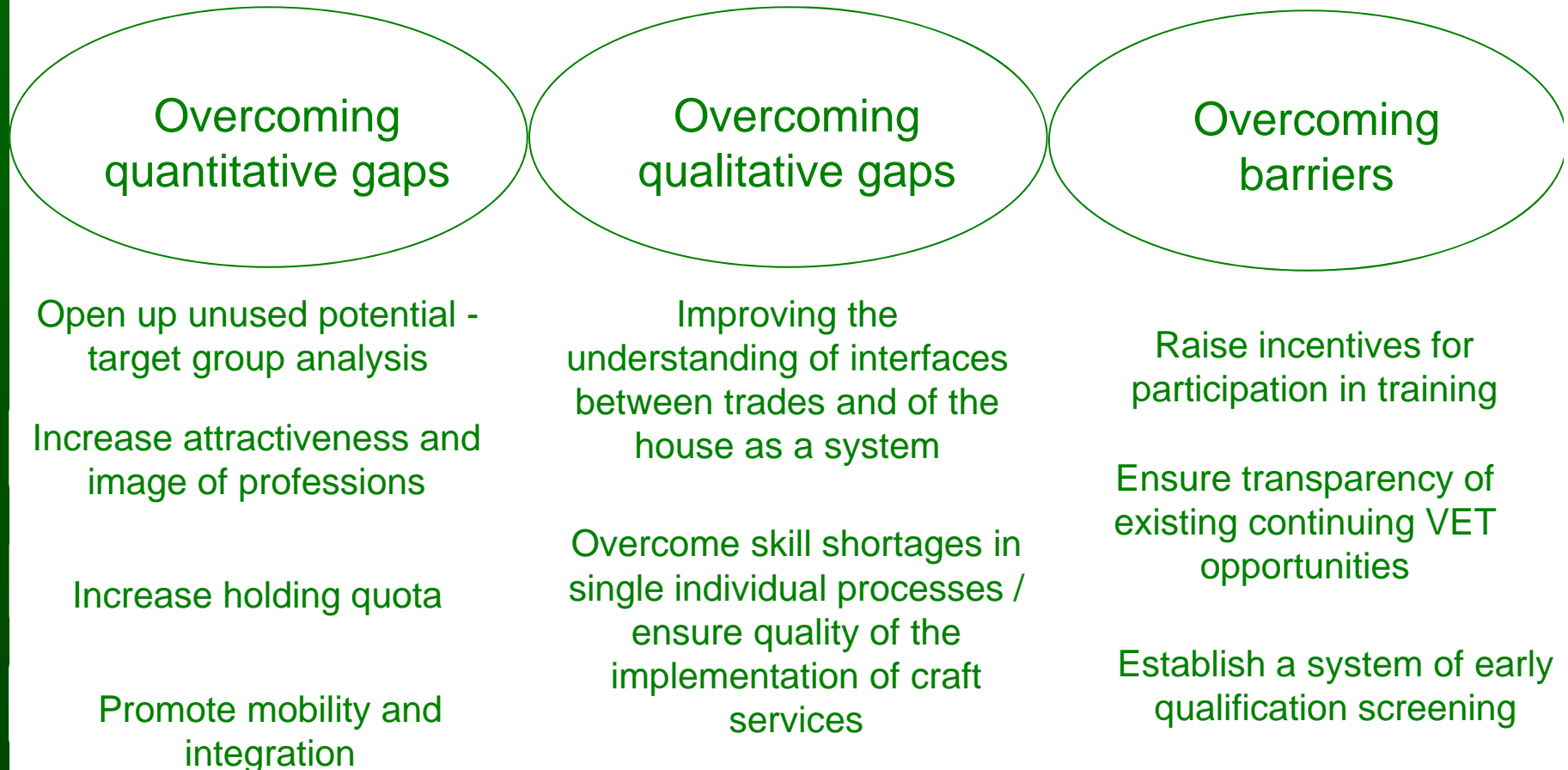
	Beratung		Planung				Realisierung									Abnahme / Übergabe	Wartung / Reparatur / Instandhaltung			Entsorgung
	Entgegennahme von Kundenwünschen (VOR Durchführung der Leistung)	Kundeninformation (NACH Durchführung der Leistung)	Berücksichtigung von Vorgaben ("Umsetzung von Konzepten")	Auswahl von Maßnahmen	Abstimmung der Realisierung mit anderen Beteiligten	Vorbereitende organisatorische Maßnahmen / Materialauswahl / Baustelleneinrichtung	Vorbereitende Maßnahmen am Bau / Erdarbeiten	Materialvorbereitung	Materialbe- und -verarbeitung	Montage von Teilen und Anlagen/ Zusammenführung/ Einbau von Teilen in die Gebäudehülle/ Einbau von Dämmstoffen	Anschluss von Anlagen ¹	Schutz/ Abdichtung/ Dämmung	Inbetriebnahme	Dokumentation / Überprüfen ausgeführter Tätigkeiten	Baustellenträumung	Abnahme und Übergabe an den Kunden	Bedarfsfeststellung für Reparatur/ Wartung/ Instandhaltung	Durchführung von Wartung/ Reparatur / Instandhaltung	Dokumentation der Wartung/ Reparatur/ Instandhaltung	Entsorgung
Ausbaufacharbeiter , SP Zimmerarbeiten (§ 11 Nr. x)			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6,7,8,9, 10)	x (Nr. 13)	x (Nr. 10)	x (Nr. 10)	x (Nr. 10)		x (Nr. 10)		x (Nr. 5, 19)	x (Nr. 6)					x (Nr. 6)
Zimmerer, ergänzend zu Ausbaufacharbeiter, SP Zimmerarbeiten (38 Nr. x)			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6, 7, 8)			x (Nr. 7)	x (Nr. 7,8)		x (Nr. 9)					x (Nr. 5)			
Ausbaufacharbeiter, SP Stuckateurarbeiten (§ 11 Nr. x)			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6,7,8,9)	x (Nr. 13)			x (Nr. 14)				x (Nr. 5, 19)	x (Nr. 6)					x (Nr. 6, 15)
Stuckateur, ergänzend zu Ausbaufacharbeiter, SP Stuckateurarbeiten			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6)	x (Nr. 8)		x (Nr. 10)	x (Nr. 8, 10)							x (Nr. 5)			
Ausbaufacharbeiter, SP Trockenbauarbeiten (§ 11 Nr. x)			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6,7,8,9)	x (Nr. 13, 14)			x (Nr. 14)				x (Nr. 5, 19)	x (Nr. 6)					x (Nr. 6)
Trockenbaumonteur (§ 63 Nr. x)			x (Nr. 5)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6)		x (Nr. 8)	x (Nr. 8)	x (Nr. 8)				x (Nr. 5, 10)	x (Nr. 6)		x (Nr. 5, 9)	x (Nr. 5, 9)		
Bauwerksabdichter (§ 5 Nr. x)			x (Nr. 7)			x (Nr. 5, 6, 7, 8, 9, 13)	x (Nr. 13)	x (Nr. 12)		x (Nr. 12)				x (Nr. 15)	x (Nr. 5, 17)	x (Nr. 5, 6)				
Dachdecker, FR Dach-, Wand- und Abdichtungstechnik (§ 4 Abs. 1 Nr. x) (umfasst auch Dachfenster o.ä.)			x (Nr. 5, 8)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6,7,8,10,11, 12, 13,15, 16)	x (Nr. 11)	x (Nr. 10,13,14,15 , 19)	x (Nr. 10, 11,12, 13,14, 15, 18,19, 20, Abs. 2 Nr. 1a, 1c)	x (Nr. 10, 11, 12, 16, 13,14, 15, 18,19, 20, Abs. 2 Nr. 1a, 1c)		x (Nr. 10, 15, Abs. 2 Nr. 1b)		x (Nr. § 4 Abs. 2 Nr. 1g)	x (Nr. 6)		x (§ 4 Abs. 2 Nr. 1f)	x (§ 4 Abs. 2 Nr. 1f)	x (§ 4 Abs. 2 Nr. 1g)	x (Nr. 6)
Dachdecker, FR Reetdachtechnik § 4 Abs. 1 Nr.x) (umfasst auch Dachfenster o.ä.)			x (Nr. 5, 8)	x (Nr. 5)	x (Nr. 5)	x (Nr. 6,7,8,10,11, 12, 13,15, 16, Abs. 2 Nr. 2a)	x (Nr. 11)	x (Nr. 10,13,14,15 , 19)	x (Nr. 10, 11,12, 13,14, 15, 18,19, 20, Abs. 2 Nr. 2b, 2c)	x (Nr. 10, 11, 12, 16, 13,14, 15, 18,19, 20, Abs. 2 Nr. 2b, 2d)		x (Nr. 10, 15)		x (Nr. § 4 Abs. 2 Nr. 2g)	x (Nr. 6)		x (§ 4 Abs. 2 Nr. 2f)	x (§ 4 Abs. 2 Nr. 2f)	x (§ 4 Abs. 2 Nr. 2g)	x (Nr. 6)
Glaser, alle Fachrichtungen (§ 3 Abs. 1 Nr. x)	x (Nr. 6, 17)		x (Nr. 7)	x (Nr. 6)	x (Nr. 6)	x (Nr. 7, 8, 9, 10, 11, 12, 14)		x (Nr. 10, 11, 12, 14)	x (Nr. 10, 11, 20)	x (Nr. 10, 12, 14, 20)		x (Nr. 11, 12)		x (Nr. 14, 17, 20)	x (Nr. 8)		x (Nr. 15, 16)	x (Nr. 14, 15, 16)	x (Nr. 15, 16)	x (Nr. 11)
Glaser, FR Verglasung und Glasbau (§ 3 Abs. 2 Nr. 1 Buchstabe x), ergänzend zu § 3 Abs. 1						x (Buchstabe a)		x (Buchstabe a)		x (Buchstabe a)				x (Buchstabe a)						x (Buchstabe a)
Klempner (§ 4 Nr. x)			x (Nr. 6)	x (Nr. 5)	x (Nr. 5)	x (Nr. 5, 6, 7, 8, 9, 10, 14, 15, 18, 15)		x (Nr. 7, 8, 9, 13, 15)	x (Nr. 8, 9, 10, 12, 13, 18, 19)	x (Nr. 8, 13, 17, 19, 21, 24)		x (Nr. 11, 16, 19)		x (Nr. 5, 6, 11, 14, 16, 22)	x (Nr. 25)		x (Nr. 11, 22)	x (Nr. 11)	x (Nr. 11)	
Metallbauer, FR Konstruktionstechnik (§ 4 Abs. 2 Abschnitt A Nr.x)	x (A Nr. 5)	x (A Nr. 5)	x (A Nr. 5)	x (A Nr. 6)	x (A Nr. 6)	x (A Nr. 5, 6, 8, 10, 11, 18; B Nr. 2, 3)	x (A Nr. 8, B Nr. 4)	x (A Nr. 8, 9, 10, 11, 13, 14, 15, 16, 18, B Nr. 3, 4)	x (A Nr. 9, 18, B Nr. 5)		x (A Nr. 16, B Nr. 5)			x (Nr. 5, 6, 7, 13)	x (B Nr. 2)		x (Abschnitt B Nr. 7)	x (Abschnitt B Nr. 7)	x (Abschnitt B Nr. 7)	

Qualergy 2020: Qualitative Results

- Necessary Skill sets are well-anchored in the apprenticeship frameworks and master craftsman examination regulations
- ‚Gaps‘ in apprenticeship frameworks (intentionally: advisory, planning) are closed by master craftsman qualification
- Potential improvements concerning dovetailing the different trades and understanding the building as an integrated system
- 315 additional CVET-programs, BUT:
 - Number of participants too low and decreasing – incentives needed
 - Intransparency concerning training opportunities
- Dovetailing of systems for the early recognition of qualifications needed

Qualergy 2020: Roadmap

- total of 37 proposed measures
- rating according to the criteria *widespread effect, sustainability, acceptance* in order to settle implementation priority
- 24 specific action bundles (accepted and endorsed by relevant organisations)

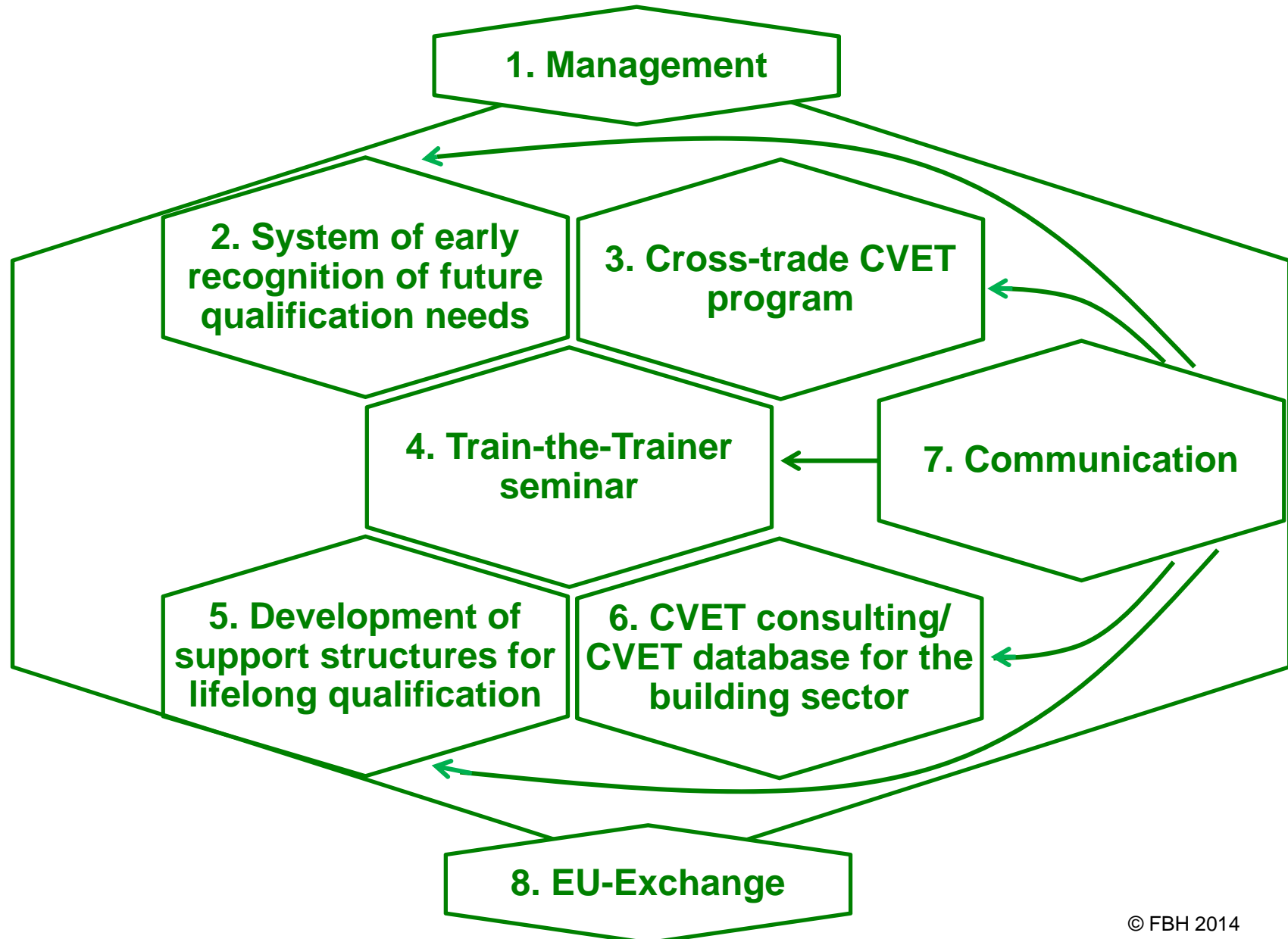


Qualitrain: Goals and Key facts

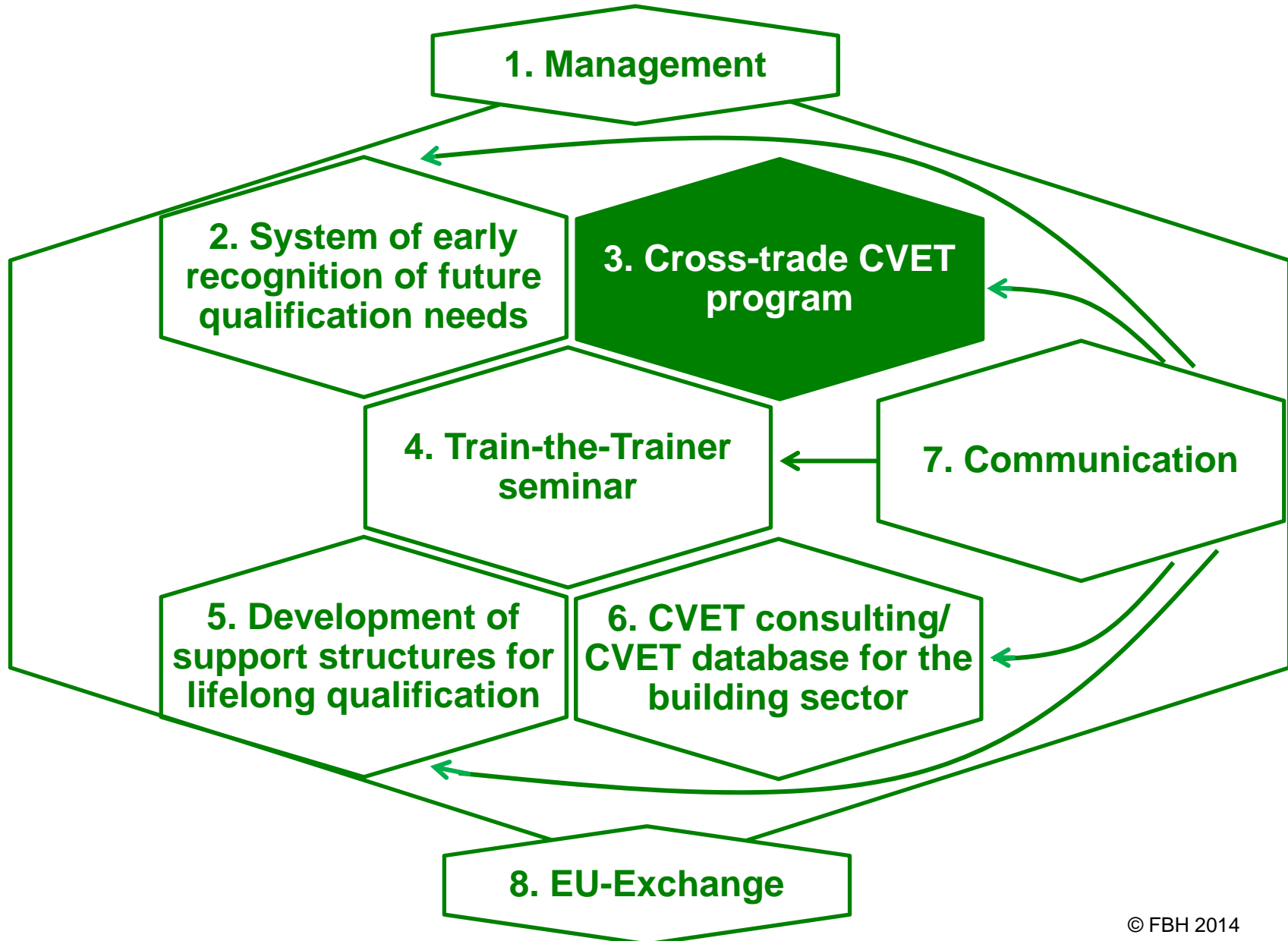
- BUILD UP Skills QUALITRAIN aims at the conception and implementation of large-scale qualification and training schemes as well as accompanying measures which ensure a sustainable system of lifelong qualification of blue-collar workers in the building sector.
- Duration: 32 months
(Nov. 2013 – June 2016)



Qualitrain: Work packages

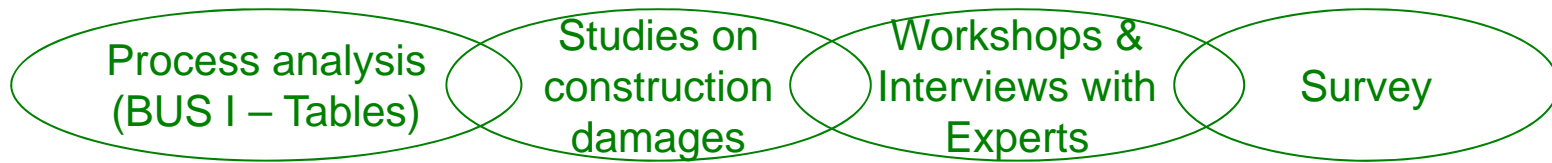


Qualitrain: Focus Cross-trade CVET program



Focus: Cross-Trade CVET-Program

- ① Analysis 1: Identification of „critical situations“ in the building sector concerning
- Interfaces between trades
 - Interdependencies between fields of technology



② Analysis 2: Comparison of gained knowledge on interfaces and system thinking with qualification in existing CVET programs

③ Selection of particularly relevant „critical situations“

④ Curricula development

⑤ Development of a teaching concept

⑤ Testing, evaluation and transfer

Focus: Cross-Trade CVET-Program

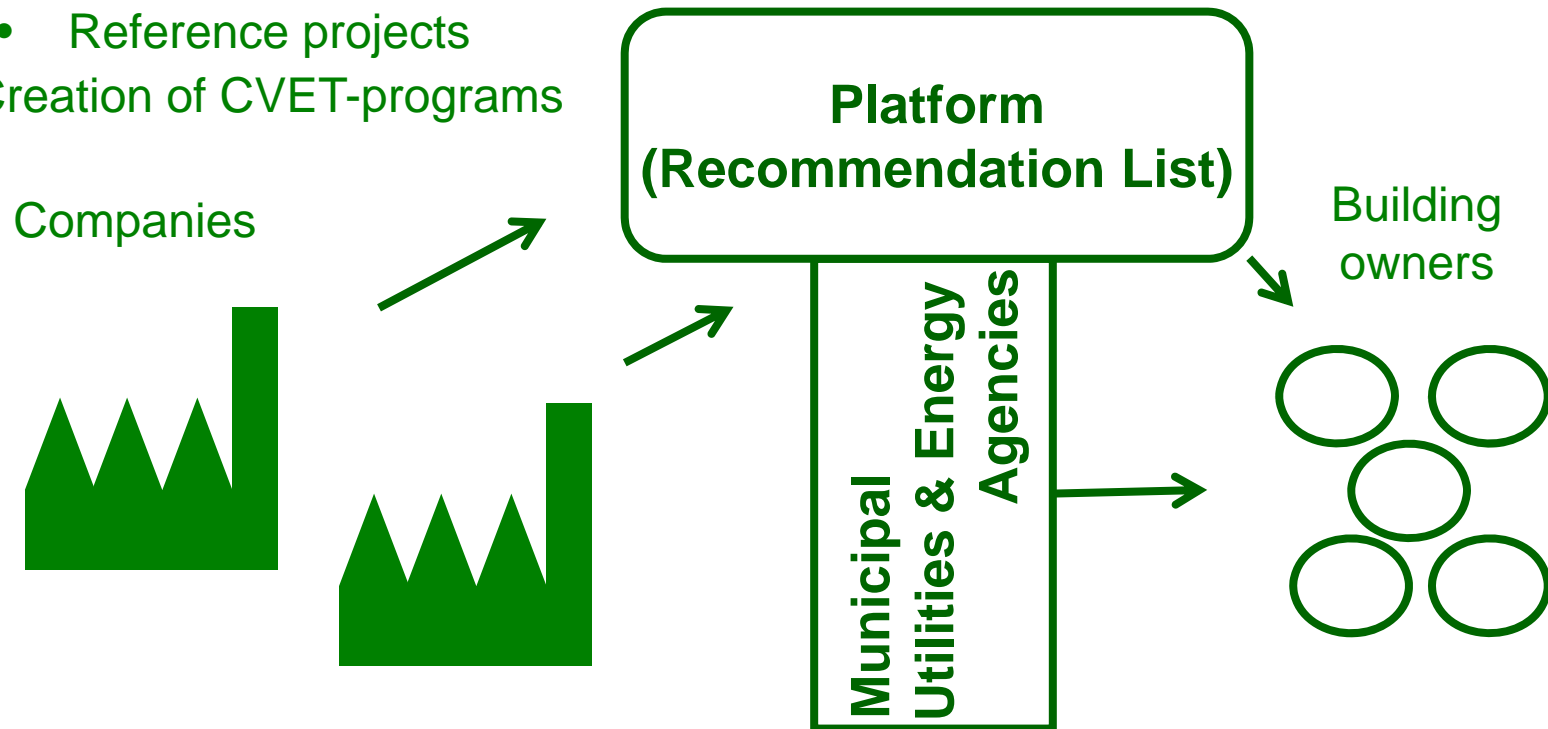
Results from the Workshop at the Kick-off of the Nationalen Plattform concerning relevant issues for a cross-trade CVET-program

1. Prevention of thermal bridges
2. Damages of the roof and the facade due to the installation of solar heat elements and photovoltaik elements
3. Interdependencies between building envelope and heating system
4. Airtightness of the building envelope
5. Smart Buildings / Smart Systems
6. Refurbishment of existing buildings: indoor insulation as alternative to insulation of the facade
7. Effectiveness of refurbishment measures depending on customers use of the building => necessary advisory services

....

Concepts for quality ensurance on a regional level

- Networks of regional energy agencies, municipalities, municipal utilities, chambers of crafts, guilds etc.
- Recommendation lists as key idea
- Criteria for companies to be set on the list
 - Regular attendance of CVET-programs
 - Reference projects
- Creation of CVET-programs



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Wirtschafts-
ministerien der
Bundesländer

aufgrund eines Beschlusses
des Deutschen Bundestages