



ingREeS – training for better energy efficiency

Ing. Tomáš Funtík, PhD.

Slovak Chamber of Civil Engineers

6.december 2016, EU BUS Exchange meeting, Athens, Greece



This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under grant agreement No 649925-ingREeS

Full name: **Setting up Qualification and Continuing Education and Training Scheme for Middle and Senior Level Professionals on Energy Efficiency and Use of Renewable Energy Sources in Buildings — ingREeS**

Duration: **marec 2015 – február 2018**

Program: **Horizont 2020 – program Európskej únie pre výskum a inovácie**



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Partners:

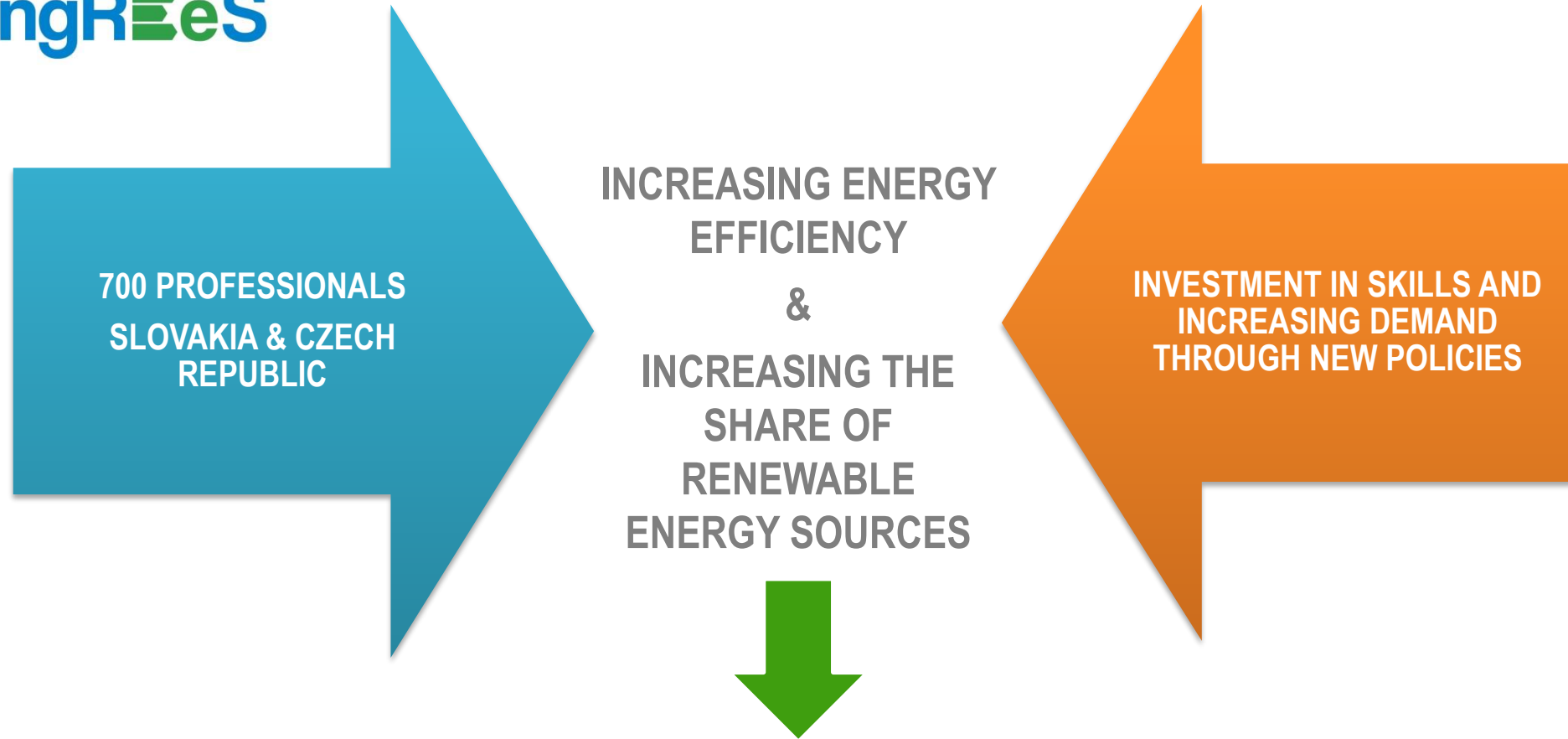


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Slovenská komora stavebných inžinierov - <i>Lead Partner</i>	SK
Stavebná fakulta STU v Bratislave	SK
ViaEuropa® Competence Centre s.r.o.	SK
Zväz stavebných podnikateľov Slovenska	SK
Národný ústav celoživotného vzdelávania	SK
Universität für Bodenkultur Wien	AT
Technische Universität Graz	AT
Svaz podnikatelů ve stavebnictví v České republice	CZ
SEVEEn – Středisko pro efektivní využívání energie o.p.s.	CZ



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COMPETITIVE AND ENERGY-EFFICIENT EUROPE



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E-LEARNING



MONITORING ON ACTIVITY



COVERING REGIONS



IN-HOUSE TRAINING



FLEXIBILITY OF DATA BANK



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ARCHITECT / PLANNER

SITE MANAGER

SITE SUPERVISOR

ASSESSOR OF ACHIEVED ENERGY
EFFICIENCY OF THE BUILDINGS

SUSTAINABILITY / ENERGY COUNSELLOR



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- ESTABLISHMENT OF THE PROGRAMME STRUCTURE AND MODULES
- AGREEMENT ON THE SCOPE AND CONTENT OF THE MATERIALS IN THE MODULE AND REDUCING OVERLAPS
- THE CREATION OF THE TEAM OF MODULAR EXPERTS
- APPROVAL OF A MODULAR PACKAGE TO THE DATA BANK
- TRAINING OF TRAINERS
- TRAININGS – SPRING 2017



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ARCHITECT / PLANNER

- CZ prof. Ing. Alois Materna, CSc., MBA, SK prof. Ing. Zuzana Sternová, PhD.

SITE MANAGER

- CZ Ing. Ludmila Zahradnická, CSc., SK doc. Ing. Peter Makýš, PhD.

SITE SUPERVISOR

- CZ doc. Ing. Dana Měšťanová, PhD., SK doc. Ing. Ivan Juríček, PhD.

ASSESSOR OF ACHIEVED ENERGY EFFICIENCY OF THE BUILDINGS

- CZ Ing. Bohuslav Málek, CSc., SK prof. Ing. Ivan Chmúrny, PhD.

SUSTAINABILITY / ENERGY COUNSELLOR

- CZ doc. Ing. Iveta Skotnicová, PhD., SK Ing. Ladislav Piršel, PhD.



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INITIAL 4 TRAINING SESSIONS IN SLOVAKIA AND CZECH REPUBLIC



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MATERIALS INCLUDED IN DATA BANKS

- ✓ 2h presentation on the methodology of teaching and instructions,
- ✓ A complete presentation in a predefined structure (module - Theme 1, Theme 2, ..)
- ✓ PDF version of the presentation,
- ✓ 40-60 pages of supporting scientific text,
- ✓ Including examples and calculations,
- ✓ Related literature with additional information,
- ✓ Other sources (video, tests, standards,..)
- ✓ Min. 30 questions with correct and incorrect answers

15 MODULES



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ingREeS - 649925



CD5 Stavebná fyzika a energetická efektívnosť budov
CD5 Building Physics and Energy Efficiency of Buildings

Priručka / Handbook



Horizon 2020 Energy Efficiency
Grant Agreement No. 649925-ingREeS

Setting up Qualification and Continuing Education and Training Scheme for Middle and Senior Level Professionals on Energy Efficiency and Use of Renewable Energy Sources in Buildings (Build Up Skills ingREeS)

Autori / Authors:

Rastislav Ingeli
Anton Puškár
Roman Rabenseifer

Handbook CD5: Building Physics and Energy Efficiency / Stavebná fyzika a energetická efektívnosť budov 1



Horizon 2020 Energy Efficiency
Grant Agreement No. 649925-ingREeS
Setting up Qualification and Continuing Education and Training Scheme for Middle and Senior Level Professionals on Energy Efficiency and Use of Renewable Energy Sources in Buildings (Build Up Skills ingREeS)

Authors:

Doris Österreicher
Roman Grünner

<p>AM1 – Energy Certification and Building Certification:</p> <ul style="list-style-type: none"> • Energy certification (2 sessions); • Building Certification (2 sessions). 	<p>CD1 – Basic Climate Adaptive Design:</p> <ul style="list-style-type: none"> • Introduction to climate adaptive design; • Passive-, Zero- and Plus-Energy buildings; • Orientation, form and compactness; • Case study/Practical demonstration (excursion). 	<p>LQ1 – Project Life Cycle Management:</p> <ul style="list-style-type: none"> • Project management; • Building information modelling; • Putting the building into service; • Facility management (FM): <ul style="list-style-type: none"> ○ Environmental impacts of FM; ○ Impacts of FM on building’s life cycle.
<p>AM2 – Life Cycle Assessments:</p> <ul style="list-style-type: none"> • General principles of life cycle assessment (LCA) and life cycle cost assessment (LCCA); • System boundaries; • Methods and tools; • Databases; • Application – influence factors and strategies; • Communication of results. 	<p>CD2 – Advanced Climate Adaptive Design:</p> <ul style="list-style-type: none"> • Methodological approach to sustainable building design; • Building envelope 1: Opaque materials; • Building envelope 2: Transparent materials; • Design Exercise. 	<p>LQ2 – Recycling and waste management on-site:</p> <ul style="list-style-type: none"> • Material flows in the construction sector; • Political intensions and legal framework; • Recycling technologies for construction materials; • Economic aspects.



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<p>BS1 – Integrated Buildings Design:</p> <ul style="list-style-type: none"> • Integrative approach: architecture and building energy systems; • Heating technologies and strategies; • HVAC technologies and strategies; • Lighting and control engineering strategies. 	<p>CD3 – Internal Comfort and Indoor Air Quality:</p> <ul style="list-style-type: none"> • Health, comfort and productivity in the indoor environment; • Daylighting and sunlight in buildings; • Acoustics of the indoor environment; • Thermal comfort in indoor environment and appropriate design measures to ensure high indoor comfort; • IAQ – chemicals, pathogens and odours in indoor environment, sick building syndrome; • Health hazard evaluations – radon, asbestos, dampness, mould and VOCs; 	<p>LQ3 – Quality Control:</p> <ul style="list-style-type: none"> • Assessment of building energy systems; • Operational evaluation of building in real conditions.
<p>BS2 – Renewable Energy Technologies:</p> <ul style="list-style-type: none"> • Solar thermal systems; • Photovoltaic (PV) and building integrated wind power systems; • Heat pumps and biomass systems; • RES application for various building typologies and climates; • Energy concepts for plus energy buildings. 	<p>CD4 – Green Construction Products:</p> <ul style="list-style-type: none"> • What is a green product; • Environmental impacts; • Basics of environmental assessments; • EPDs acc. to EN 15804. 	<p>LQ4 – Legal Requirements:</p> <ul style="list-style-type: none"> • European policies and energy efficiency “acquis”; • National legislation in CZ and SK.



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<p>BS3 – Advanced Building methods and tools:</p> <ul style="list-style-type: none"> • Overview and application of advanced building simulation tools; • Introduction to static simulation tools (e.g. ArchiPhysik or PHPP); • Introduction to thermal dynamic simulation tools (e.g. Trnsys or EnergyPlus). 	<p>CD5 – Building Physics and Energy Efficiency:</p> <ul style="list-style-type: none"> • Building physics and thermodynamics; • Heat transfer modelling – Case: Advanced construction technologies; • Modelling of energy flows; • Assessment and Validation.
<p>BS 4 – Non-residential High Performance Buildings:</p> <ul style="list-style-type: none"> • Typologies and framework conditions of high performance buildings; • Advanced façade systems; • Façade integrated heating, ventilation and air-conditioning (HVAC) and renewable energy systems. 	



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STRUCTURE OF PROGRAMS

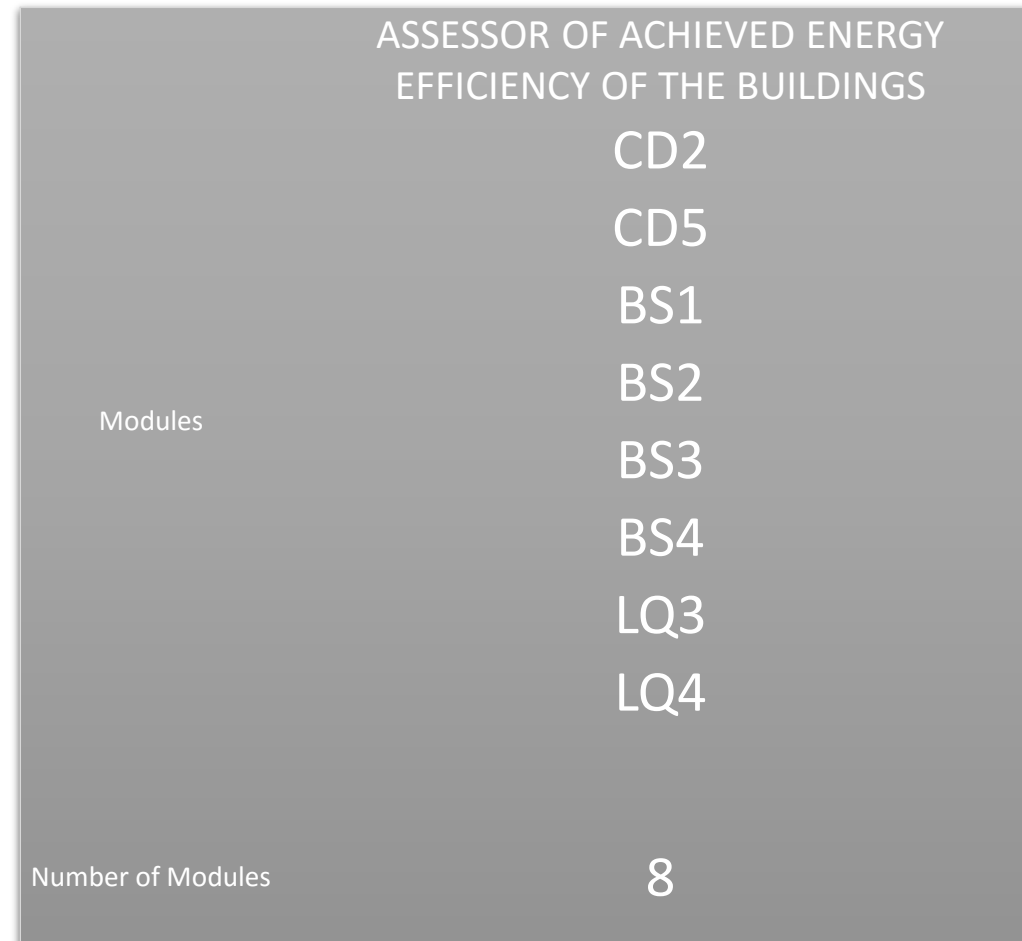
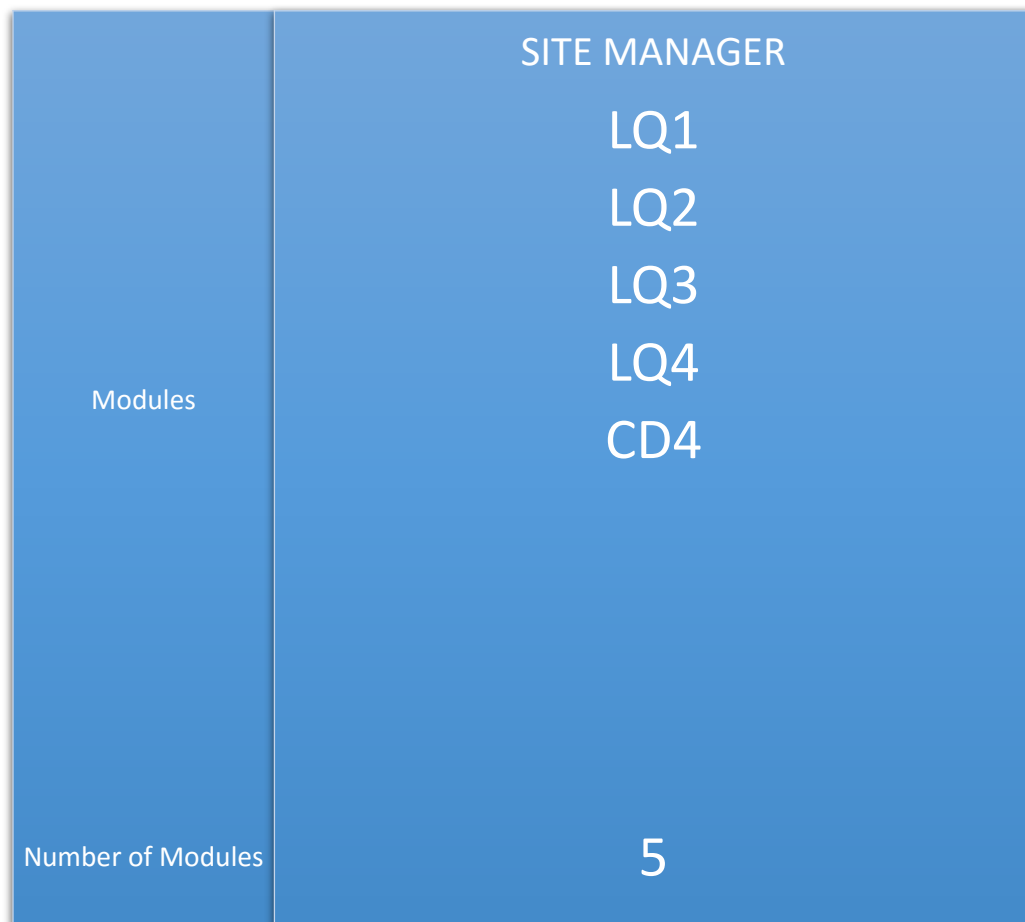
ARCHITECT / PLANNER	
Modules	CD1
	CD2
	CD3
	CD4
	CD5
	BS2
	BS4
	LQ1
	LQ4
Number of Modules	9

SUSTAINABILITY / ENERGY COUNSELLOR	
Modules	AM1
	AM2
	CD3
	CD4
	CD5
	BS1
	BS2
	LQ3
	LQ4
Number of Modules	9



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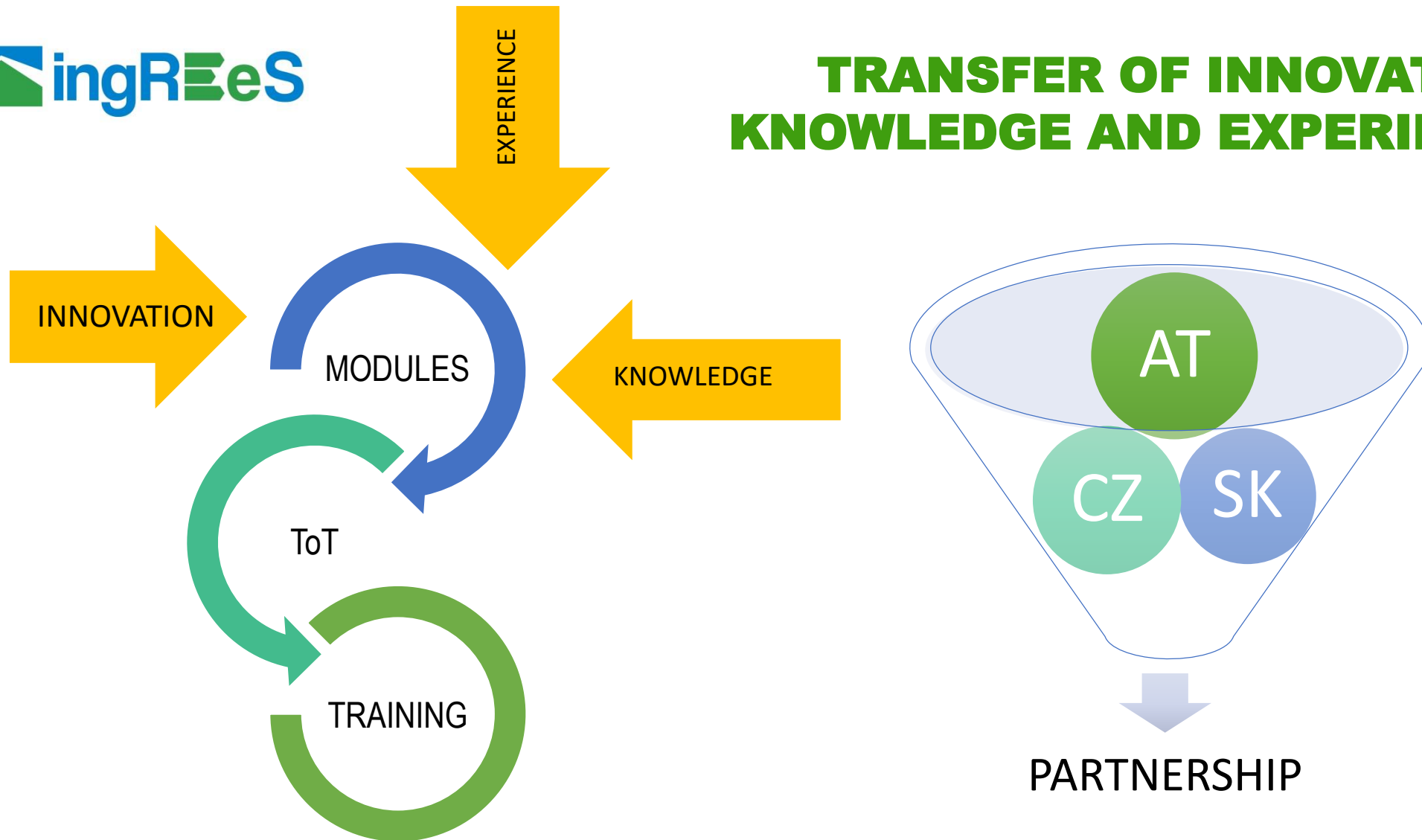
STRUCTURE OF PROGRAMS

Modules	SITE SUPERVISOR
	LQ1
	LQ2
	LQ3
	LQ4
	CD4
Number of Modules	5



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TRANSFER OF INNOVATION, KNOWLEDGE AND EXPERIENCE



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SITE MANAGER

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ATTRACT INDUSTRY PROFESSIONALS



MOTIVATE BUSINESS OWNERS



RISE AWARENESS TO RISE DEMAND



OPTIMIZE LENGTH OF TRAINING



CONSIDER ALTERNATIVE TO IN-HOUSE TRAINING



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THANK YOU FOR YOUR TIME AND ATTENTION



SPS



STU
SvF



SEVEN



VIAEUROPA®



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