

e-Skills gap, national policies and initiatives in the European Union

Werner B. Korte, Director
empirica GmbH

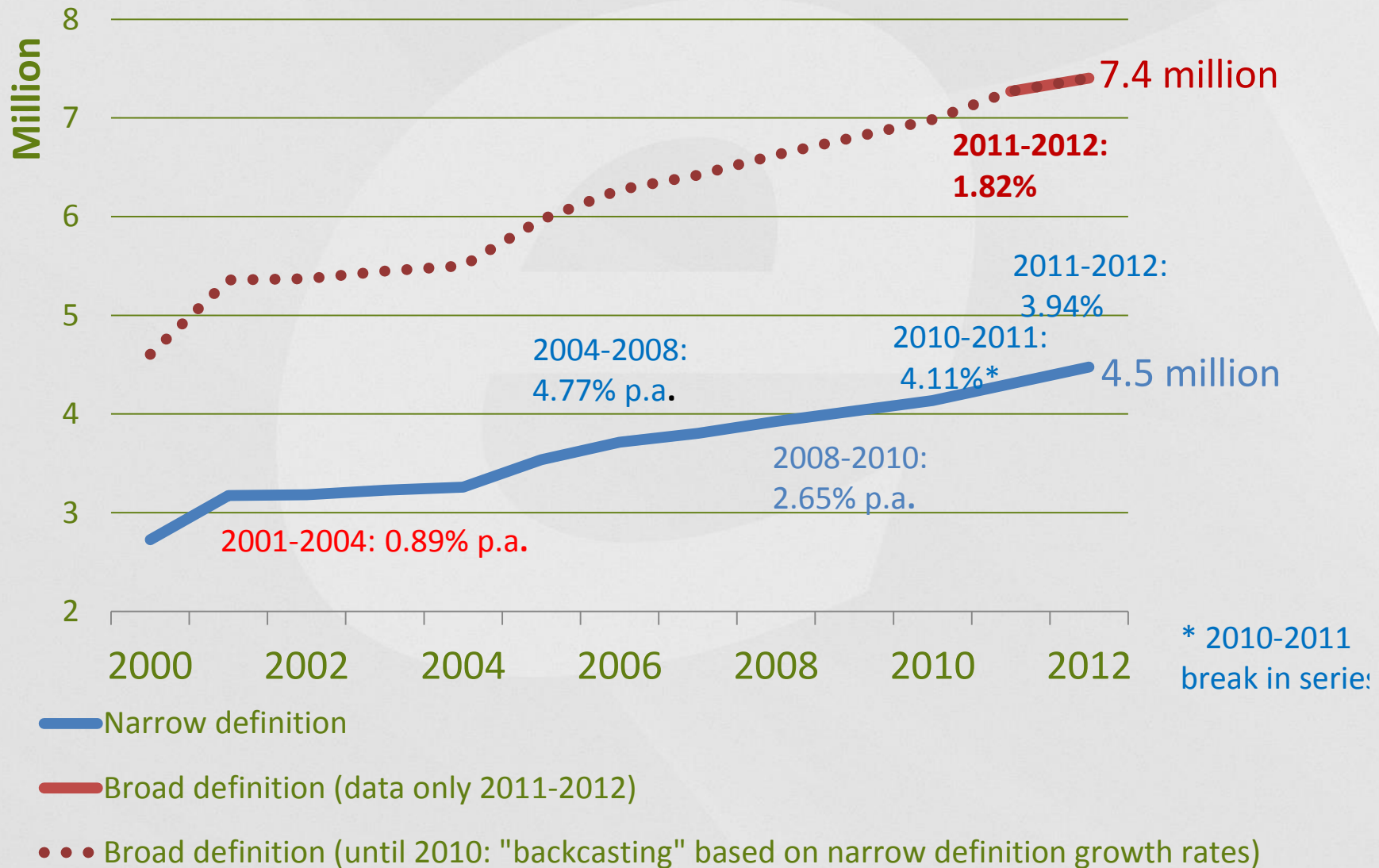
eSkills for Jobs 2014 - ICT employment
needs for 2014

Zagreb, 9th May 2014

e-Skills Gap:

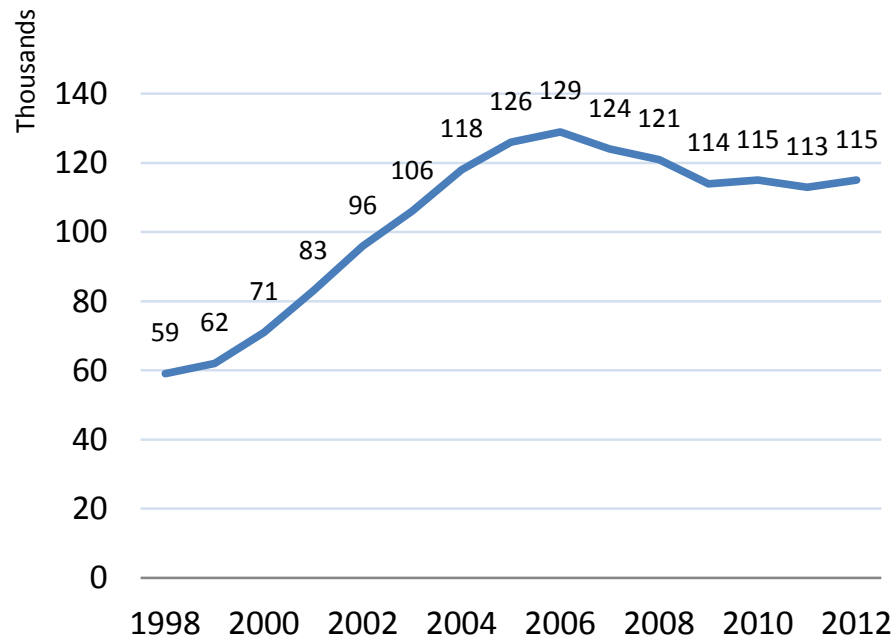
Supply and demand: current situation, trends and forecasts

ICT Workforce Europe 2000-2012

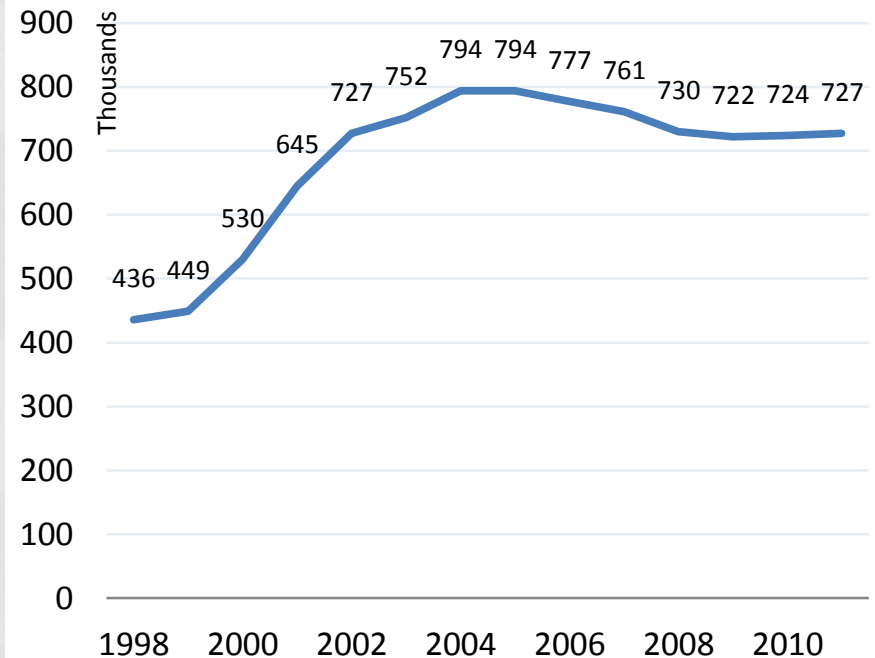


Enrolment in and graduates from Computer Science studies in Europe (EU27) 1998 - 2012

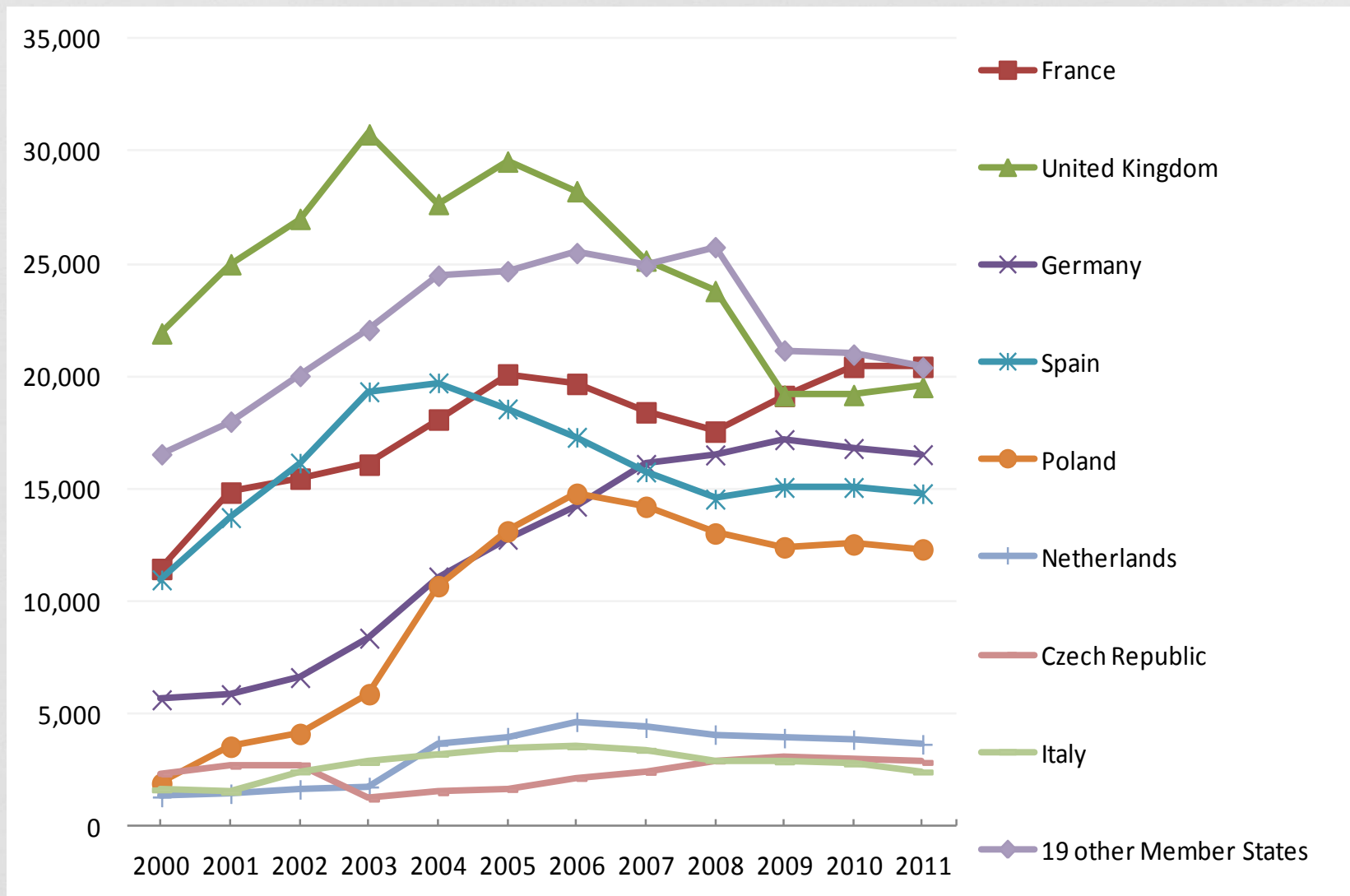
**Computer Science graduates
(first degrees/ qualifications in ISCED 5A and 5B)**



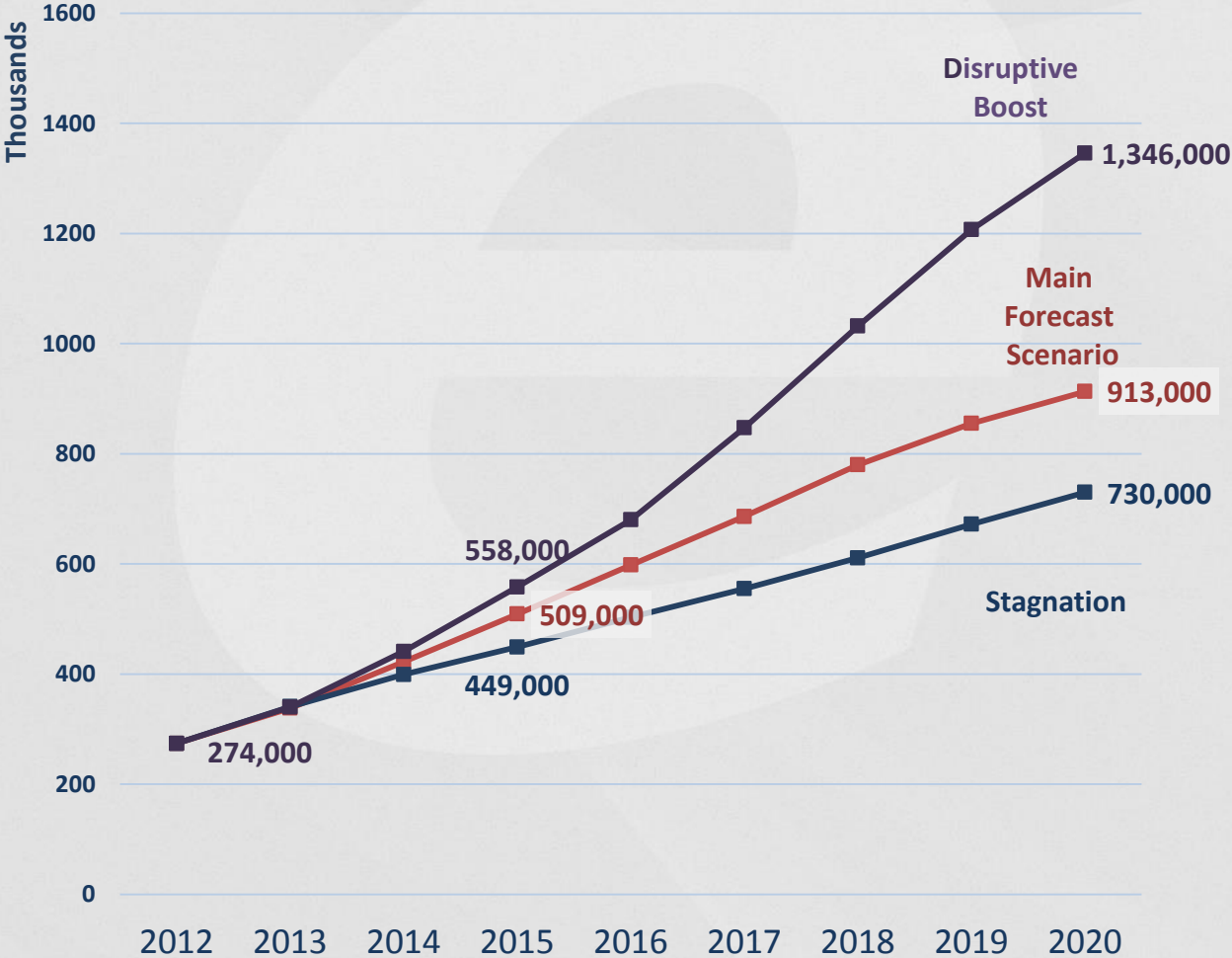
**Enrolment in Computer Science
(in ISCED 5A and 5B)**



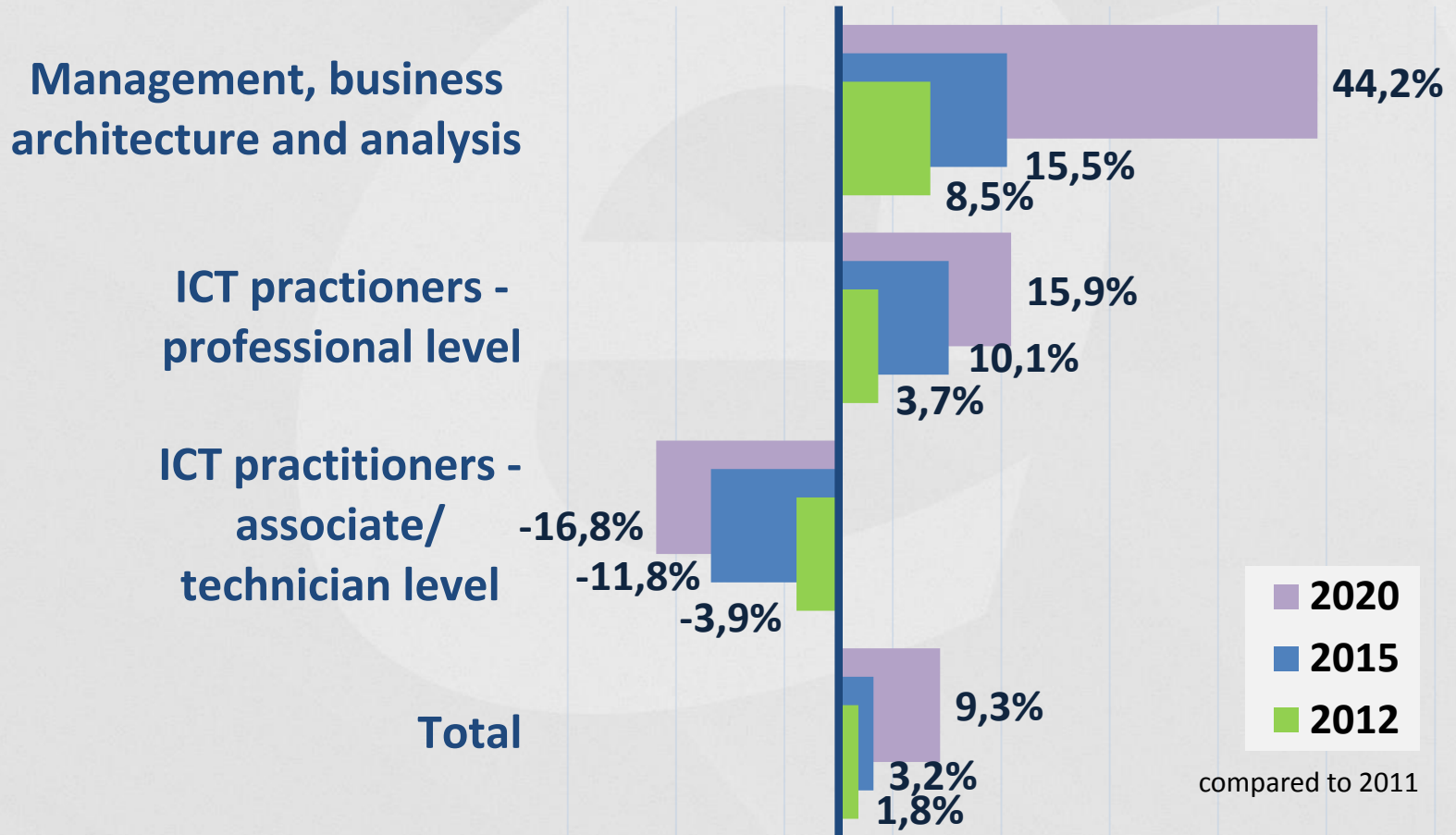
Tertiary level computer science graduates in European countries 2000 – 2011



The Three Scenarios: Structural Shortages (2012-2020)



ICT Workforce Expected Growth (2011/2020)



Conclusions

- Demand keeps growing despite crisis. Forecasts: even the worst scenario sees increasing excess demand.
 - Trend in core jobs up to 4% growth p.a.
 - Management jobs up to 8% growth p.a.
 - Technician/associate level jobs declining
 - Need to continuously increase the quality and the relevance of e-skills
- Job growth largest in highly skilled jobs
 - Management, Architecture and Analytics positions, where also e-Leadership skills are required. Usually recruited from seasoned practitioner pool and other (non-ICT) managers.
 - New job profiles not yet fully covered in classification, such as Big Data and Cloud computing specialists

Conclusions

- Huge opportunity of new jobs creation generated by new mobile technologies, cloud computing, big data, social business etc. in all industry sectors
- Formal education and VET gaps, remaining importance of non-ICT graduate and career changer side entries
 - Increased importance of continuous professional education, lifelong learning and executive education
 - Importance of new education approaches, new modes of delivery, better curricula and learning outcomes

Forecasting e-skills demand and supply in Europe

THANK YOU

e-Skills Policies and Strategies in EU Member States

Approach

EU27 Country Analysis based on:

- Statistics & indicators comparable across EU27 on
 - ✓ Innovation,
 - ✓ Competitiveness and
 - ✓ ICT skills
- Policies
- Multi-stakeholder partnerships
- Empirical evidence on supply and demand for ICT professionals

EU Country e-Skills Monitor

1. Overview

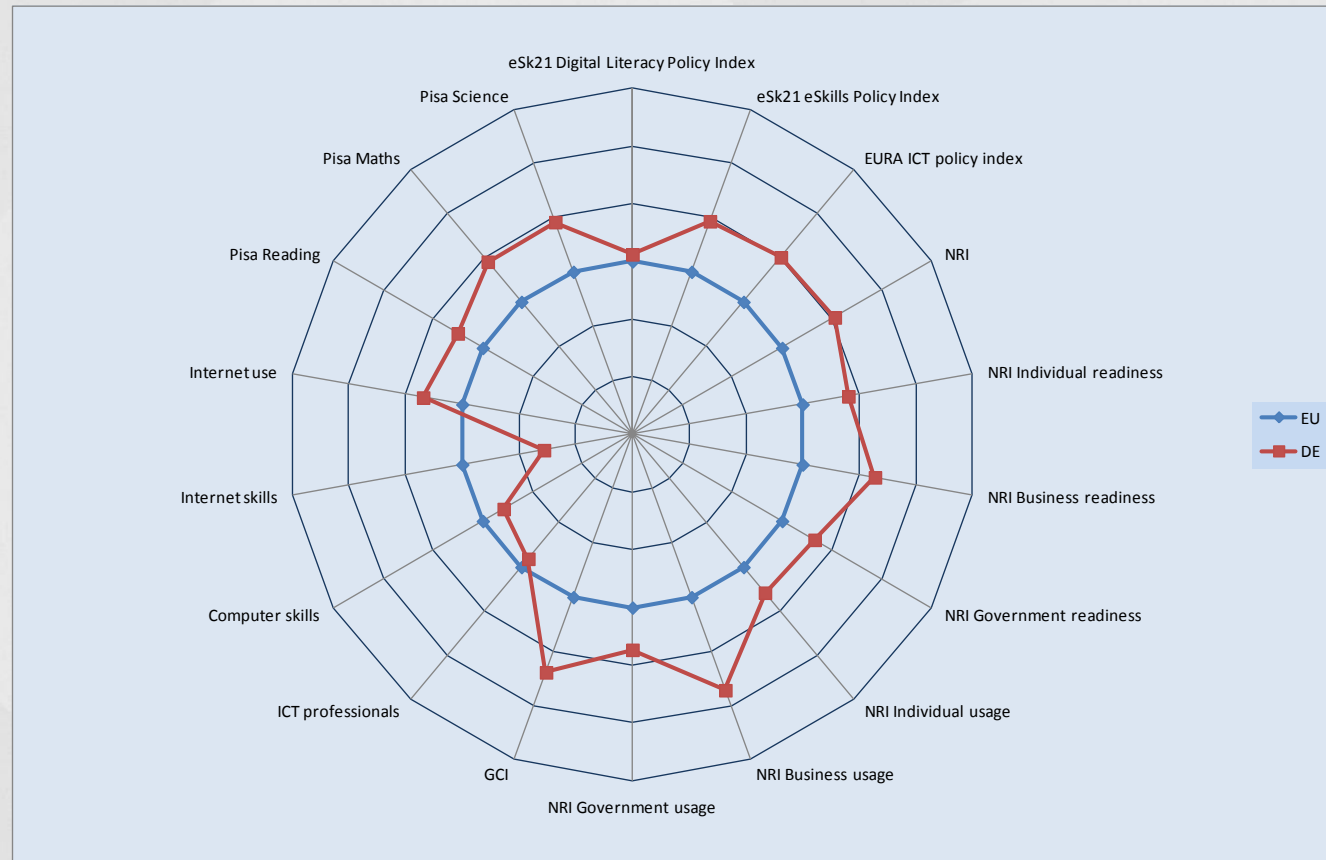
2. Indicators on innovation, competitiveness and ICT skills

3. E-skills demand and supply forecasts 2012 – 2015 – 2020

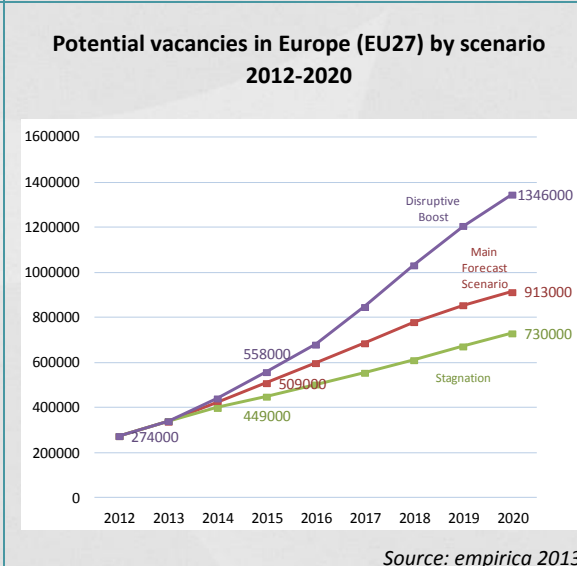
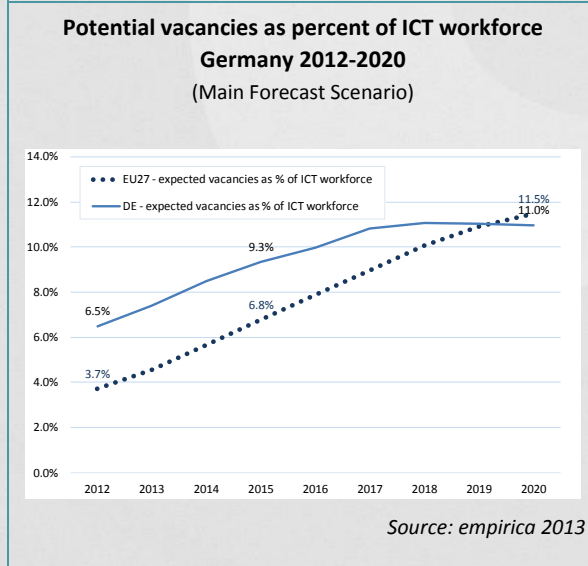
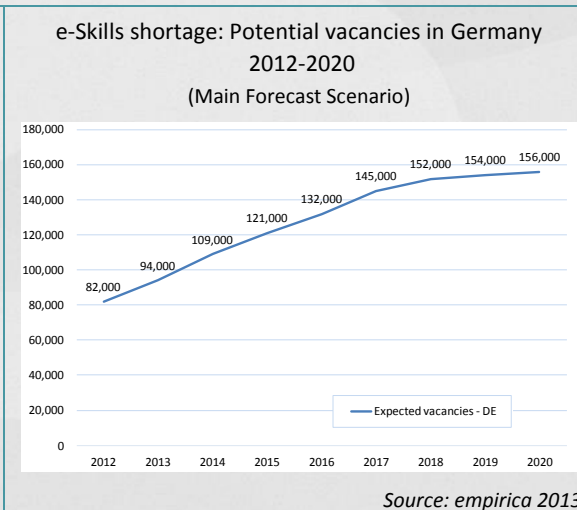
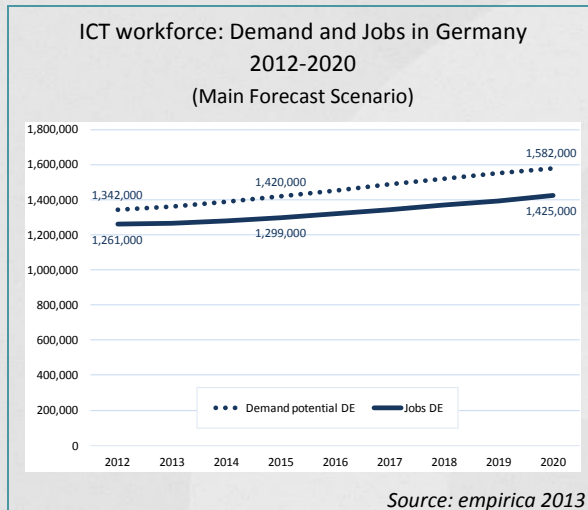
4. Policy and major stakeholders initiatives

5. Selected multi-stakeholder partnerships






6. Success of e-skills policies and activities in meeting the objectives of the EU e-skills agenda etc.



E-Skills Demand and Supply Forecasts 2012 – 2015 - 2020



e-Skills Policy Activity Index

	<ul style="list-style-type: none">→ No relevant policy or stakeholder activities of significant scope→ Policy debate is non-existent or sketchy
	<ul style="list-style-type: none">→ Some relevant policy or stakeholder activities→ ... but limited in size and scope and poorly integrated→ Weak links with mainstream policy-making, no proper evaluation
	<ul style="list-style-type: none">→ A larger variety of policy and stakeholder activities→ ... but limited coordination/integration and sustainability→ Policy debate well developed but not yet involving all target groups
	<ul style="list-style-type: none">→ Has master strategy on e-skills/ ICT practitioners ...→ ... <i>or</i> no master strategy but policies and stakeholder activities are comprehensive and well embedded in the national e-skills landscape→ Policy debate well developed and involving all key target groups→ Some shortcomings remain (e.g. sustainability, evaluation, coverage)
	<ul style="list-style-type: none">→ Has master strategy on e-skills/ ICT practitioners , strong policy leadership→ Many relevant policies and initiatives involving all main stakeholders→ Policy action also strong at sectoral and regional level→ Policies take a medium to long-term view perspective, proper evaluation

Progress 2009 - 2013

e-Skills Activity Index EU27 Average:

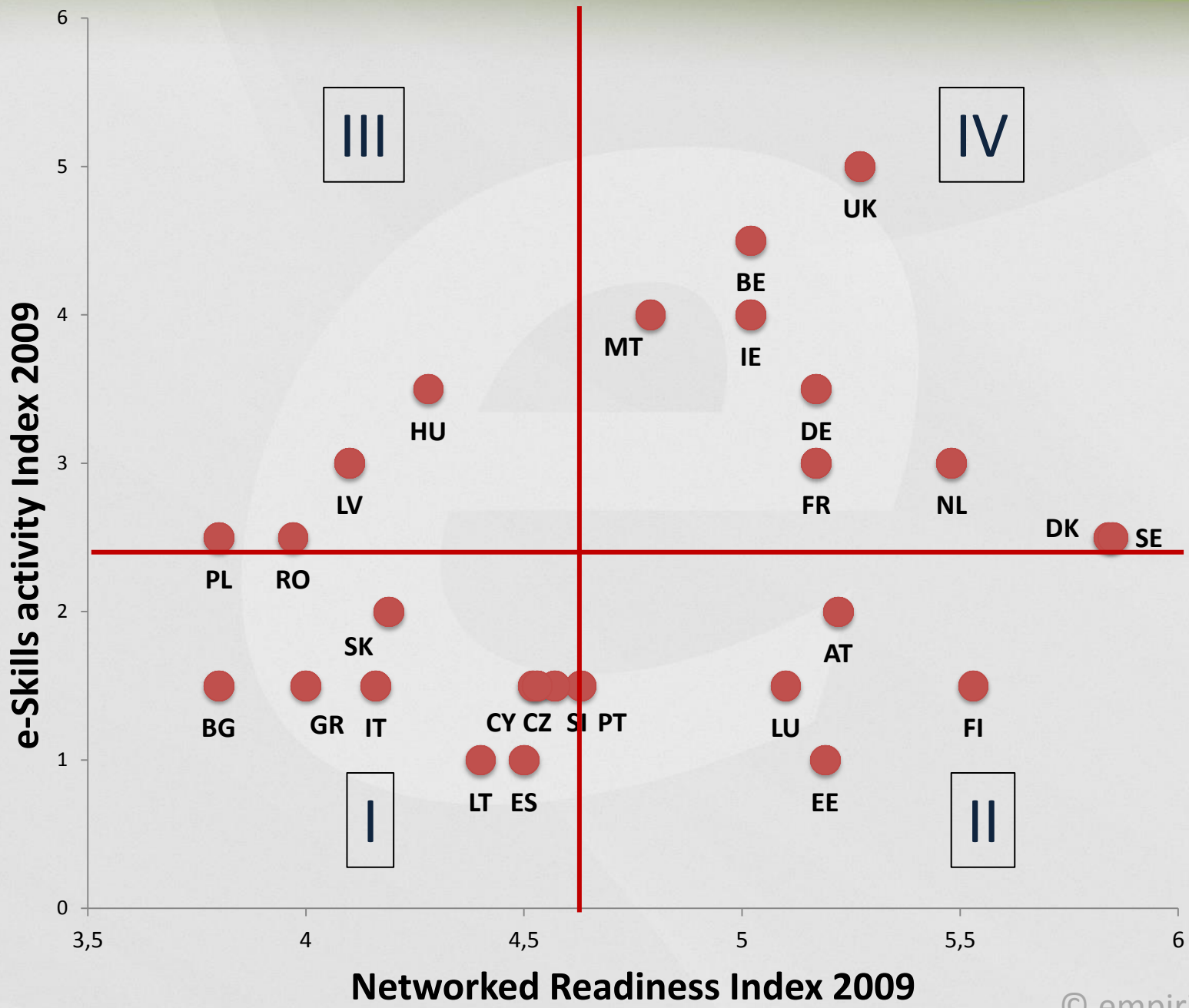
2009: 2.4 / 5

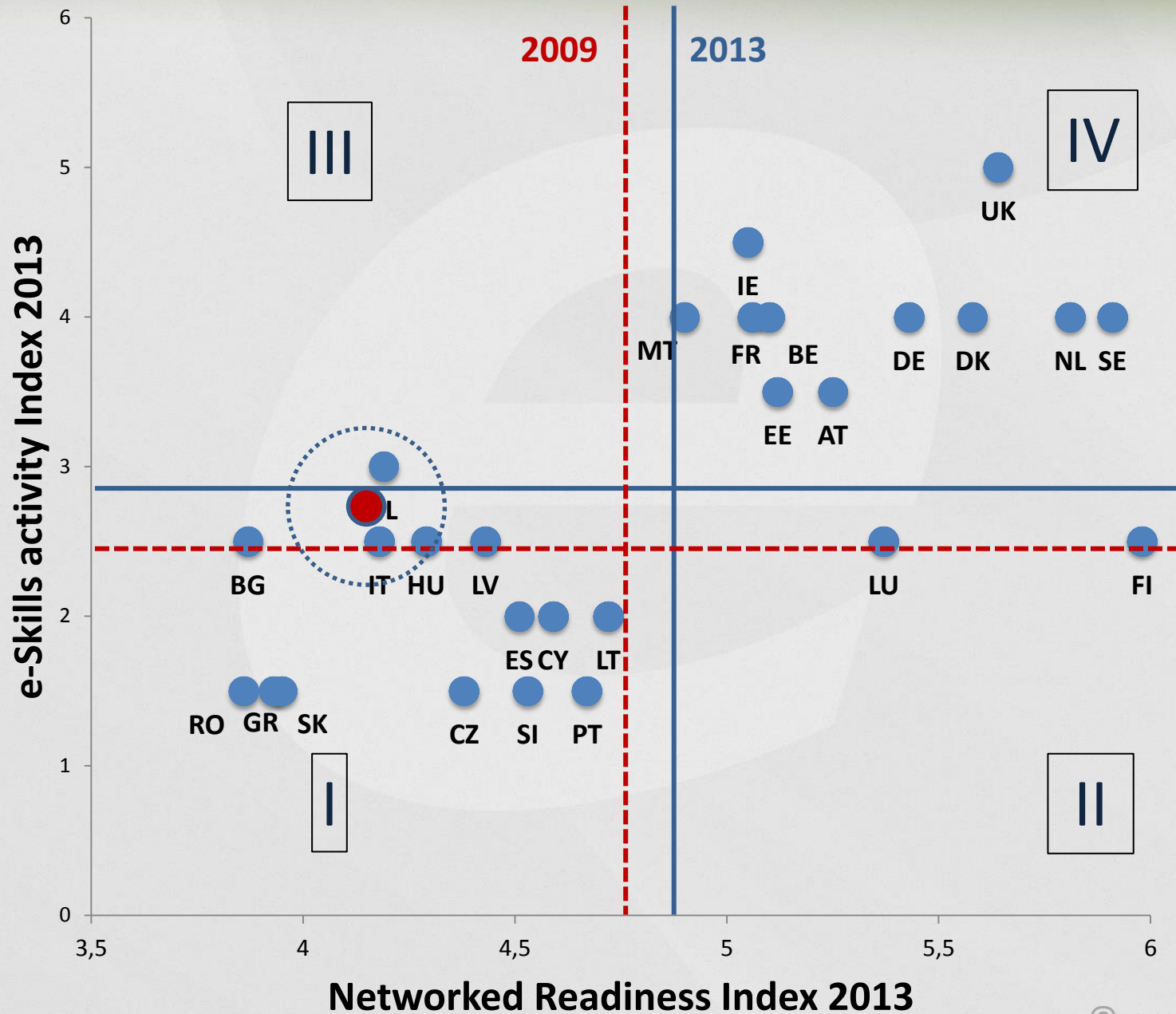
2013: 2.9 / 5 (+ 0,5)

Investigation Period:

April – November 2013

Country		2013	2009	Evolution
AT	Austria	●●●● 3.5	●● 2.0	+1.5
BE	Belgium	●●●● 4.0	●●●● 4.5	-0.5
BG	Bulgaria	●●● 2.5	●● 1.5	+1.0
CY	Cyprus	●● 2.0	●● 1.5	+0.5
CZ	Czech Republic	●● 1.5	●● 1.5	0.0
DE	Germany	●●●● 4.0	●●●● 3.5	+0.5
DK	Denmark	●●●● 4.0	●●● 2.5	+1.5
EE	Estonia	●●●● 3.5	● 1.0	+2.5
EL	Greece	●● 1.5	●● 1.5	0.0
ES	Spain	●● 2.0	● 1.0	+1.0
FI	Finland	●●● 2.5	●● 1.5	+1.0
FR	France	●●●● 4.0	●●● 3.0	+1.0
HU	Hungary	●●● 2.5	●●●● 3.5	-1.0
IE	Ireland	●●●● 4.5	●●●● 4.0	+0.5
IT	Italy	●●● 2.5	●● 1.5	+1.0
LT	Lithuania	●● 2.0	● 1.0	+1.0
LU	Luxembourg	●●● 2.5	●● 1.5	1.0
LV	Latvia	●●● 2.5	●●● 3.0	-0.5
MT	Malta	●●●● 4.0	●●●● 4.0	0.0
NL	Netherlands	●●●● 4.0	●●● 3.0	+1.0
PL	Poland	●●● 3.0	●●● 2.5	+0.5
PT	Portugal	●● 1.5	●● 1.5	0.0
RO	Romania	●● 1.5	●●● 2.5	-1.0
SE	Sweden	●●●● 4.0	●●● 2.5	+1.5
SI	Slovenia	●● 1.5	●● 1.5	0.0
SK	Slovak Republic	●● 1.5	●● 2.0	-0.5
UK	United Kingdom	●●●●● 5.0	●●●●● 5.0	0.0





Croatia: rankings

- GCI: rank 27
 - NRI: rank 20
 - LLL: rank 26
 - Reading: rank 17
 - Maths: rank 25
 - Science: rank 21
- of 28

	Quality of education	Quality of education	Quality of education	Life-long-learning	NRI - Networked Readiness Index	GCI - Global Competitiveness Index
	Pisa Reading	Pisa Maths	Pisa Science	Adults	NRI	GCI
SE	497	494	495	28,1	5,6	5,61
FI	536	541	554	24,9	5,43	5,47
DK	495	503	499	31,4	5,29	5,40
NL	508	526	522	17,4	5,19	5,41
DE	497	513	520	7,8	5,14	5,41
LU	472	489	484	14,4	5,14	5,03
UK	494	492	514	16,1	5,12	5,39
FR	496	497	498	17,7	4,92	5,14
AT	470	496	494	13,9	4,9	5,14
BE	506	515	507	6,7	4,8	5,20
MT	:	:	:	7,7	4,76	4,33
EE	501	512	528	12,6	4,76	4,62
IE	496	487	508	7,3	4,71	4,77
CY	:	:	:	6,9	4,5	4,36
PT	489	487	493	9,8	4,5	4,40
SI	483	501	512	12,4	4,44	4,30
ES	481	483	488	10,9	4,33	4,54
CZ	478	493	500	9,7	4,27	4,52
LT	468	477	491	5,7	4,2	4,41
CR	485	471	491	2,1	4,17	4,04
HU	494	490	503	3	4,03	4,36
IT	486	483	489	6,2	3,97	4,43
LV	484	482	494	6,5	3,93	4,24
PL	500	495	508	4,3	3,84	4,46
GR	483	466	470	2,9	3,83	3,92
RO	424	427	428	2	3,81	4,08
SK	477	497	490	2,9	3,79	4,19
BG	429	428	439	1,7	3,79	4,16
Average	486	490	497	10,46	4,54	4,69

e-skills policies in the EU27 Member States

THANK YOU

Best practice Multi- Stakeholder Partnerships on e-Skills in EU Member States

The Multi-Stakeholder Approach to e-Skills Development

- **Multi-stakeholder partnerships (MSPs) are:**
 - initiatives jointly operated by organisations from the education and training sector and private-sector partners;
 - Emphasis on involving key stakeholders which are of relevance for the e-skills related issue in question.
- **Role of private-sector partners (employers, industry associations, NGOs etc.):**
 - Complement and extend services provided by the public sector → enhance resources, achieve faster and stronger impact;
 - Take over responsibilities which traditionally have been held by public/civic sector institutions;
 - Help overcoming polarisation between education provision (public education system) and skills demand (employers).

Research Process

Stage 1

- MSP-like initiatives identification ("stocktaking")
- MSP analysis and revised typology
- MSP and policy context studies and descriptions

→ 200 MSP abstract descriptions

→ 35 selected as candidates for further analysis

Stage 2

- In-depth case studies of MSPs
- Validation by third parties (national experts)

→ 58 selected as candidates for Good Practice

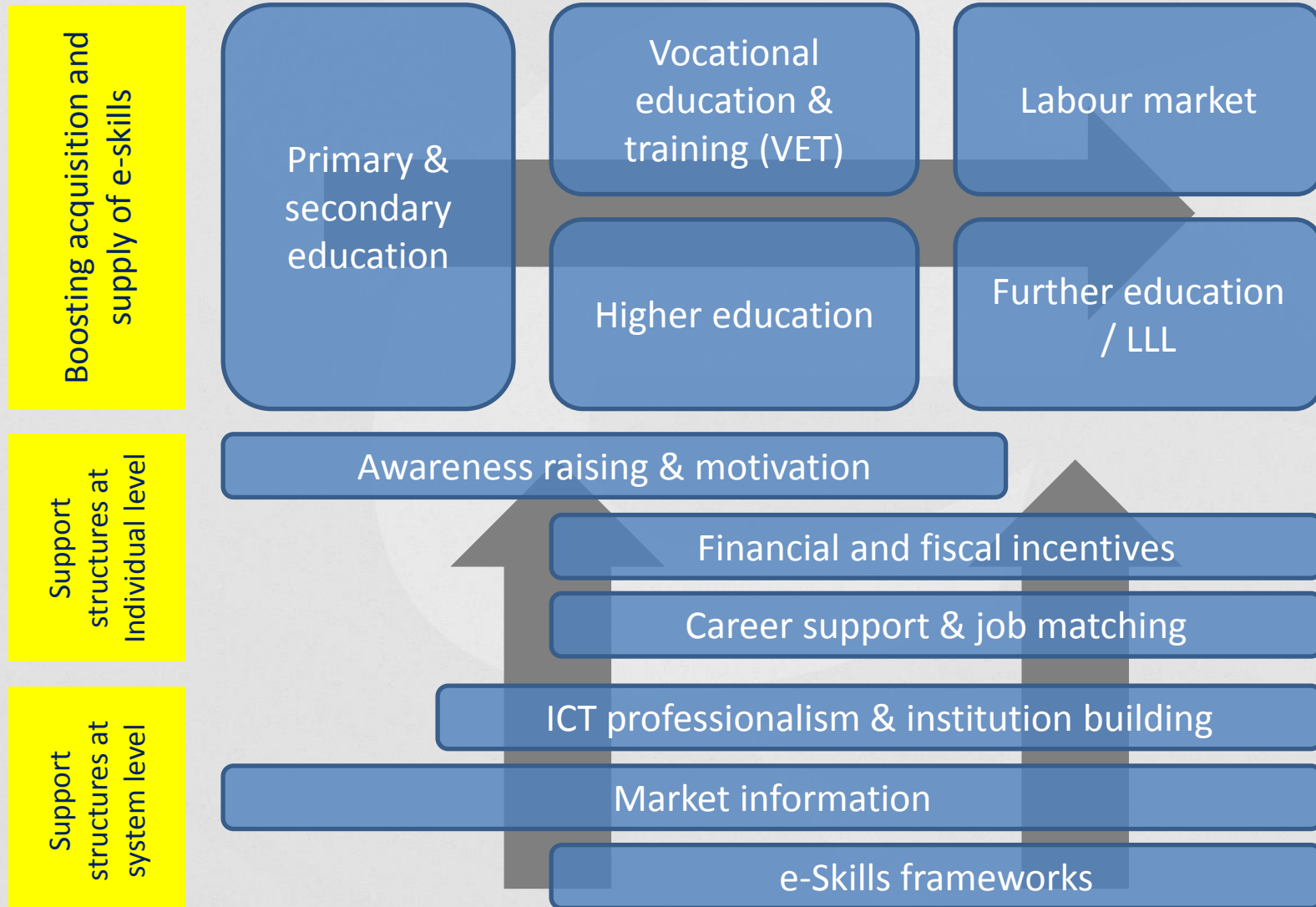
→ 7 of these selected based on validated descriptions

Stage 3

- Benchmarking using common set of indicators (qualitative and quantitative)
- Lessons learned and recommendations to be derived

→ 17 Good Practice "stories" for dissemination

Types of MSPs according to focus



Selected Good Practices from the EU



1. Comprehensive National e-Skills MSP



1. Comprehensive National e-Skills MSP

e-skills UK,
United Kingdom

e-skills uk

The Sector Skills Council for Business
and Information Technology



1. Comprehensive National e-Skills MSP

Pasc@line
Association,
France

The logo for Pasc@line features the text 'pasc@line' in a blue, lowercase, sans-serif font. The '@' symbol is stylized with a blue and yellow arc above it. Below the main text is the tagline 'Osez les métiers du numérique' in a smaller, black, sans-serif font.
Osez les métiers du numérique



2. e-Skills Competence Frameworks, Certification + Job Matching



2. e-Skills Competence Frameworks, Certification + Job Matching

EVOLIRIS ICT
Reference Centre
for Brussels region



2. e-Skills Competence Frameworks, Certification + Job Matching

RETE Competence Network for the Digital Economy, Italy



RETE
COMPETENZE
PER
L'ECONOMIA
DIGITALE



2. e-Skills Competence Frameworks, Certification + Job Matching

ECF-NL Working
Group
Netherlands

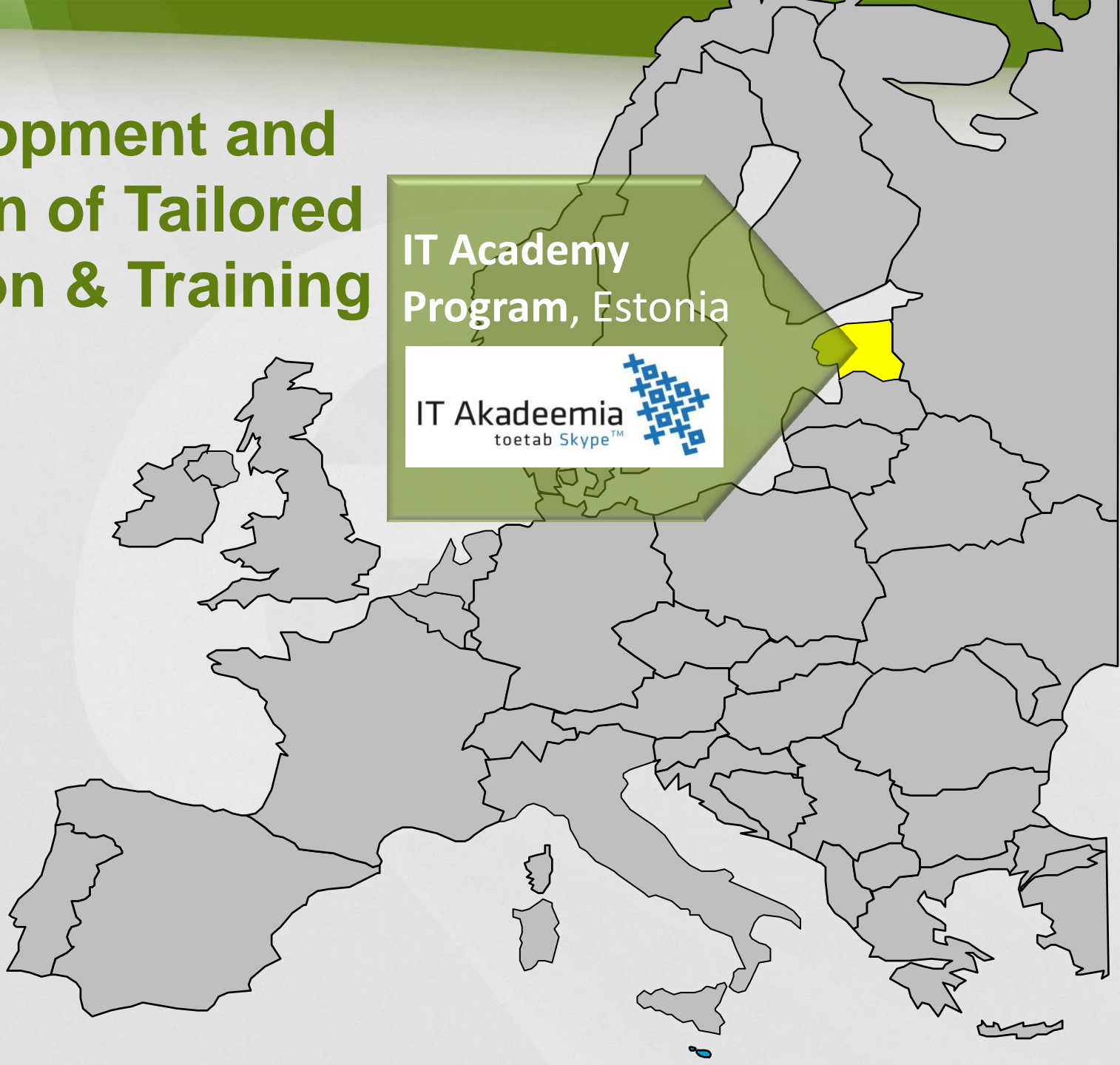


3. Development and Provision of Tailored Education & Training



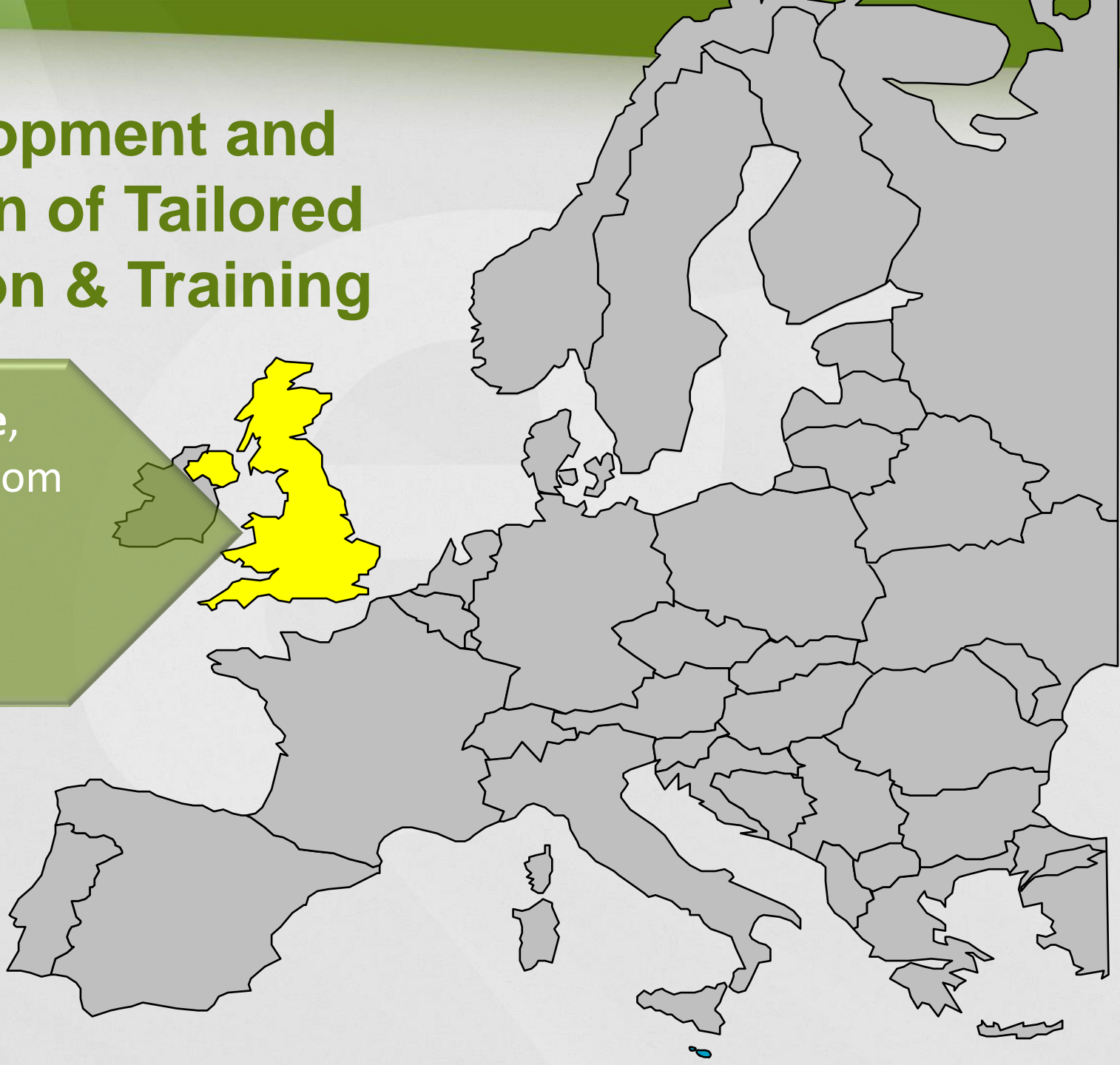
3. Development and Provision of Tailored Education & Training

IT Academy
Program, Estonia



3. Development and Provision of Tailored Education & Training

ITMB Degree,
United Kingdom



3. Development and Provision of Tailored Education & Training



Get Qualified
Scheme, Malta



3. Development and Provision of Tailored Education & Training

Level 8
Conversion
Programme, Ireland



4. Career Support, Lifelong Learning and e-Leadership Training



4. Career Support, Lifelong Learning and e-Leadership Training

Finish IT,
Germany



4. Career Support, Lifelong Learning and e-Leadership Training

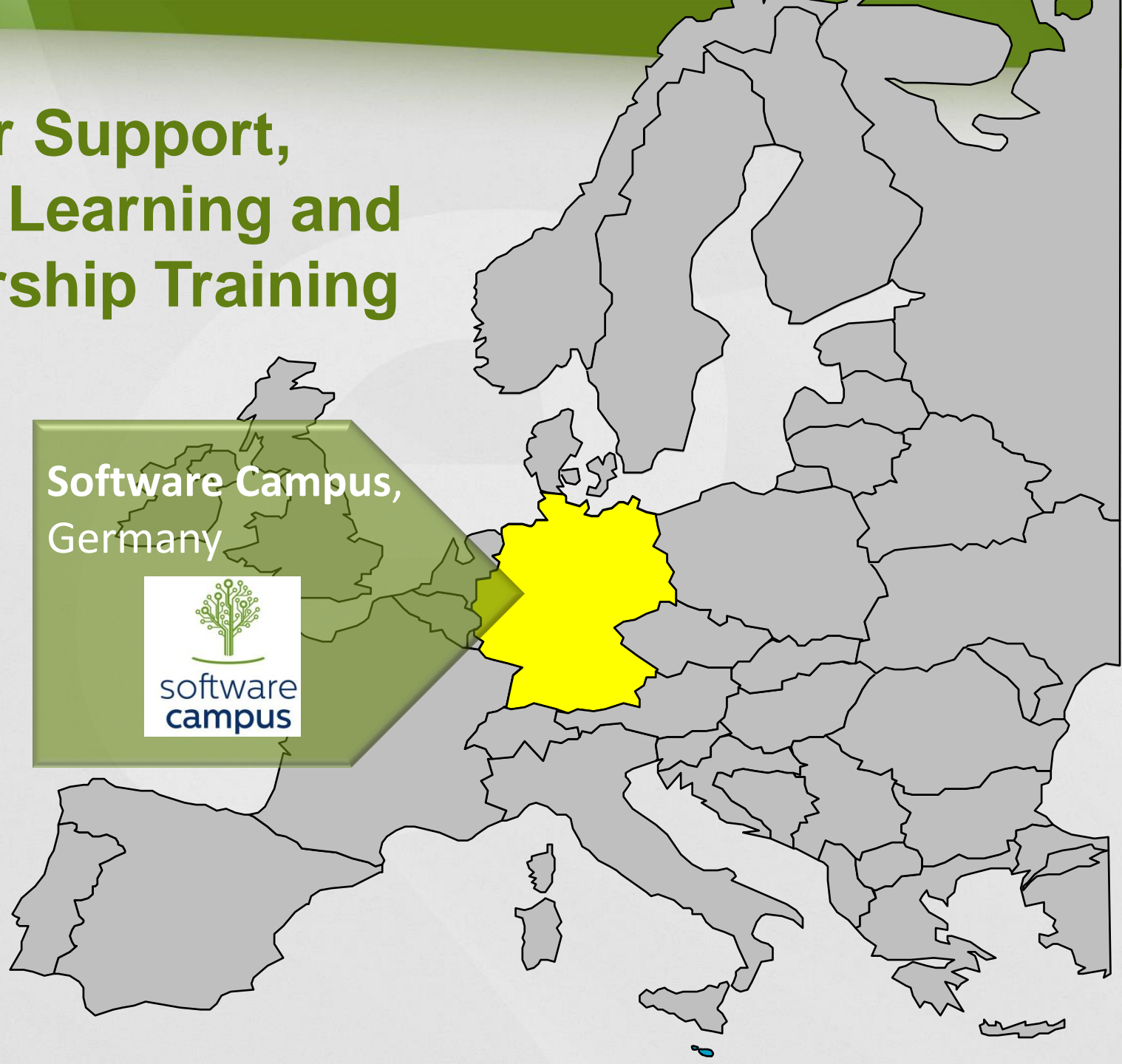


Nokia Bridge,
Finland & global

A graphic for the Nokia Bridge program. It features five blue icons with white text: a left-pointing arrow for 'Find a new job within Nokia', a right-pointing arrow for 'Find a new job outside Nokia', an upward-pointing arrow for 'Start a new business', a right-pointing arrow for 'Learn something new', and a circular arrow for 'Create your own path'. The background is a photograph of a modern bridge over a green landscape under a bright sky.

4. Career Support, Lifelong Learning and e-Leadership Training

Software Campus,
Germany

The logo for Software Campus features a stylized green tree with circular nodes at the top, above the text "software campus" in a blue, lowercase sans-serif font.

5. Awareness Raising and Providing the Basis at Early Age



5. Awareness Raising and Providing the Basis at Early Age



Sparkling Science,
Austria



Sparkling Science >
Science linking with School
School linking with Science

BMW_F

BMW_F

5. Awareness Raising and Providing the Basis at Early Age

Coder Dojo,
Ireland and
worldwide



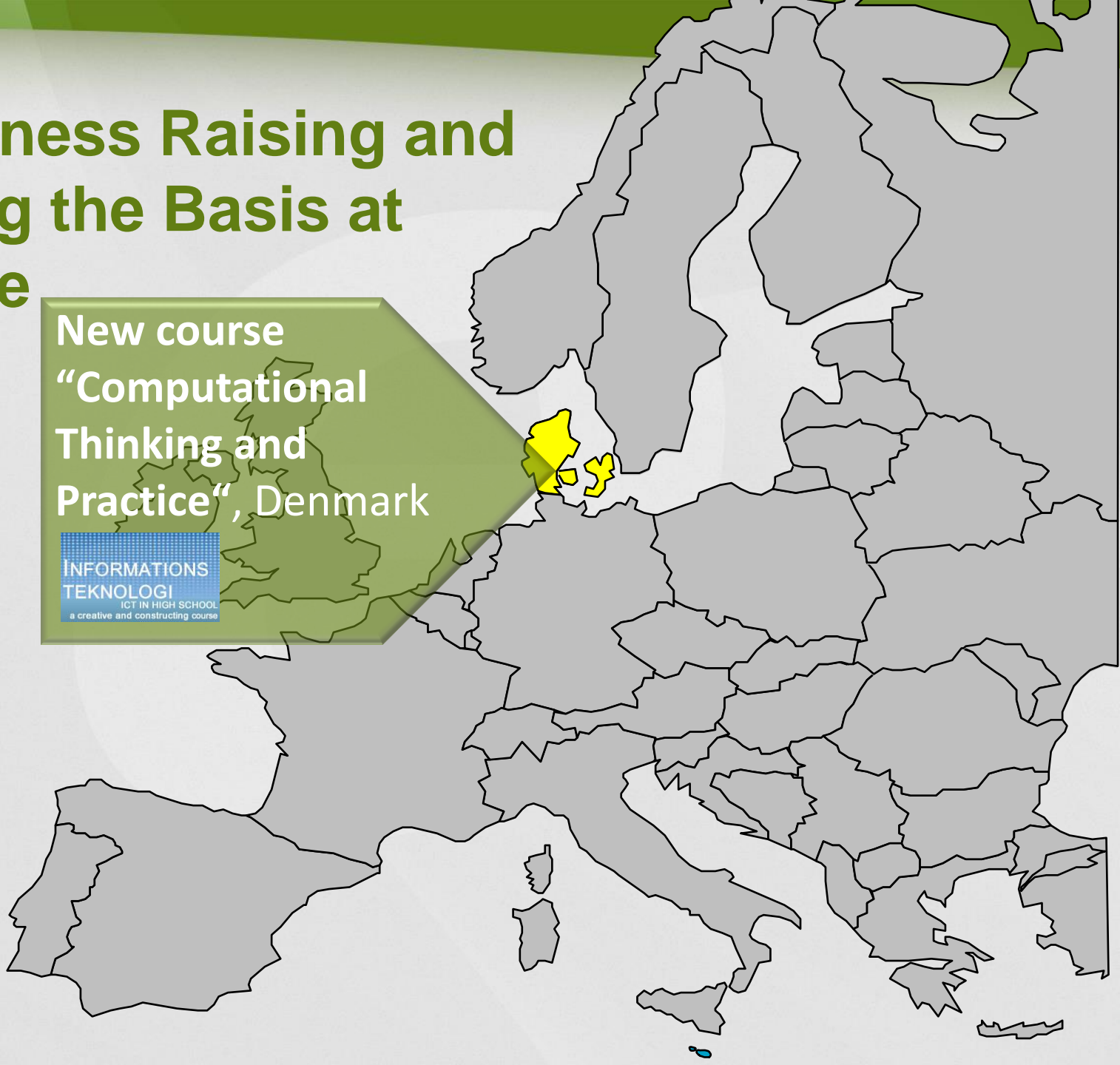
CoderDojo



5. Awareness Raising and Providing the Basis at Early Age

New course
“Computational
Thinking and
Practice”, Denmark

INFORMATIONS
TEKNOLOGI
ICT IN HIGH SCHOOL
a creative and constructing course

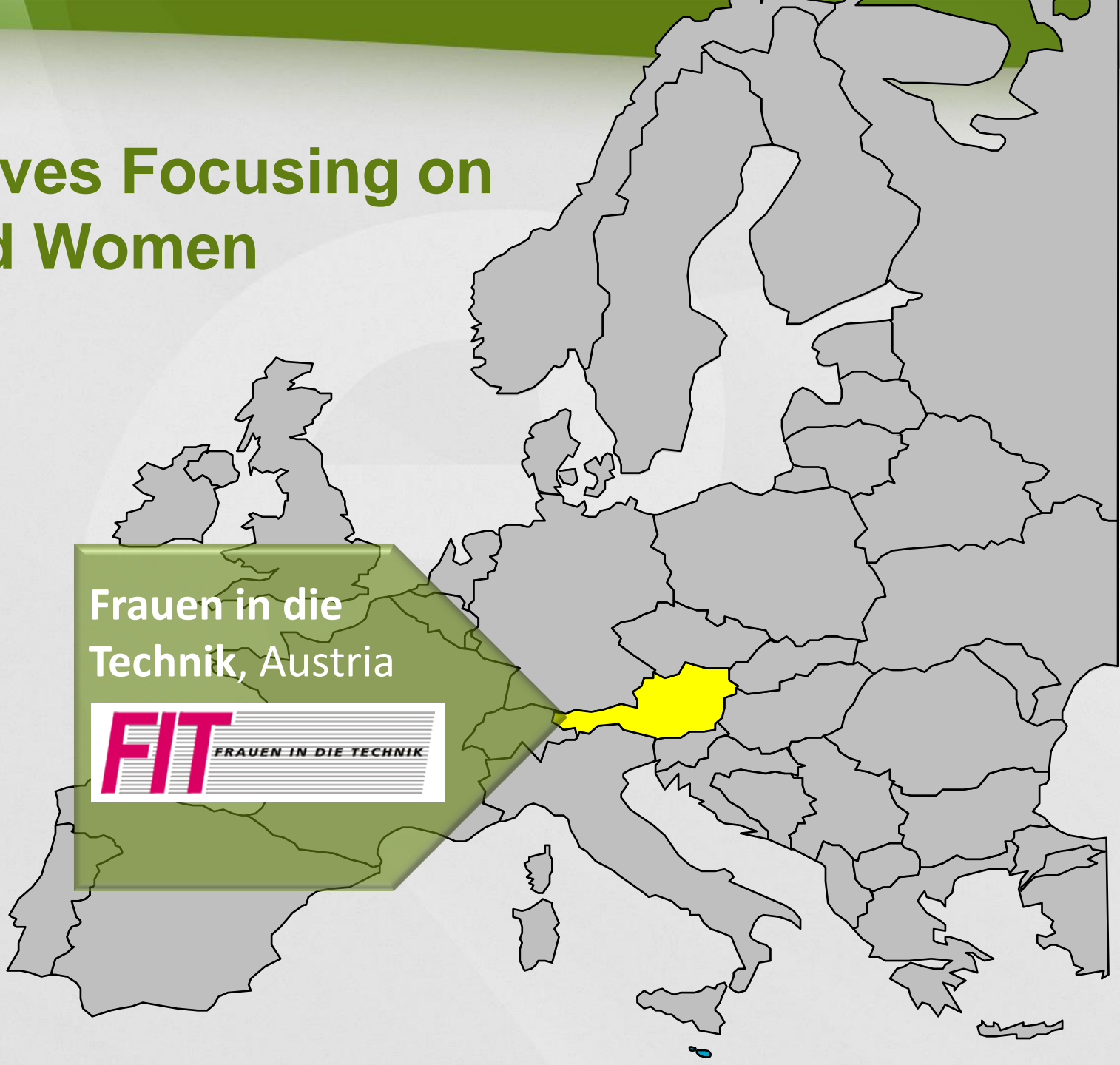


6. Initiatives Focusing on Girls and Women

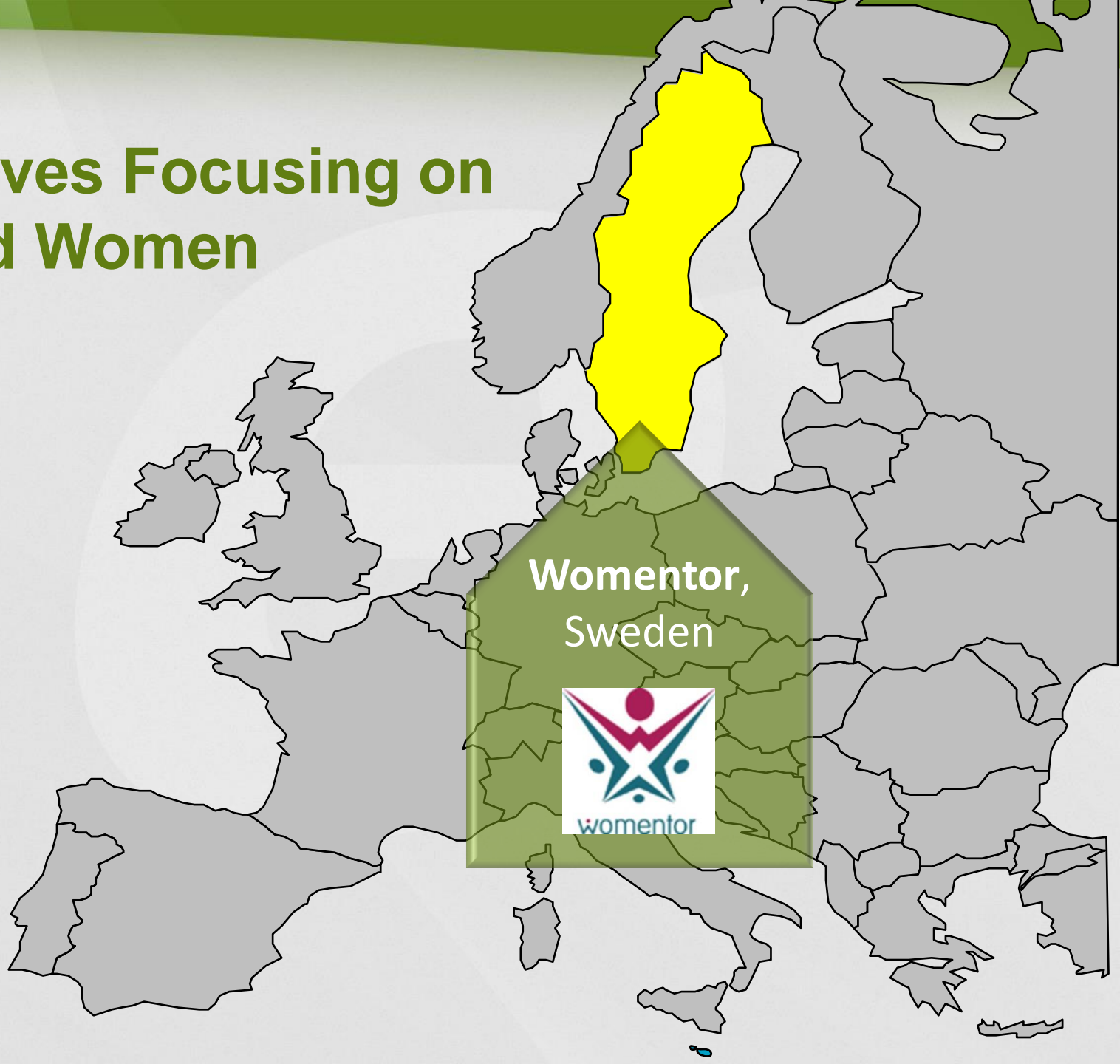


6. Initiatives Focusing on Girls and Women

Frauen in die
Technik, Austria



6. Initiatives Focusing on Girls and Women



Womentor,
Sweden



Some findings

- Huge variety of multi-stakeholder initiatives across Europe
- Significant development in sustainability, scope and maturity since 2007
- Key lessons:
 - By applying a multi-stakeholder approach to e-skills development, you can make a real difference!
 - Policy leadership is helpful, but where it is absent stakeholder initiatives are all the more essential.
 - Long breath required (although short-term gains are achievable).
 - Make best use of good practices from other countries – there is a wealth of experience to learn from!

Best practices as learning cases

Recommendations → Croatia

- Primary schools:
 - Sparkling science (AT)
- Secondary schools:
 - New subject "Computational Thinking and Practice" (DK) (similar development in the UK, currently under development)
 - Many initiatives promoting a career in ICT among students in secondary education
- Vocational schools (VET):
 - Initiatives by the UK's National Apprenticeship Service (NAS): "IT Professional Apprenticeships" and "Pathways to Apprenticeships" (UK)
 - FinishIT (DE)
 - SAP's "Bildungspartner" (Training partner) programmes in Germany

Recommendations → Croatia

- University:
 - Comprehensive approach: IT Academy programme (EE)
- Training for those in non-IT areas:
 - Level 8 conversion programme (IE)
 - Fast Track to IT / FIT (IE)
 - Springboard (IE)
- Women:
 - Women in technology (AT)
 - Womentor (SE)
 - Girls Day (DE)
 - Rails Girls campaign which originated in Finland (FI)
 - France's Women of the Digital Sector Commission

Recommendations → Croatia

- Women (cont'd):
 - UK's "Join the Girls in IT" campaign (UK)
 - Swedish Government's 2011 Digital Agenda for Sweden with is clear focus on "increasing the proportion of young people, especially girls and young women, who apply to study ICT-related subjects and programmes in higher education (SE)
- Highly educated unemployed ICT people with skills which are out of scope and demand
 - IT 50plus (DE)
 - Level 8 Conversion Programme + Springboard (IE)
 - ICT Reference Centre Evoliris (BE))
 - Literacy Plan and digital training for Barcelona 2010-2015 (ES)
 - First Step and Second Step ICT Training Programmes (MT)

Multi-stakeholder partnerships on e-skills

THANK YOU

Survey likelihood of offshoring

<i>Skills</i>	<i>Demand</i>	<i>Offshoring chance</i>
Data Visualisation	↑ (82%)	↓ (62%)
User Experience Design	↑ (74%)	↓ (54%)
Coding	↑ (46%)	↑ (54%)
Software testing	↑ (54%)	↑ (44%)
ICT support	→ (59%)	↑ (39%) ↓ (37%)
Infrastructure ops	→ (58%)	↑ (35%) ↓ (41%)
BPM	↑ (63%)	↓ (73%)
ICT supplier management	→ (53%)	↓ (76%)
Digital marketing	↑ (58%)	↓ (63%)
Information security	↑ (79%)	↓ (81%)
Enterprise Architecture	↑ (57%)	↓ (76%)
High performance computing	→ (49%)	↓ (57%)
Embedded systems	→ (64%)	↓ (50%)
eLeadership skills	↑ (54%)	↓ (67%)
Legacy maintenance	→ (46%)	↑ (32%) ↓ (48%)

Skillset	Decline in demand	Growth in demand	Unliketo offshore	Likely to offshore
Data Visualisation	1.6	82.3	62.7	16.9
UXD	0	74.1	54.4	21.1
Coding	7.9	46	28.1	54.4
Software testing	1.6	54.7	39.7	44.8
ICTsupport	4.7	35.9	37.9	39.7
Infrastructure ops	6.2	35.4	41.1	35.7
BPM	4.8	62.9	73.2	7.1
ICT Supplier management	1.6	45.2	75.9	5.6
Digital Marketing	1.7	58.6	63.3	8.2
Information security	4.7	79.7	81.5	0
Enterprise Architecture	1.6	57.8	76.4	1.8
High performance comput	5.5	45.4	57.1	12.2
Embedded systems	3.9	31.4	50	9.1
eLeadership skills	2	54	67.4	2.2
Legacy maintenance	21.1	33.3	48	32