UNTANGLED

The 7th Open Virtual Expert Café

May 25th, 2023, 2 pm CET

Ursula Holtgrewe
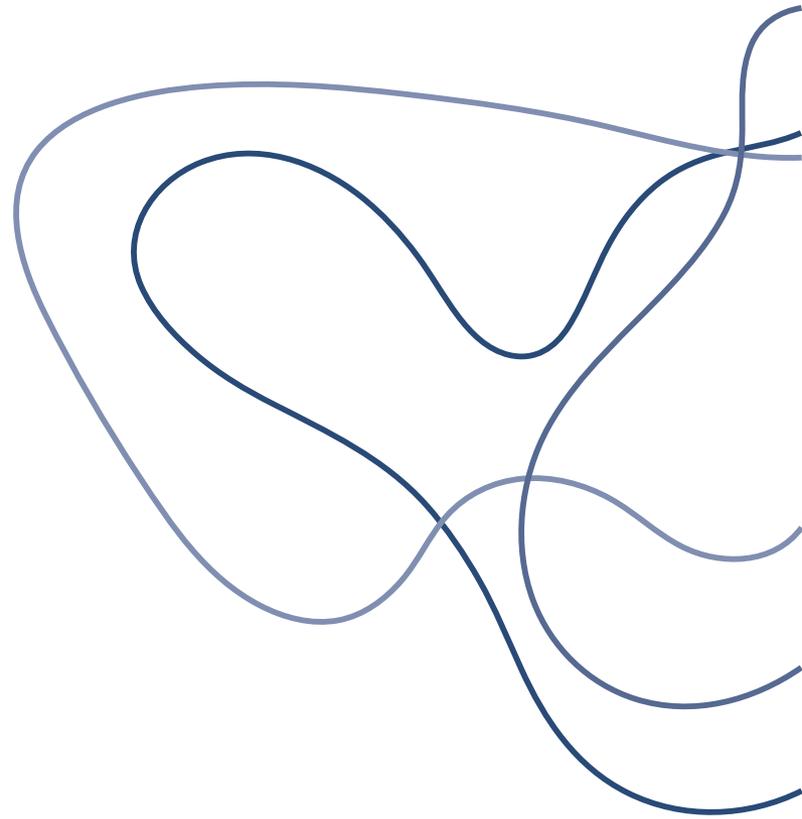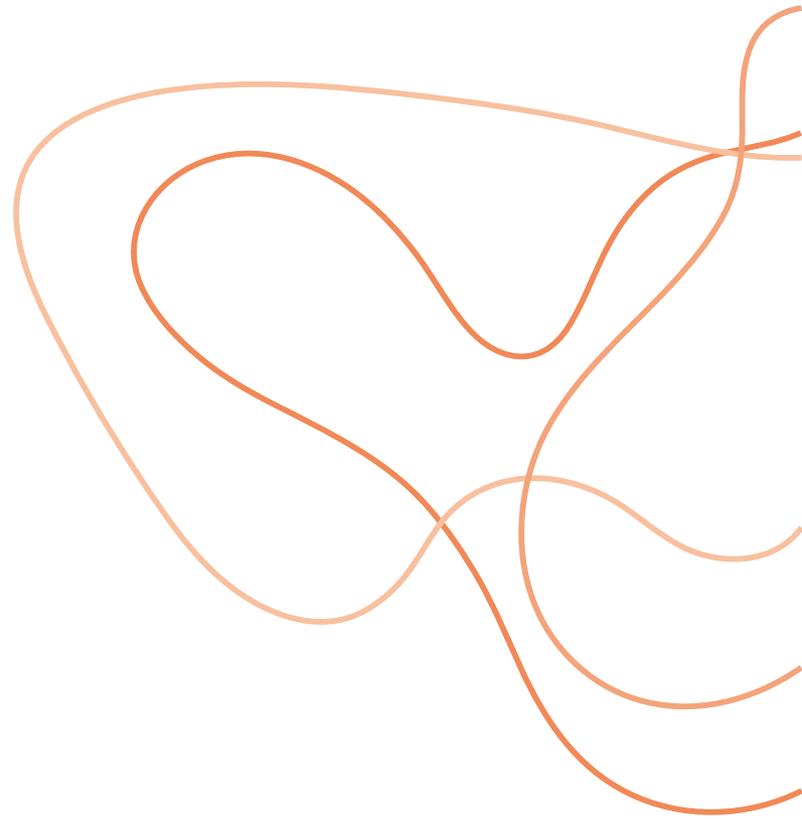
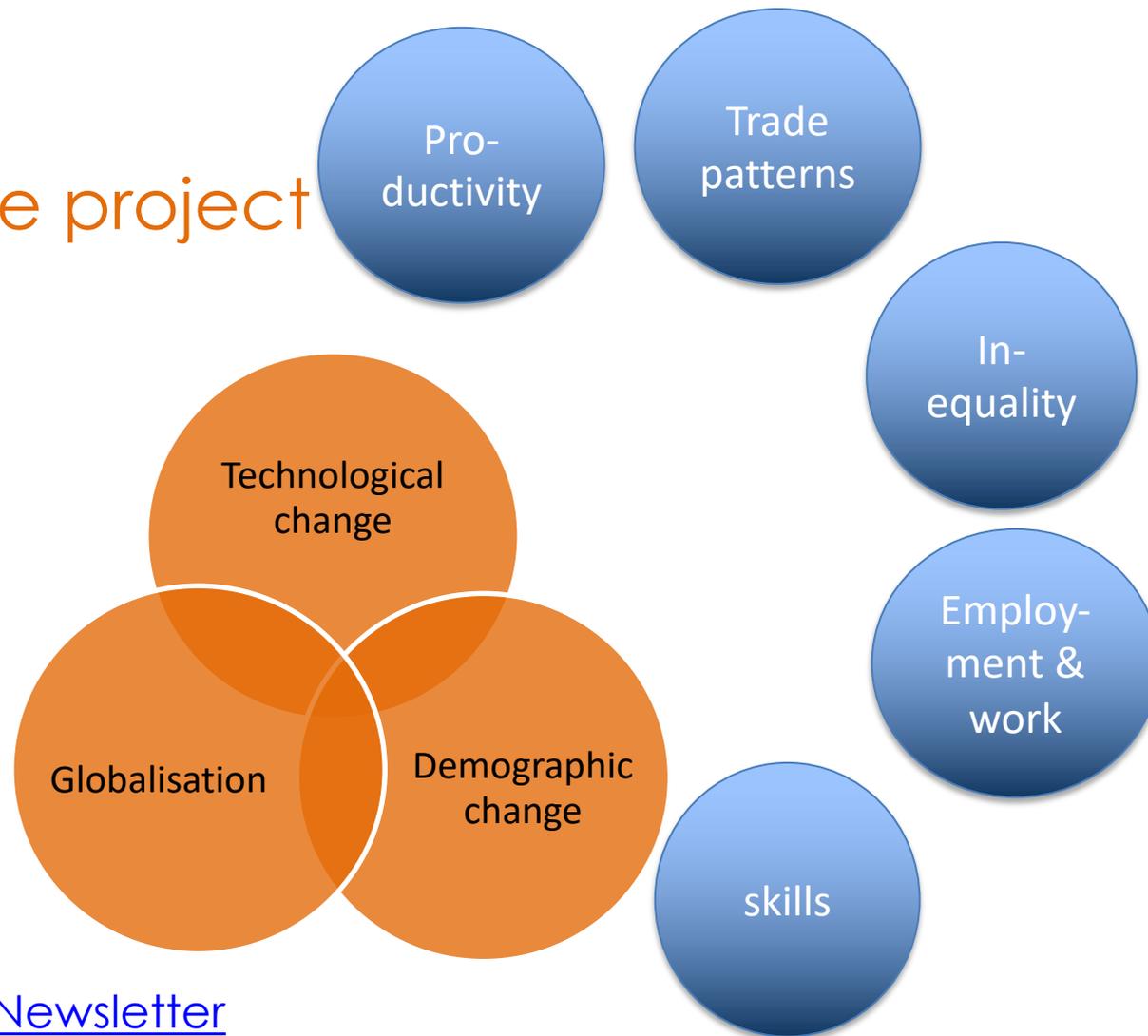# 1

Rules of the game

The format

- A low-threshold virtual forum for exchange on globalization, digitization, demographic change, work and employment
- news, ideas, results, collaborations
- Everybody's welcome to contribute or listen and comment!
- Contributors have a 5 minute time slot (may be 3 minutes or sometimes even 10) and 1 ppt slide (headline, keywords, links, contact data!) to present projects, ideas, results, partner searches …
- A quarterly 90-minute virtual meeting
- Next Session (save the date!): **tba**
- Register online: https://survey3.zsi.at/index.php/566899?lang=en
- Contact: untangled@zsi.at
  (the team: Ursula Holtgrewe, Leonie Dworsky)

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Your hosts: the UNTANGLED project

The project

UNTANGLED

Pro-ductivity

Trade patterns

In-equality

Technological change

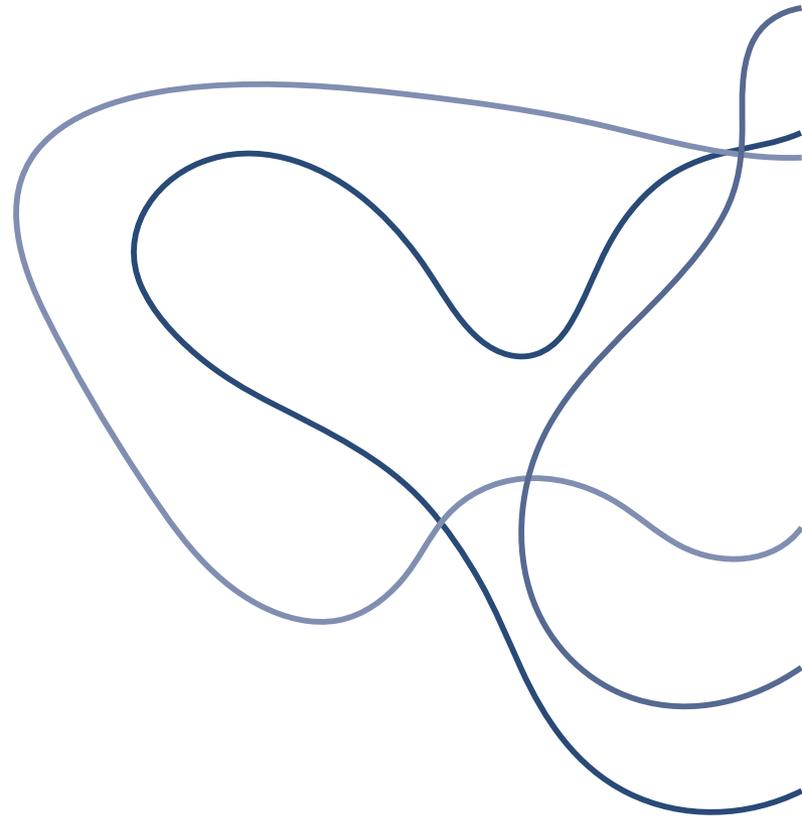Globalisation

Demographic change

Employ-ment & work

skills

Horizon Europe, Call TRANSFORMATIONS-18-2020
2/2021 – 1/2024

- Economic and social science approaches
- Scenarios
- Policy briefs
- Ongoing stakeholder engagement
- **Final Conference 23rd Nov, 2023!**

- [Newsletter](#)
- To get more targeted information: Register for the [stakeholder community](#)

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Contributions

Unslicing the pie: AI innovation and the labor share in European regions

Francesco Venturini

$\diamond$ University of Perugia & NIESR & CIRCLE

May 25, 2023

Our aim

- Investigate whether (and how) AI shapes the relative distribution of income across factors (capital vs labor)

- Identify which skill type is the most affected by AI

- Focus on the development of AI (patents) and search for the channel

Channels

1. Distribution of innovation rents: profits grow more than wage income, leading to a fall in the labor share (Aghion & al. 2019; Madsen & al. 2023)
2. Reallocation effects: larger market share away from labor intensive companies (Author & al. 2020)
3. Business reconfiguration: change in skill demand (high vs low-skilled; routinised vs non-routinised)

AI and ICT patenting in European regions
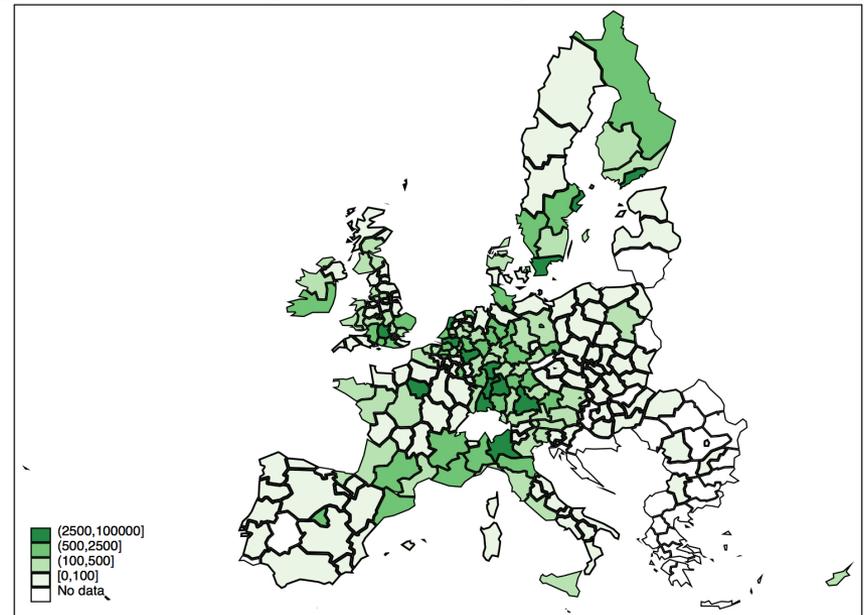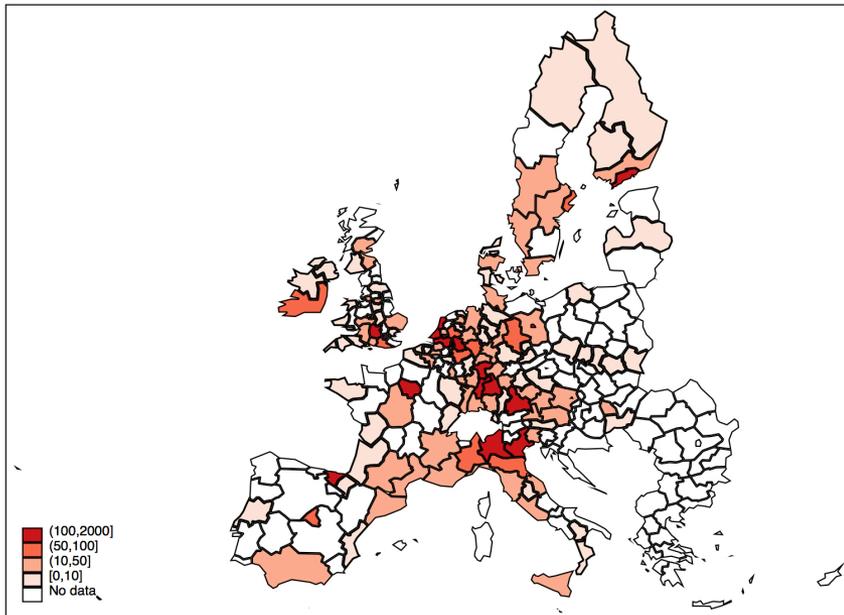
Conclusions and Next steps

- We show that the labor share has decreased in regions specialised in AI development, corroborating the view of decoupling effect of AI
- Major detrimental effects on medium and low skilled workers
- Negative effect of AI sums up to those of other innovation (ICT, 4IR, etc.)

- Exploration of the channels: changes in rent-sharing Vs reallocation effects Vs business reconfiguration

Working in an immaterial world: intangible assets and the demand and supply for skilled labour

Mary O'Mahony
(King's College London)
Catherine Robinson
(Kent Business School)
 Michela Vecchi
(Kingston University)

The great reversal in the demand for skills

Evidence suggests that link between technology and skills is dying out

Skill wage premium in Europe

- (1) **technologies are reaching maturity** and no longer require high cognitive skills (Chun 2003, O'Mahony, Robinson and Vecchi 2008)
- (2) Technology and skill complement each other but **investments in technological assets** (IT and intangibles) **have dropped** after the year 2000. (Beaudry et al 2016, Haskel and Westlake 2020).
- (3) **Job polarization** and skill downgrading (Valletta 2018)
- (4) **Skill mismatch** – Liu et al. 2016, Vecchi et al. 2021, 2023)
- (5) Long term negative effect of **graduating during a recession/** (Oreopoulos et a. 2012, Rothstein 2021). But the evidence is mixed (Bicakova et al. 2021)
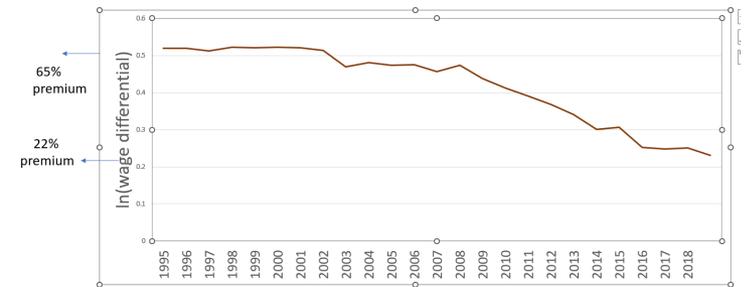
Main questions:

1) What is the relationship between ICT, intangibles and The demand for skills?
2) Is the technology still skill biased?

Data

EUKLEMS data, 1995-2018
7 EU countries + the UK & 19 industries

Model

$$\ln(wage\ premium_{it})$$
$$= \theta_1 + \theta_2 \text{Technology} + \theta_3 \ln(\frac{High\ skilled\ workers}{Low\ skilled\ workers}) + \varepsilon_{it}$$

Results

Variables	Benchmark model	Extended model
Ln(H/L)	-0.286***	-0.247***
*Ln(H/L)*D2008*		*0.031***
ln(TFP)	-0.001	-0.034
*Ln(TFP)*D2008*		*-0.008***
Ln(ICT/TK)	0.027***	0.053***
*Ln(ICT/TK)*D2008*		*-0.138***
Ln(EC_comp/TK)	-0.023	-0.020
*Ln(EC_comp/TK)*D2008*		*0.009*
Ln(lCAPInnovaP)	-0.028**	0.000
*Ln(lCAPInnovaP)*D2008*		*-0.113***
Observations	3,193	3,193
R-squared	0.287	0.3096
Number of id	136	136
FE	YES	YES

Discussion & Conclusions

- From the demand side: since the financial crisis the link between technology and skills has weakened

- Working in an intangible world does not favour highly skilled workers

- From the supply side: the increasing supply of graduate workers may be associated with higher skill heterogeneity

- Our results support the evidence of skills downgrading

- Is technology reaching maturity? Probably not. We see an increase in investments in intangible assets and increasing automation/AI

- Maybe we need to learn to race with the machine

Context:

Digital transformation of work and its influences on health

Research:

How to develop a tool which allows companies to govern this transformation together with their employees to create healthy working conditions?

- 53 qualitative Interviews in 4 Austrian companies
- a quantitative survey with the interviewed persons

Output:

- Prototype of the tool with a focus on employed work
- Report on the theoretical context
- Report on the results from the fieldwork

Healthsensor for digital work

Which health impacts are caused by digitialization and what results from different factors?

[Gesundheitssensor - ÖSB Social Innovation (oesb-socialinnovation.at)](oesb-socialinnovation.at)

The digital skills employers want: A real-time skills intelligence taxonomy based on online job vacancies

Ludivine MARTIN (LISER, Luxembourg, CREM, France, IZA, Germany);
*Kamil Filipek (*Institute of Sociology, Maria Curie Skłodowska University, Poland);
*Thiago Brant (*Living conditions department, LISER, Luxembourg)

- **Research questions:**

1) Are existing typologies of digital skills sufficient to follow the labour market changes?

2) Which digital skills are in the highest demand by companies?

3) What about AI skills?

Data: Online job vacancies from Lightcast (ex-Burning Glass Technologies Europe, Wollybi team) – 2021, France, Germany, Belgium, Luxembourg
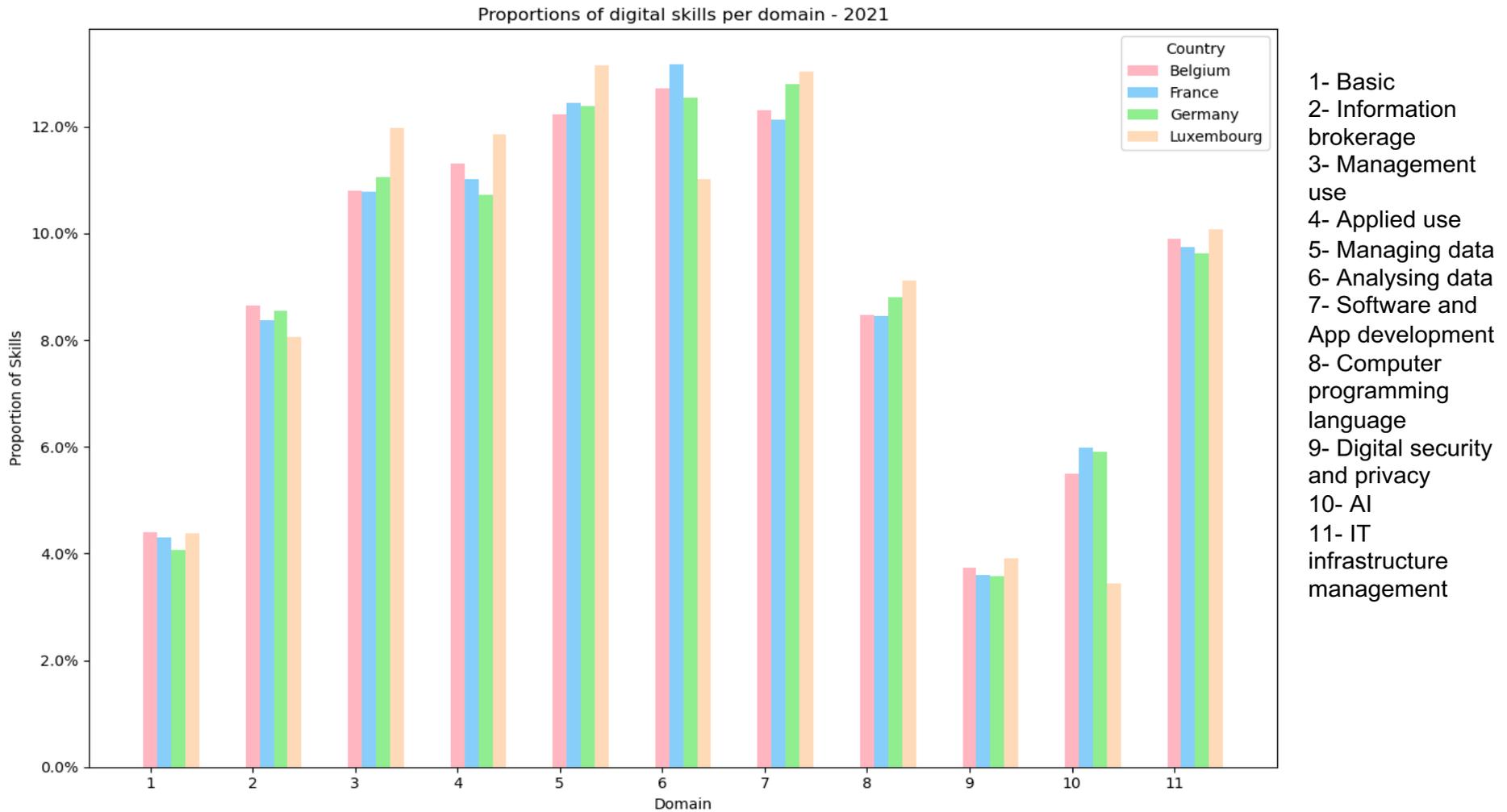
Dictionary of digital skills, competencies, abilities and related domains

Domain		Examples of digital skills, competences and abilities	id
Basic		excel; computer tools; pack office; powerpoint; windows; outlook; whatsapp; microsoft office; adobe; use word processing software	1
Information brokerage		ecommerce; amazon; networking; digital marketing; service delivery; user experience; css; photoshop; clarify; seo	2
Management use		it organization; sap; erp; crm; field service; quality assurance; supply chain; risk management; gmao; quality check	3
Applied use		automation; autocad; docker; azure; itil; cnc; change management; project control; solidworks; sharepoint	4
Technical use	Managing data	data protection; exadata; database; sql; elk; oracle; data management; mysql; big data; sql server	5
	Analysing data	analytics; computer science; precision; statistica; modeling; sas; algorithms; statistics; r; math	6
	Software and App development	software engineering; spring; devops; software development; backend; git; frontend; jenkins; virtualization; packaging	7
	Computer programming language	zend; java; python; programming; scripting; programming languages; service oriented; vba; react; abap	8
	Digital security and privacy	cybersecurity/cyber security; backup; outsourcing; system administration; security policy; security review; data privacy; veeam; control systems	9
	AI	automation technology; machine learning; artificial intelligence deep learning; 3D modeling; learning technologies; virtual reality image processing; chatbot; computer vision	10
IT infrastructure management		IT infrastructure; hardware; ip; linux; system p; vmware; windows server; network engineering; ansible; ibm	11

Proportions of digital skills per domain - 2021

1- Basic
2- Information brokerage
3- Management use
4- Applied use
5- Managing data
6- Analysing data
7- Software and App development
8- Computer programming language
9- Digital security and privacy
10- AI
11- IT infrastructure management

The Lost Millennials Project

Juliet Tschank (tschank@zsi.at)

Stella Wolter (wolter@zsi.at)

Research activities for *discovering* opportunities for (re)integration of young people not in Education, Employment, or Training aged 25 to 29

Who are they and what characterises this group?
Activity: *Researching the Situation of NEETs 25+*

Transnational Report

Which measures exist for their labour market integration?
Activity: *Analysing existing policies & initiatives*

Country and Synthesis Reports

Are those measures successful?
Activity: *Evaluating existing measures*

Initiatives and Evaluation Mapping

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Partners

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www.projectuntungled.eu