



Alliance for IoT  
and Edge Computing  
Innovation

10<sup>th</sup> October 2023

# AIOTI Signature Event

**Advanced Digital Skills to deliver on promise of the Computing  
Continuum**

**Brendan Rowan**

**BluSpecs**



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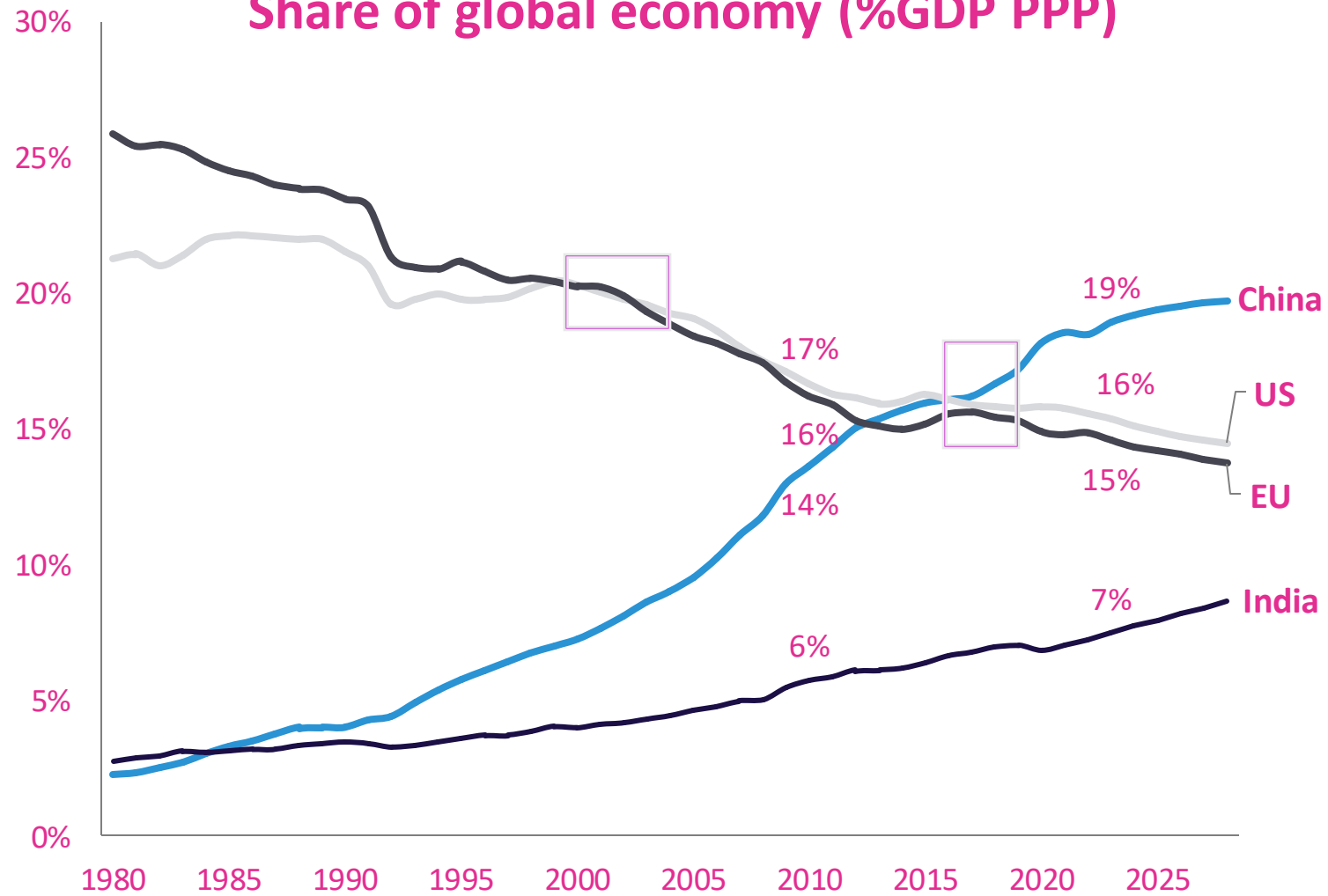
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DEMOKRITOS  
Syndesis Ltd  
Director, Applied Research  
Co-founder



**Brendan Rowan  
(M)**  
BluSpecs  
Managing Consultant  
Tech, Policy and Skills

# The context

## Share of global economy (%GDP PPP)



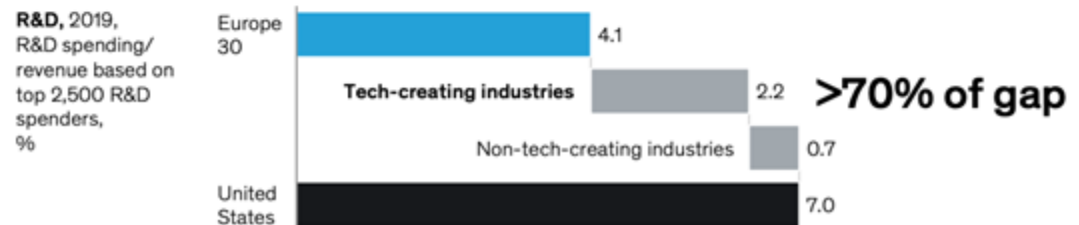
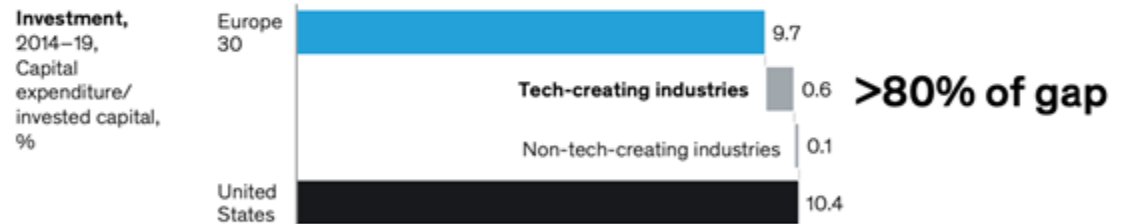
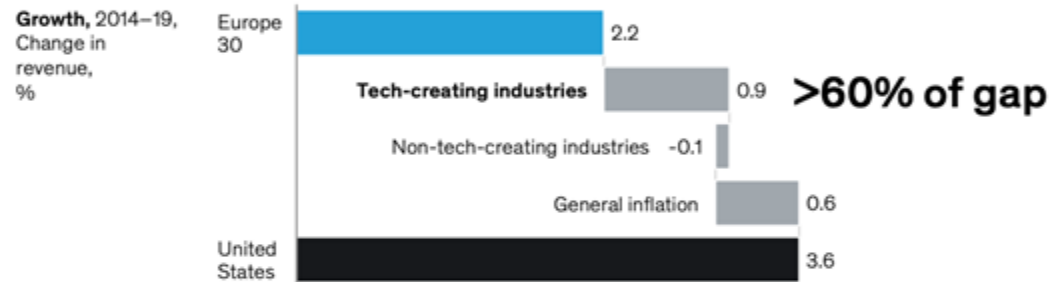
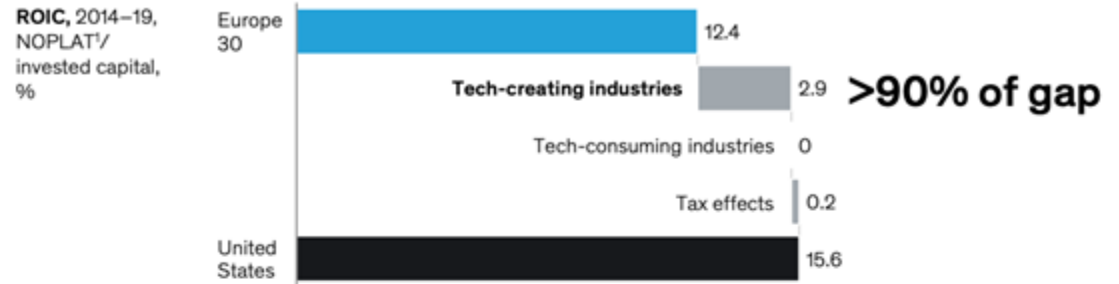
Source: IMF

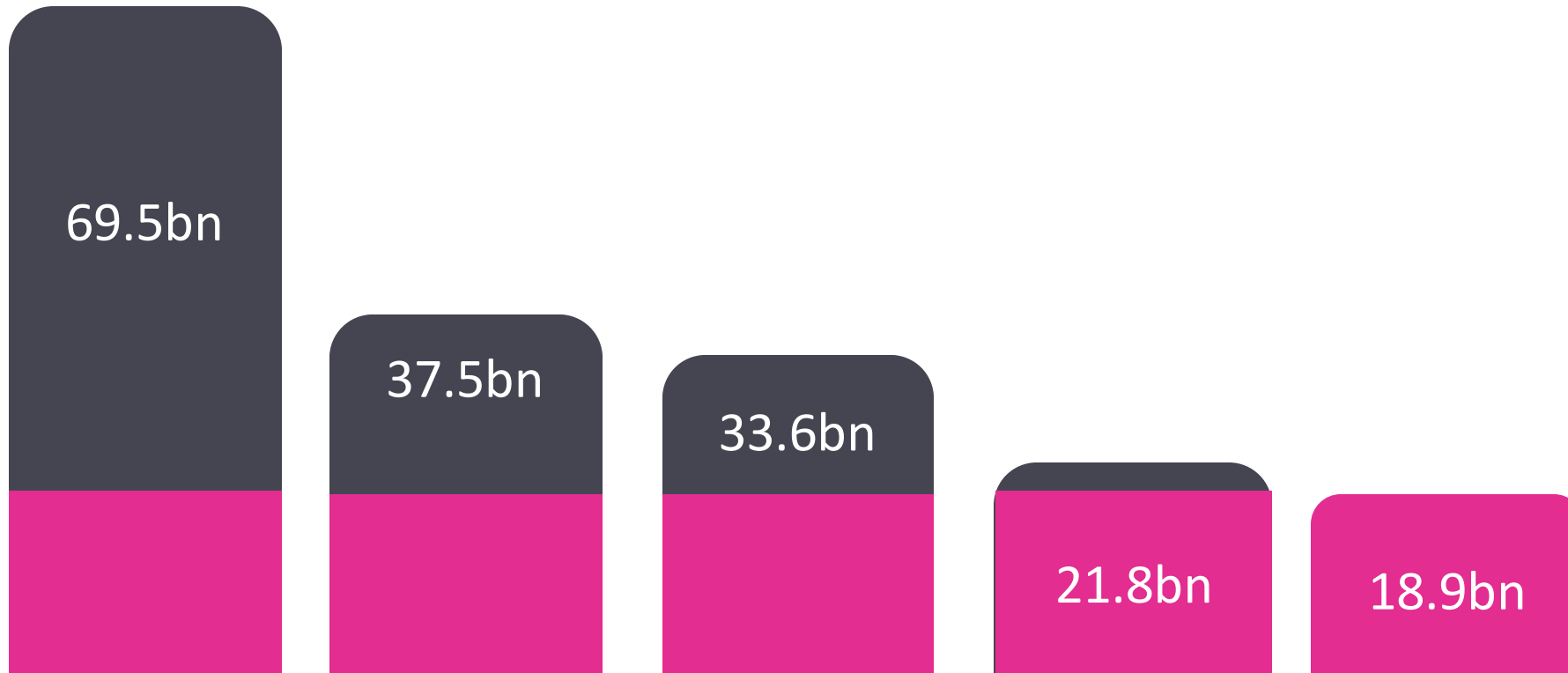
# € 2-4 Trillion

EUROPEAN CORPORATE  
VALUE-ADD  
at risk by  
2040

Source: McKinsey, Sep 2022, *Securing Europe's competitiveness ; Addressing its technology gap*

US/Europe 30 delta in return on invested capital (ROIC), growth, investment, and R&D  
Sample of ~2,200 companies with revenue of more than \$1 billion; financial companies excluded





**R&D SPEND**  
2022  
(EUR)

amazon

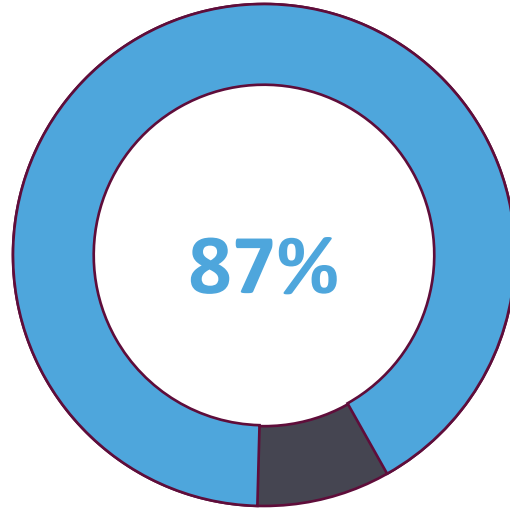
Alphabet  
Google

Meta

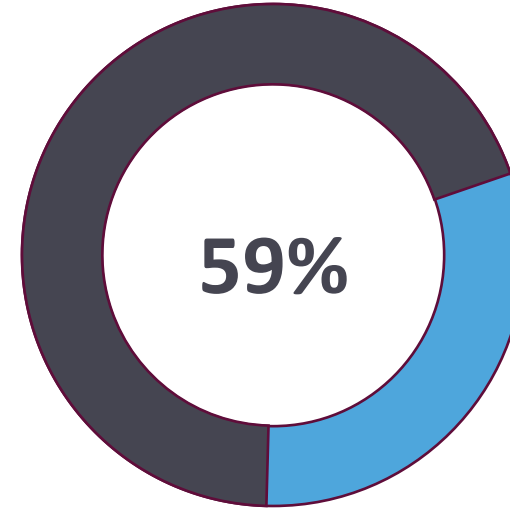
Microsoft



# TALENT IS THE KEY



Report having a skills gap in the workplace



Report negative impact on business due to skills shortages

# 5.9%

EUROZONE  
UNEMPLOYMENT  
Lowest on Record

# - 1m

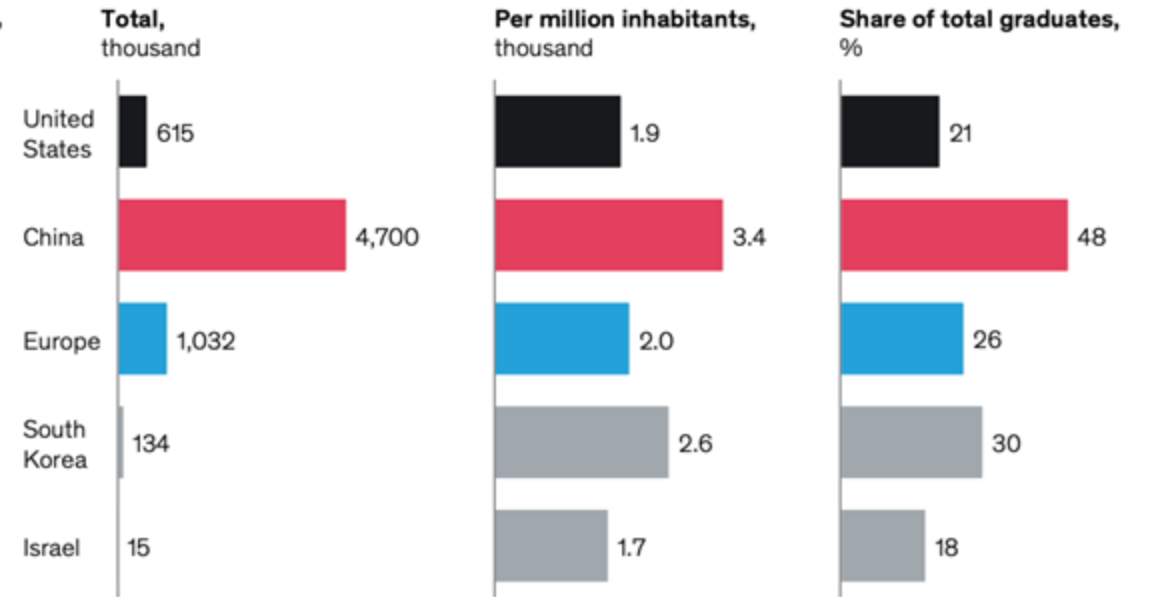
ANNUAL LOSS IN  
EU WORKFORCE  
2020-2030

# 3%

OPEN VACANCIES  
IN EU  
Highest on Record

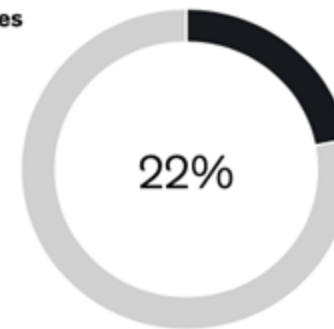
China has the highest rate of STEM graduates, with Europe second in absolute numbers.

Graduates from  
STEM programs in  
tertiary education,  
2018<sup>1</sup>

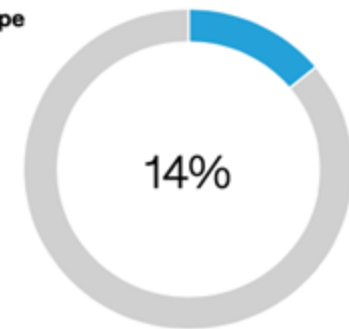


Share of STEM  
graduates with  
ICT focus, %

United States  
1 in 5



Europe  
1 in 7





# ACCELERATED TECH DEVELOPMENT

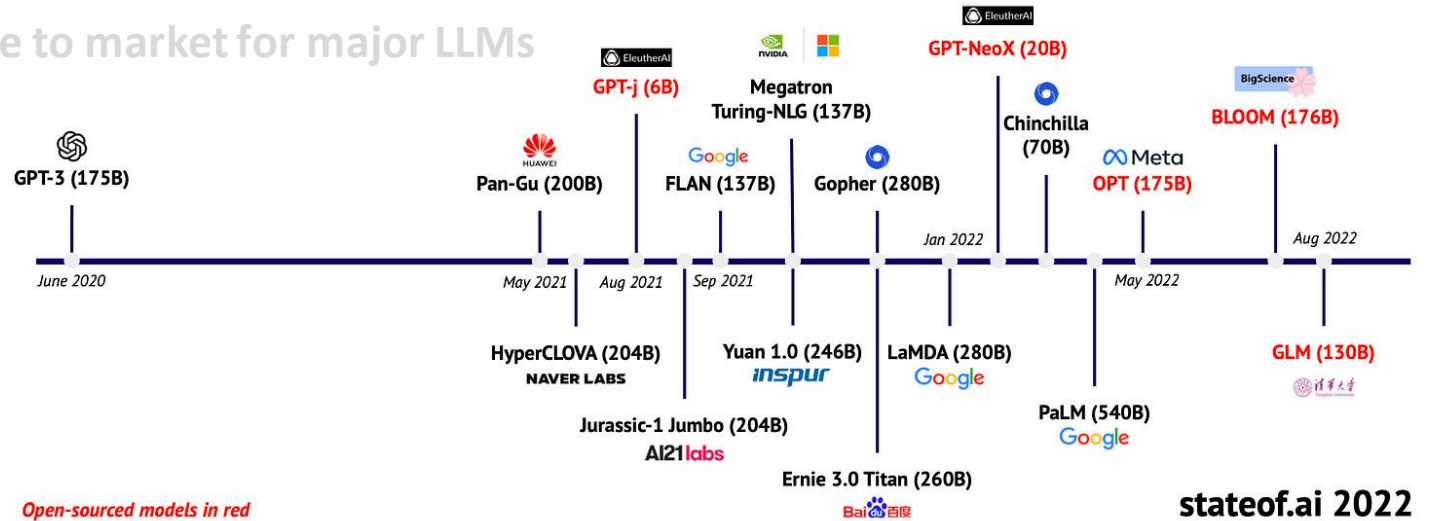
79%

Increase in Computer Programmers employed in EU from 2012

"We have seen two years' worth of digital transformation in two months"

CEO Microsoft, 2020

Time to market for major LLMs



Organizations are getting more efficient with ML; for every three experimental models, roughly one is put into production, compared to five experimental models a year prior

## Skills

20 million employed **ICT specialists**, more graduates + gender balance  
80% of adults can **use tech** for everyday tasks



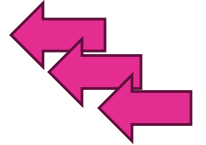
## Government

**Key Public Services** - 100% online  
Everyone can **access health records online**  
Everyone can use **eID**



## Infrastructure

**Gigabit connectivity** for everyone, **high-speed mobile coverage** (at least 5G) everywhere  
EU produces 20% of world's **semiconductors**  
10 000 **cloud edge nodes** = fast data access  
EU **quantum computing** by 2025

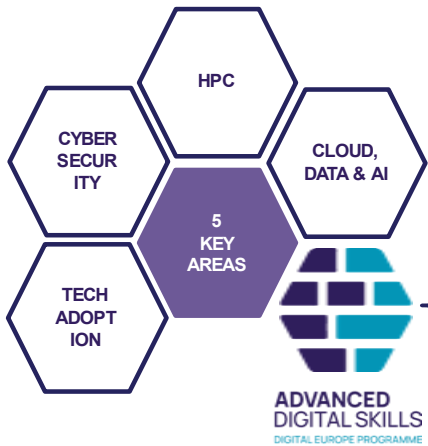


## Business

75% of companies using **Cloud, AI or Big Data**  
Double the number of **unicorn startups**  
90% of **SMEs taking up tech**



## Leading Europe's Advanced Digital Skills DIGITAL CSA 2022-2024



€ 570 million

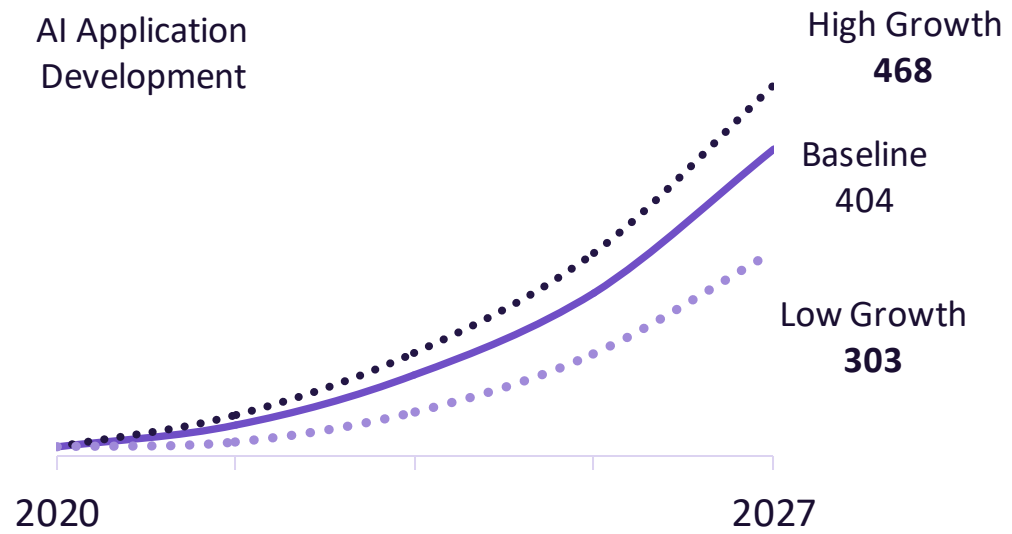
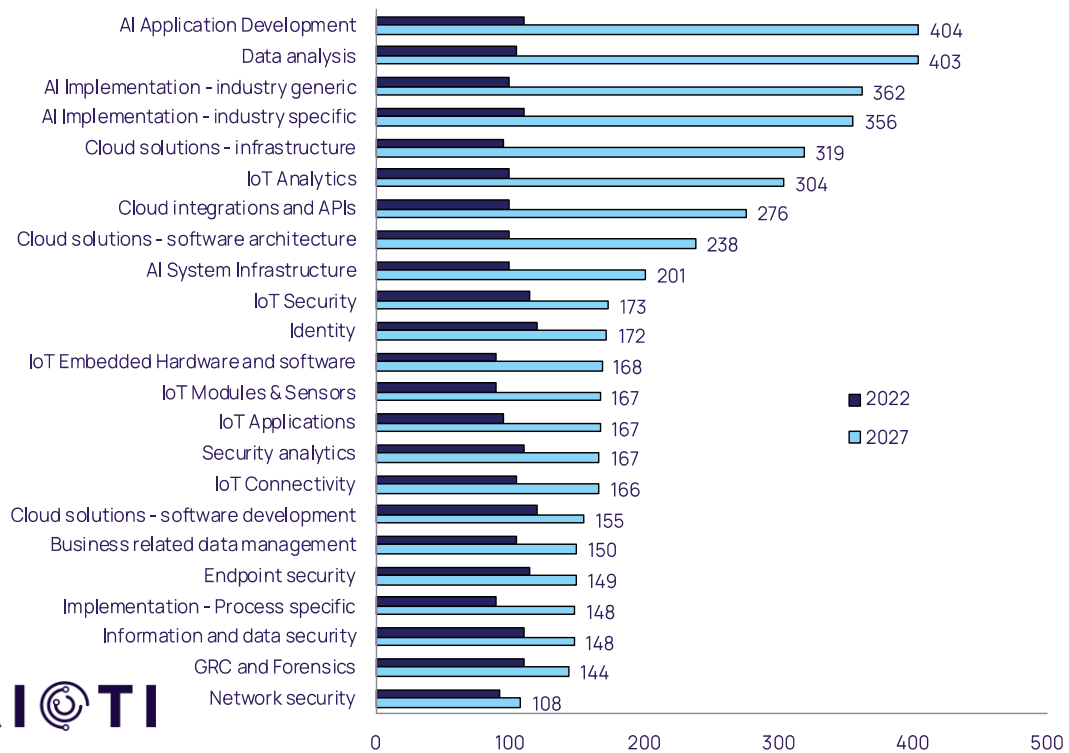
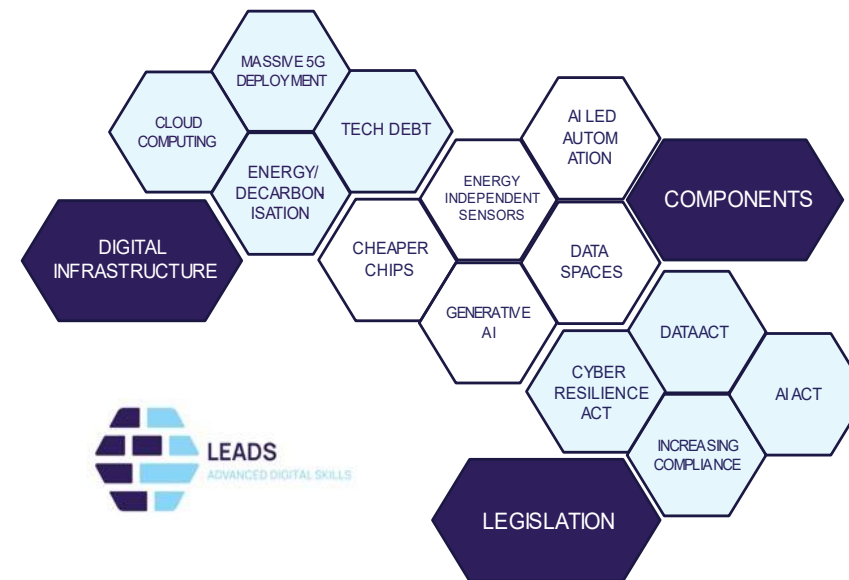
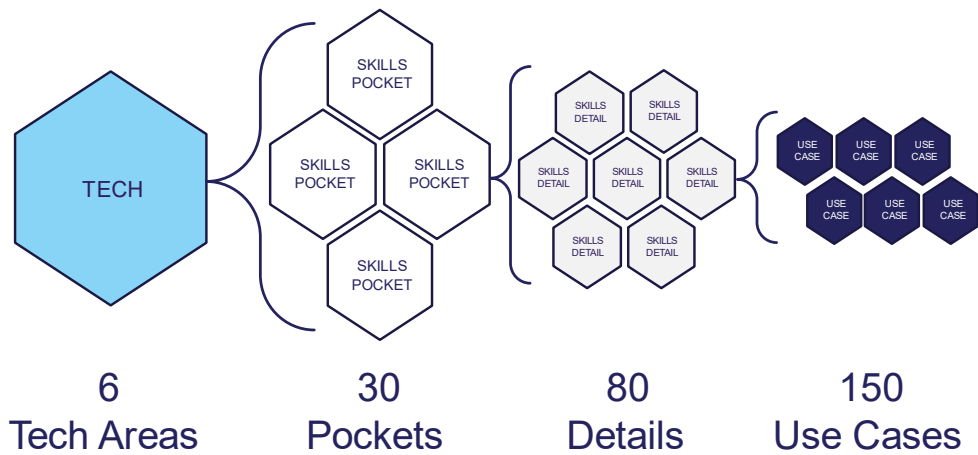
- SPECIALISED Masters' programmes
- Academic and VET networks
- Training academies
- Short-term training courses
  - SMEs, jobseekers, and individuals



**DIGITAL  
EUROPE PROGRAMME**

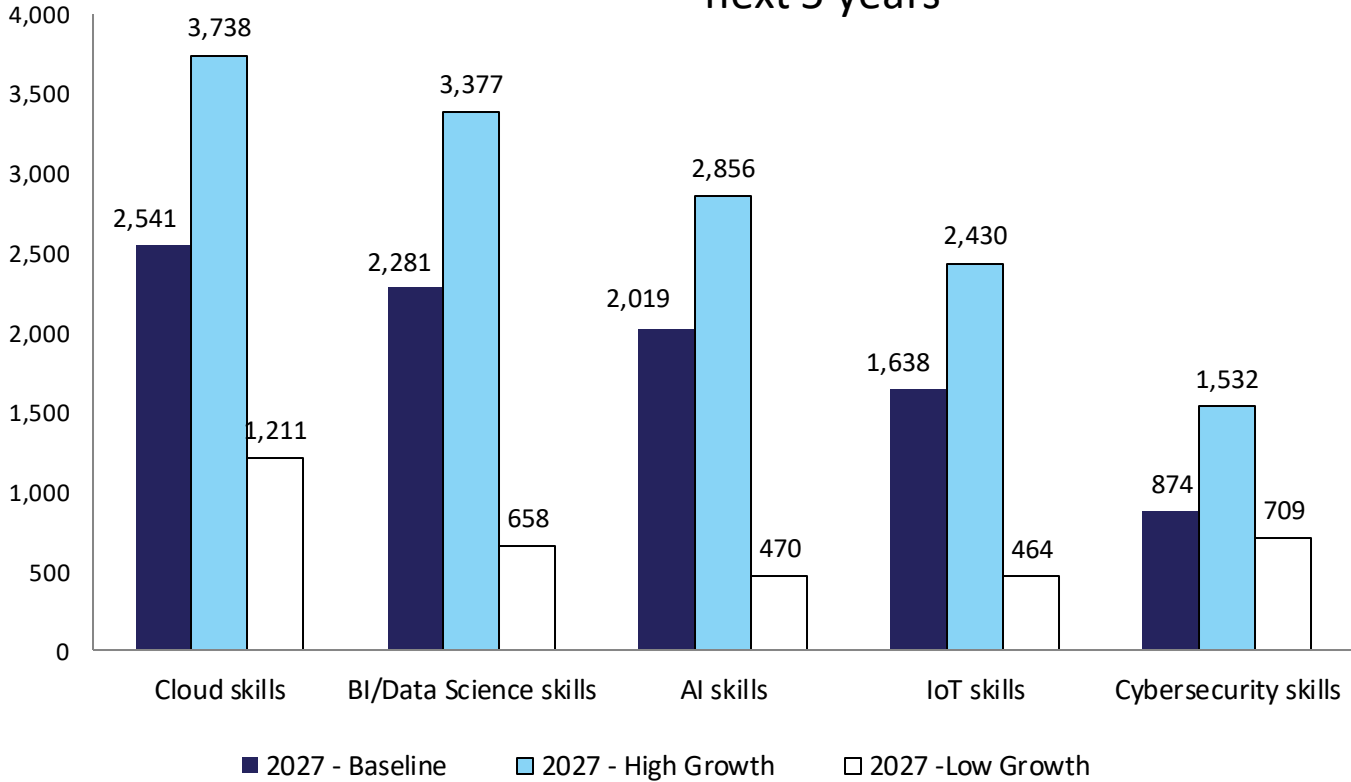
Advanced Digital Skills

[www.advancedskills.eu](http://www.advancedskills.eu)

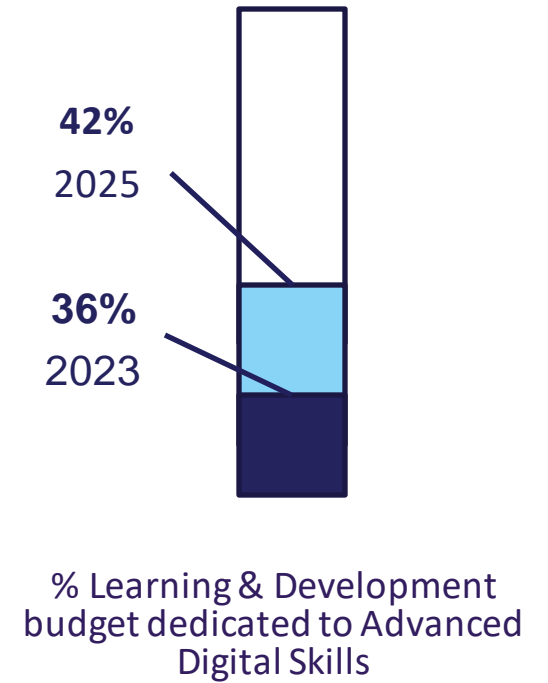
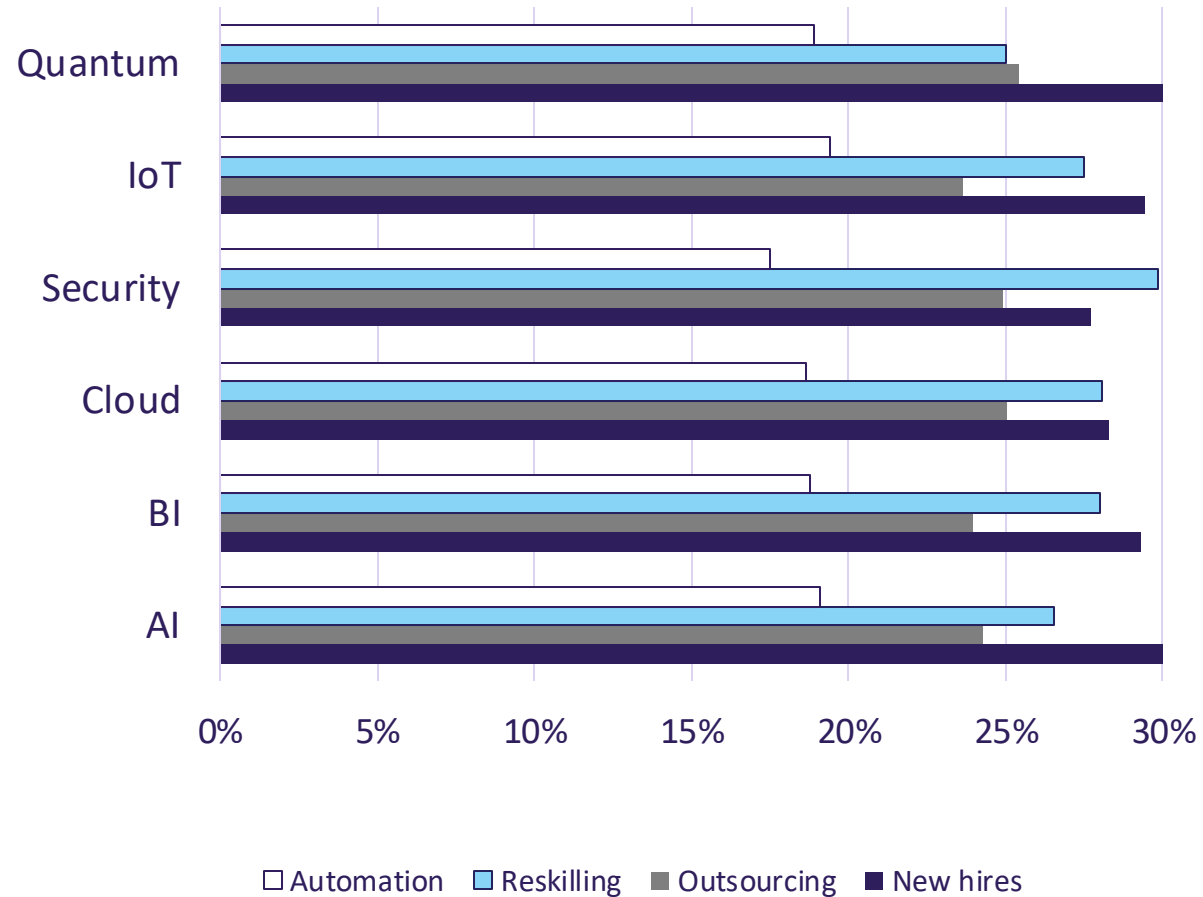


**We will need  
between 3.5 million  
and 13.9 million of  
new ADS  
professionals**

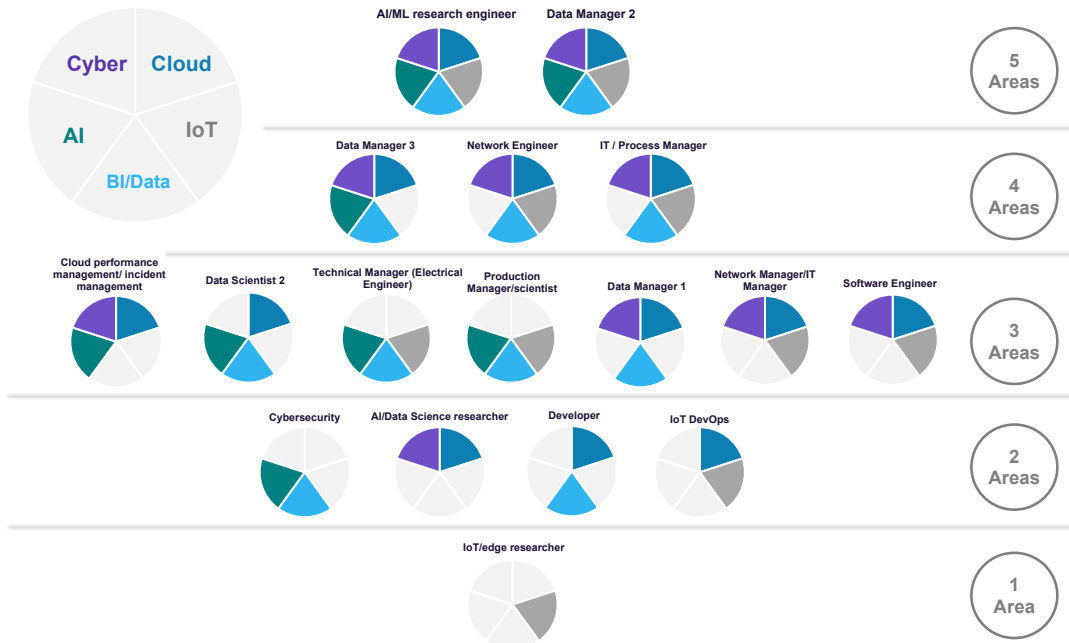
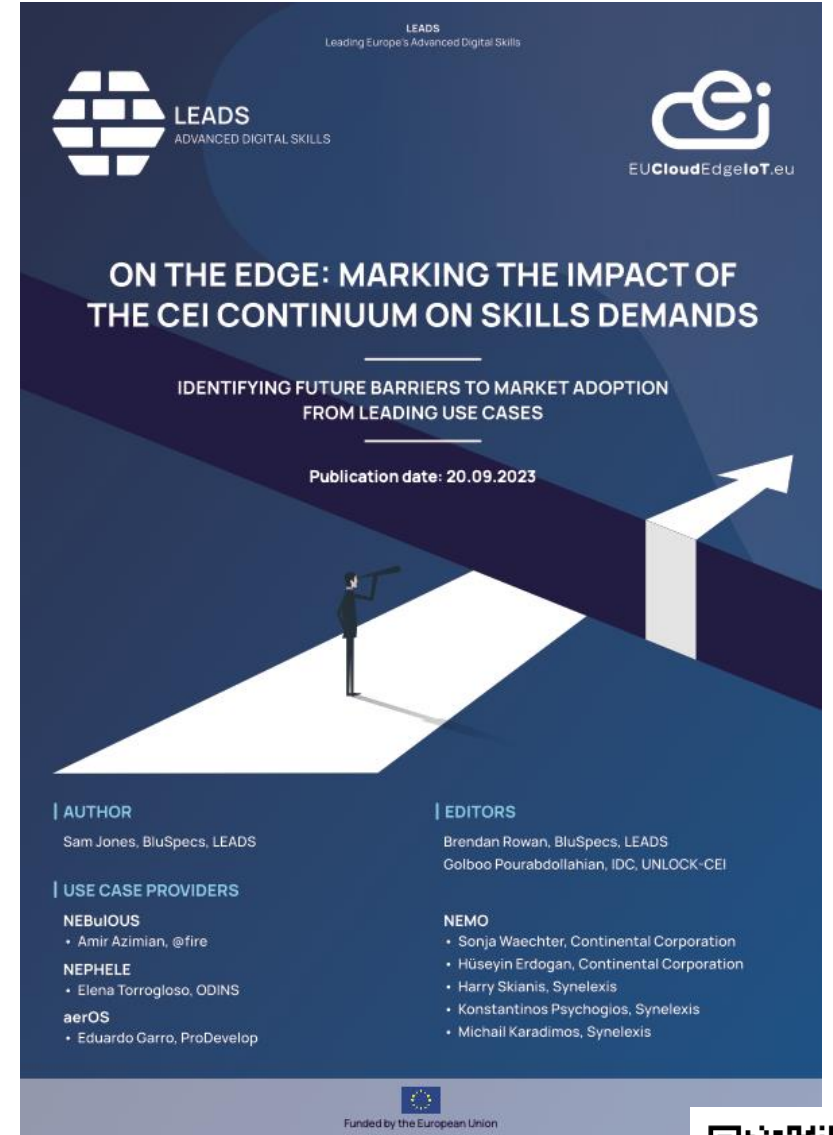
Estimated number of new professionals needed over the next 5 years



# TALENT SOURCING IS A MIXED APPROACH



Source: LEADS Advanced Digital Skills Survey, April 2023, n=885

LEADS  
Leading Europe's Advanced Digital Skills

EUCloudEdgeIoT.eu

# ON THE EDGE: MARKING THE IMPACT OF THE CEI CONTINUUM ON SKILLS DEMANDS

IDENTIFYING FUTURE BARRIERS TO MARKET ADOPTION FROM LEADING USE CASES

Publication date: 20.09.2023

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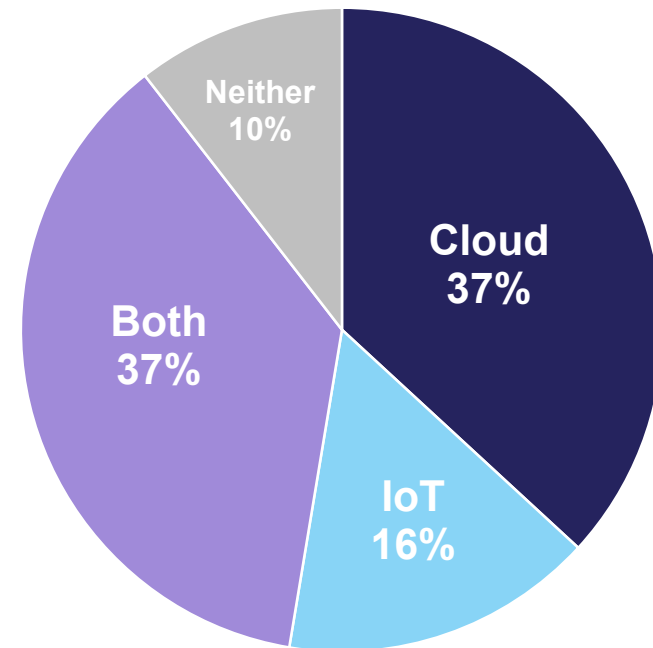
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Funded by the European Union



Cloud Skills are  
coming for the  
Edge

Overlap of Cloud/IoT skills across roles



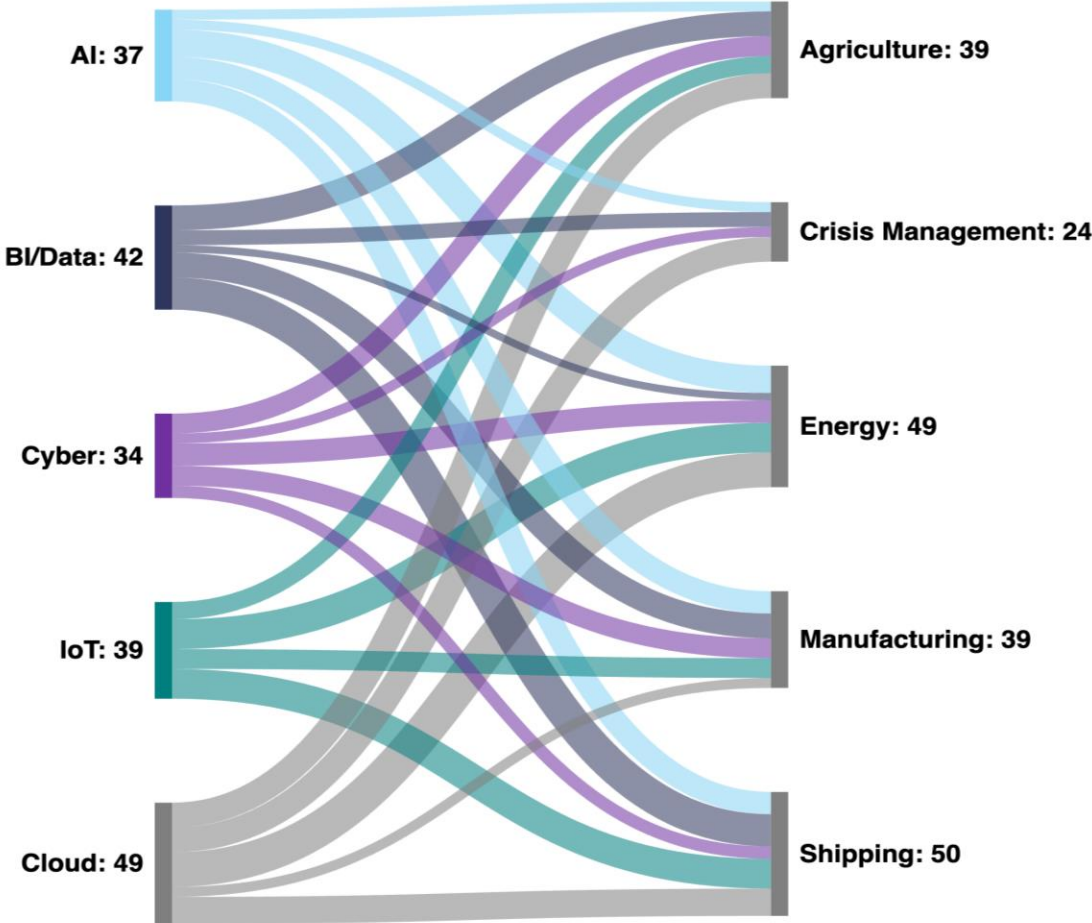


# AI, Data, and Cyber

## Key skills for the CEI

	IOT	DATA	AI	CYBER	CLOUD
IOT		10%	11%	12%	14%
DATA	18%		60%	9%	18%
AI	15%	64%		9%	8%
CYBER	8%	10%	16%		20%
CLOUD	18%	10%	16%	74%	
	15%	23%	26%	26%	15%

Skills follow the priorities of the context



# Risk is high across all areas

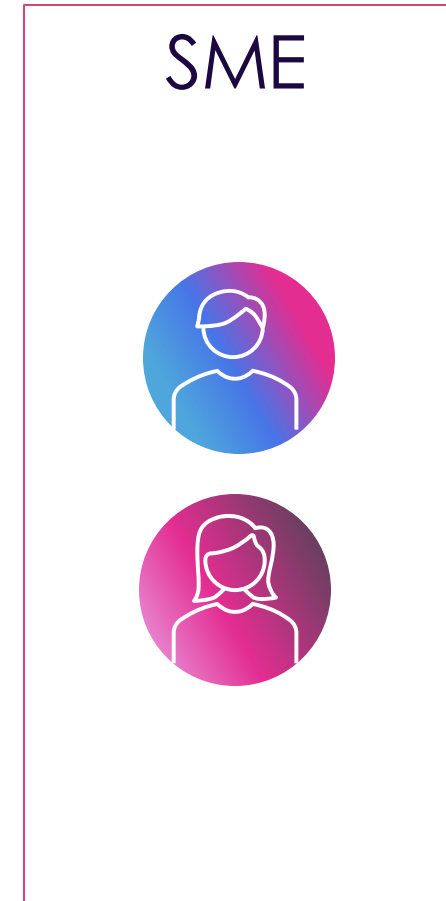
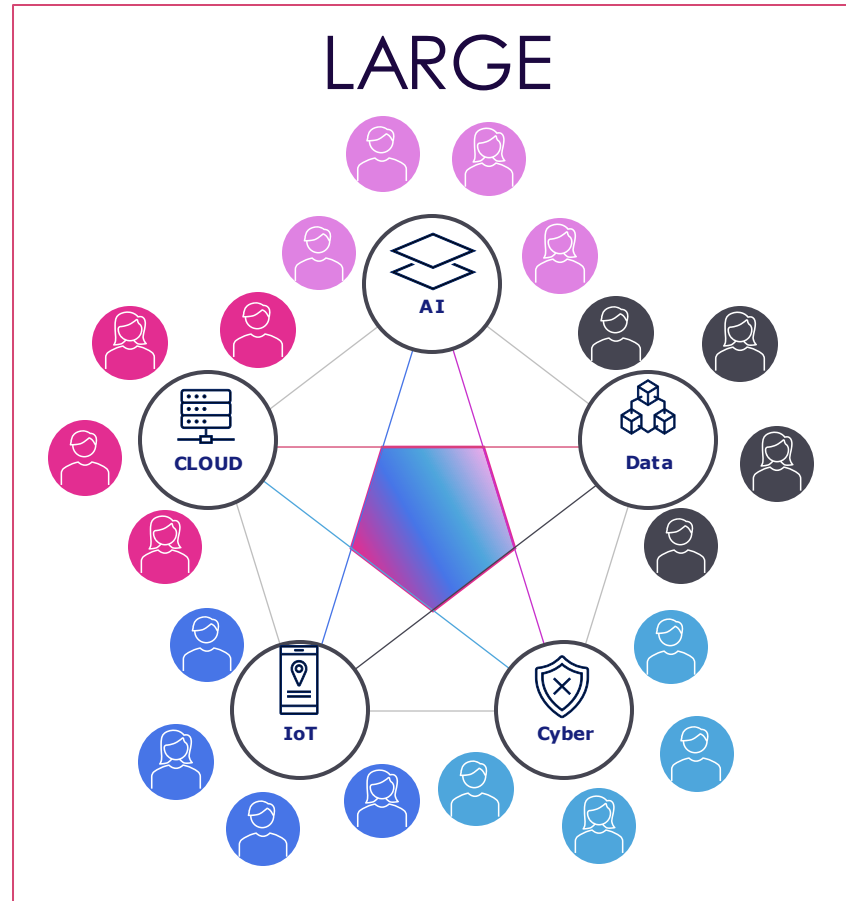
Use Case	Avg. Risk	Risk By Constituent Skills														
Disaster Management	254%	361%	336%	209%	202%	142%	110%									
		607%	352%	352%	217%	209%	177%	162%	162%	150%	122%	110%				
		607%	323%	323%	250%	220%	202%	189%								
Smart Ports	237%	323%	304%	217%	209%	189%	184%	177%	172%	161%	150%	122%				
		323%	266%	250%	216%	202%	195%	189%	168%	158%	151%	145%				
		607%	392%	392%	379%	379%	338%	323%	268%	217%	216%	187%	175%	162%	150%	
		607%	336%	268%	266%	241%	222%	217%	168%	158%	151%	150%	145%	145%	128%	
Precision Farming	225%	382%	352%	338%	241%	217%	209%	183%	172%	161%	145%	141%	139%			
		607%	607%	268%	266%	222%	222%	216%	162%	162%	147%					
		323%	250%	217%	209%	176%	158%	151%	147%	145%						
		250%	216%	209%	195%	156%	147%	142%	139%							
Smart Cognitive Manufacturing	217%	392%	338%	336%	322%	306%	222%	217%	217%	162%	162%	156%	110%			
		266%	250%	234%	189%	172%	171%	150%	130%							
		470%	361%	304%	304%	274%	268%	171%	168%	150%	148%	145%	128%			
		184%	184%	161%	145%	141%	141%	110%								
Smart Grids Flexibility & Resilience	207%	266%	266%	266%	158%	158%	158%	151%	151%	151%	145%	145%	145%			
		352%	347%	347%	338%	331%	331%	306%	306%	274%	274%	241%	241%			
		250%	250%	216%	216%	209%	184%	184%	156%	156%	156%	142%	128%			
		184%	184%	184%	183%	172%	161%	150%	147%	130%	110%	110%	110%			

# Challenges for sourcing

- Nascent definition of edge infrastructure makes it difficult to know what you are looking for.
- Each use case is different – context and scope
- Existing skills and roles can be leveraged but only with **domain-specific knowledge**.

“**professionals well-versed in cloud technologies**, such as Kubernetes (K8s), possess a formidable **skillset to effectively navigate the intricacies of edge computing**”

Responses  
depend on the  
organisation



## Giving Energy an Edge – Showcasing the Edge to Cloud Continuum in Energy

Use cases

Open Calls

MetaOS architectures



[www.eucloudedgeiot.eu](http://www.eucloudedgeiot.eu)

NOVEMBER 2023



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**Homer Papadopoulos**  
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Director, Applied Research  
Co-founder



**Brendan Rowan  
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