

# Developing Micro-credentials in Higher Education

## Key Insights from OECD Work

Shizuka Kato, Policy Analyst, OECD

3 September 2025, Leipzig





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- I. What are micro-credentials?**

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  - II. Overview of the OECD's work on micro-credentials**

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  - III. Micro-credential development in higher education**

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  - IV. Public policies for micro-credentials**

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# What are micro-credentials?

**Compared to traditional education and training programmes,  
micro-credentials are**



**Smaller**

in volume (in study  
duration or load)



**More targeted**

in terms of skills or  
study topics







**More flexible**

in delivery

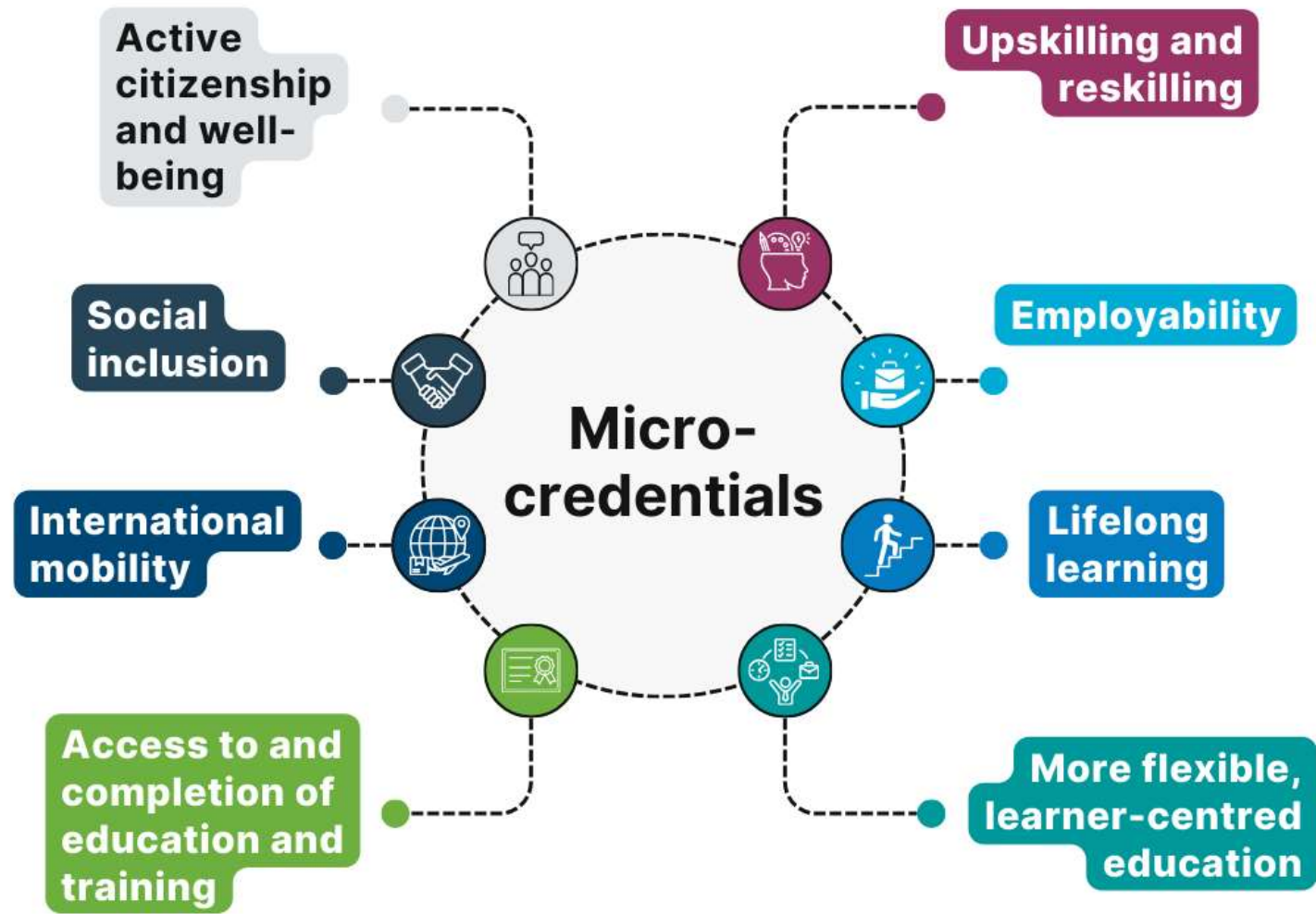
# >> What makes micro-credentials new?

Compared to earlier short-term programmes, micro-credentials tend to be:

 <p><b>LABOUR MARKET ORIENTED</b></p>	 <p><b>ONLINE</b></p>	 <p><b>STACKABLE</b></p>	 <p><b>CROSS-SECTORAL</b></p>
<p>Responds to short, medium, and long-term skills needs of the broader socio-economic environment.</p>	<p>When micro-credentials are newly developed, they are most likely to be offered online (or hybrid) to ensure flexibility.</p>	<p>Can be taken on their own but micro-credentials learning should be recognised, and when appropriate, be used to work towards a larger qualification.</p>	<p>Micro-credentials can be offered across HE, VET and adult learning providers. They are also often co-created with actors from the broader socio-economic environment.</p>



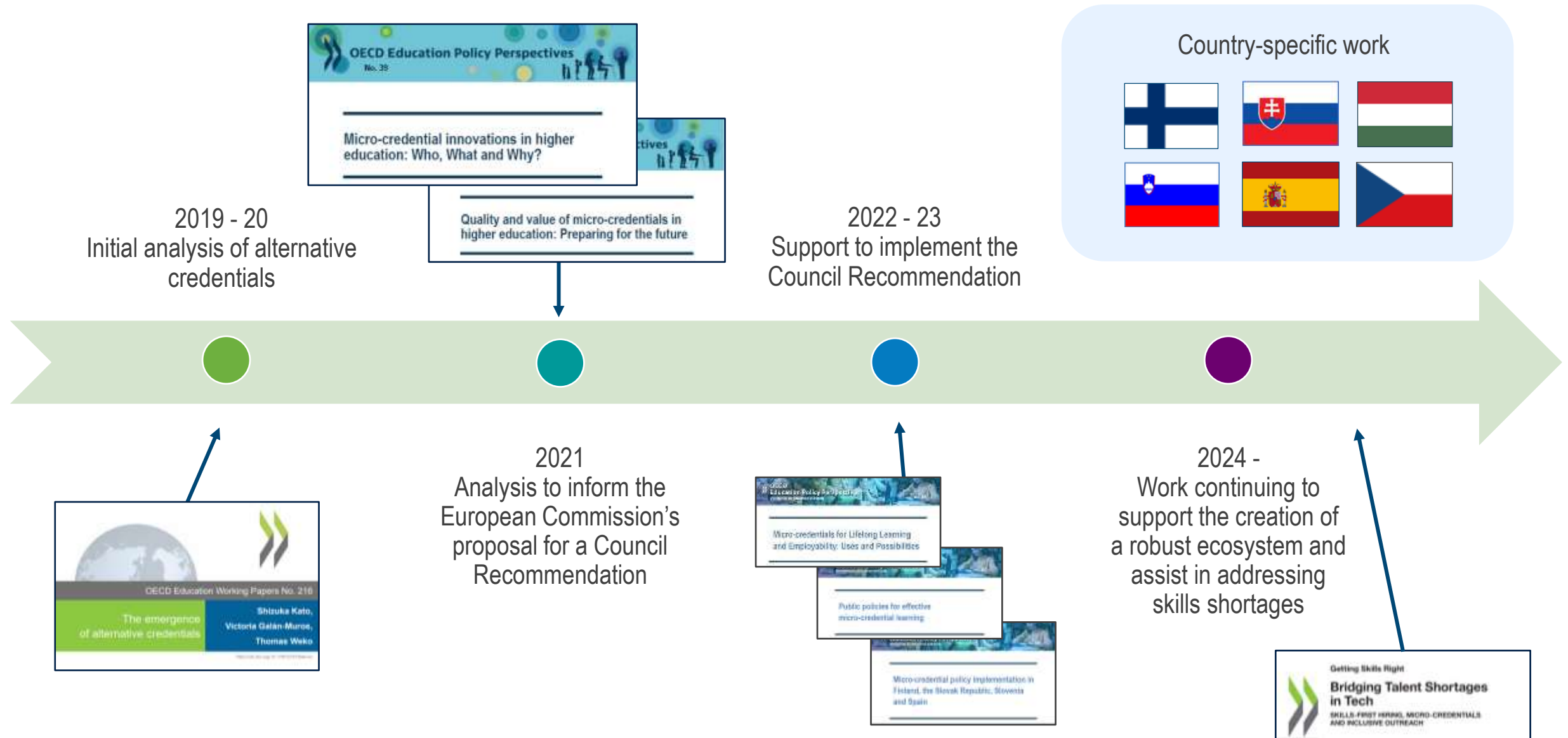
# Why and in which contexts are micro-credentials on the rise?



Source: OECD (2023), "Micro-credentials for lifelong learning and employability: Uses and possibilities", OECD Education Policy Perspectives, No. 66, OECD Publishing, Paris, <https://doi.org/10.1787/9c4b7b68-en>



# We have been supporting governments as they respond to micro-credential innovations





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## **Micro-credentials in higher education**



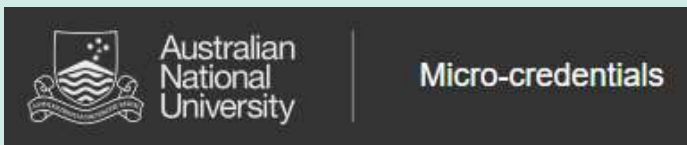
# Higher education institutions develop micro-credentials in diverse forms

## Independently

- > Micro-credentials developed by individual HEIs or HEI departments
- > Can be based on, among others:
  - Unbundling of a degree programme;
  - Bundling of courses from multiple degree programmes;
  - Pre-existing continuous learning offers.

**HO  
GENT**

**TAL  
TECH**



## In collaboration with others

- > Micro-credentials developed by HEIs partnering with other organisations, including:
  - Employers, professional organisations or other labour market actors;
  - Through online learning platforms;
  - As part of national and international collaboration projects.

*ecampus*  
Ontario





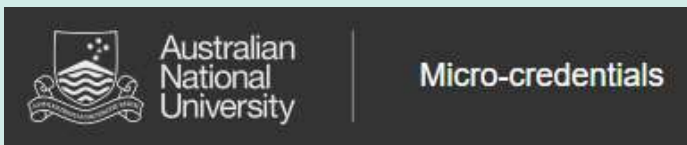
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Ontario





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educations study at HOGENT research partners this is HIGH news and info



University College Ghent, Belgium  
<https://www.hogent.be/opleidingen/micro-degrees/>

**Are you a legal professional looking to expand or refine your legal knowledge in a way that's easy to combine with a job and/or family? These micro-credentials in distance learning are small, manageable modules that are perfect if you want to further your legal education without having to interrupt your career or complete a full bachelor's degree.**



## MICRODEGREES

TalTech open learning offers smaller-scale curricula - **micro-degrees**, which consist of two or more degree subjects.

In the autumn semester of 2025, the university will open 35 micro-degree programs and 3 micro-qualification programs for admission. Three programs will be opened as completely new curricula: **financial literacy and investing** ; **basic auditing knowledge** and **supervision, work psychology and digital changes** . The largest number of micro-degree programs is available in the fields of entrepreneurship and management and engineering .

Tallinn University of Technology, Estonia  
<https://taltech.ee/avatud-ope/mikrokraadid>



Australian  
National  
University

## Continuing Education

Learning for life

[Bridging Courses](#) ▾ [Executive Short Courses](#) ▾ [Micro-credentials](#) ▾ [Login](#)

[Home](#) / [Micro-credentials](#)

## Micro-credentials

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An ANU Micro-credential provides recognition at a graduate level of the learning you have undertaken to improve your professional knowledge and practice.

Australian National University  
<https://cce.anu.edu.au/>



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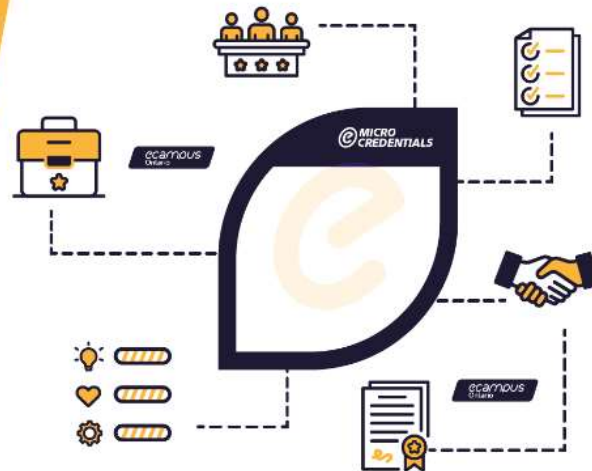
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eCampus  
Ontario

**MICRO  
CREDENTIALS**



## Micro-credential Pilots 2020-21

With the support of the Government of Ontario, eCampusOntario has launched thirty-six micro-credential pilot projects at Ontario colleges and universities. Each pilot project represents a unique partnership with an industry partner and a collaborative response to an identified skills gap. Download this document for a full list of pilots.

Whatever the conditions, eCampusOntario is your partner in driving the evolution of education through micro-credentials at both the local and systemic level. Upgrading learning through micro-credentials offers digital and creative solutions to meet rapid needs while building longer-term economic resilience.

### → Micro-credential in Data Analytics

Create new content to issue micro-credentials in fundamental elements of the data life cycle: business analysis, data exploration, quantitative analysis, communication of results, and data life-cycle management. **Partners:** McMaster University, National Institutes of Health Informatics

### → Micro-credential in Design Thinking

Explore the complex challenges and opportunities at the intersection of design, technology, and social theory, in the development of a new product prototype for this stackable Human Centred Design Micro-credential. **Partners:** OCAD University, Myant Inc.

### → Micro-credential for Media Ingestor

Create new content to issue micro-credentials in ingesting media into production for news broadcast environments. **Partners:** Seneca College, Avid Technology Inc.

eCampusOntario, Canada  
<https://micro.ecampusontario.ca/pilots/>



## Introduction to Programming in C

By Prof. Satyadev Nandakumar | IIT Kanpur

Learners enrolled: 27565 | Exam registration: 3346



### Summary

Course Status :	Ongoing
Course Type :	Elective
Language for course content :	English
Duration :	8 weeks
Category :	◦ Computer Science and Engineering
Credit Points :	2
Level :	Undergraduate/Postgraduate
Start Date :	21 Jul 2025



## Example: In partnerships with **other HEIs in the country**



- MicroCreds is a 5-Year €12.3 million national project, running from 2020 to 2025. It is led by Irish Universities Association and delivered in partnership with 7 universities.
- The MicroCreds Project's format of micro-credentials:
  - Small, focused courses
  - Range from undergraduate to master's level
  - Credit size 1-30 ECTS (1 ECTS = 25 learning hours)
  - University quality assured
  - Standalone credentials, some may stack towards a larger award
  - Developed in response to identified skills need
- Development of a common platform: [microcreds.ie](https://www.microcreds.ie)

<https://www.iua.ie/overview-microcreds/>





# Example: In partnerships with HEIs in other countries



The European Commission supports HEIs cooperating in developing micro-credentials within the framework of the European Universities Initiative.

- 65 Alliances;
- 35 countries, including all EU Member States;
- More than 570 HEIs;
- A budget of up to €14.4 million per alliance for four years.



<https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>



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## **Public policies for micro-credentials**



# Public policies can help micro-credential providers and learners

## Key policy instruments

A. Regulations and guidelines



B. Public funding for providers and learners



C. Quality assurance mechanisms



D. Information systems



## How can policies help?

- ▶ By setting clear standards and definitions
- ▶ By ensuring relevance and quality
- ▶ By encouraging the development and uptake of micro-credentials
- ▶ By fostering cross-sectoral collaboration and partnerships



# A. Regulations and guidelines – example uses

## Harder approach



Spain: Royal Decree 822/2021 defines micro-credentials as one of five types of unofficial credentials universities may offer.

### Types of unofficial (*títulos propios*) credentials

Micro-credentials	less than 15 ECTS
Certificates	15 or more ECTS
Expert diplomas	15-29 ECTS
Specialist diplomas	30-59 ECTS
Unofficial master's degrees	60 or more ECTS



Hungary: Adult Training Act, Higher Education Act, and VET Act make references to micro-credentials.

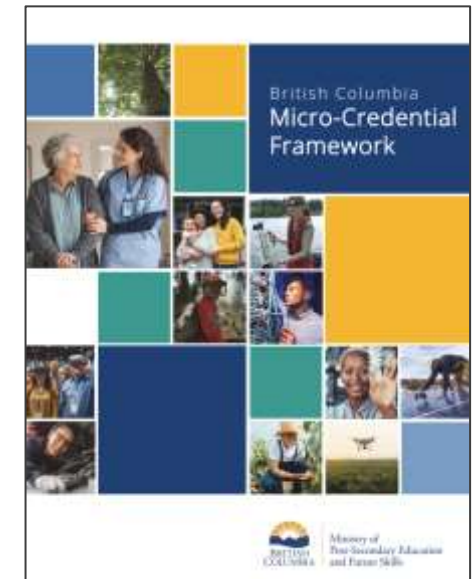
## Softer approach



Australia: The Department of Education, Skills and Employment published a non-binding national guideline in 2021.



Canada: Some provinces developed a guideline (e.g. British Columbia).





## B. Public funding for providers and learners – example uses

### Targeted funding



The Netherlands: The first round of the micro-credential pilot in the HE sector ran from 2021 to 2023, with the second round commencing in 2024. In the VET sector, the pilot also began in 2024.

### Inclusion in core public funding



Finland: From 2021, the core funding allocation model for HEIs considers the number of credits gained through open studies (5% for universities and 9% for UAS).

### Extension of student loan schemes



The UK: England plans to extend its income-contingent loan scheme for degree programmes to smaller units of learning, such as modules, starting in 2026.

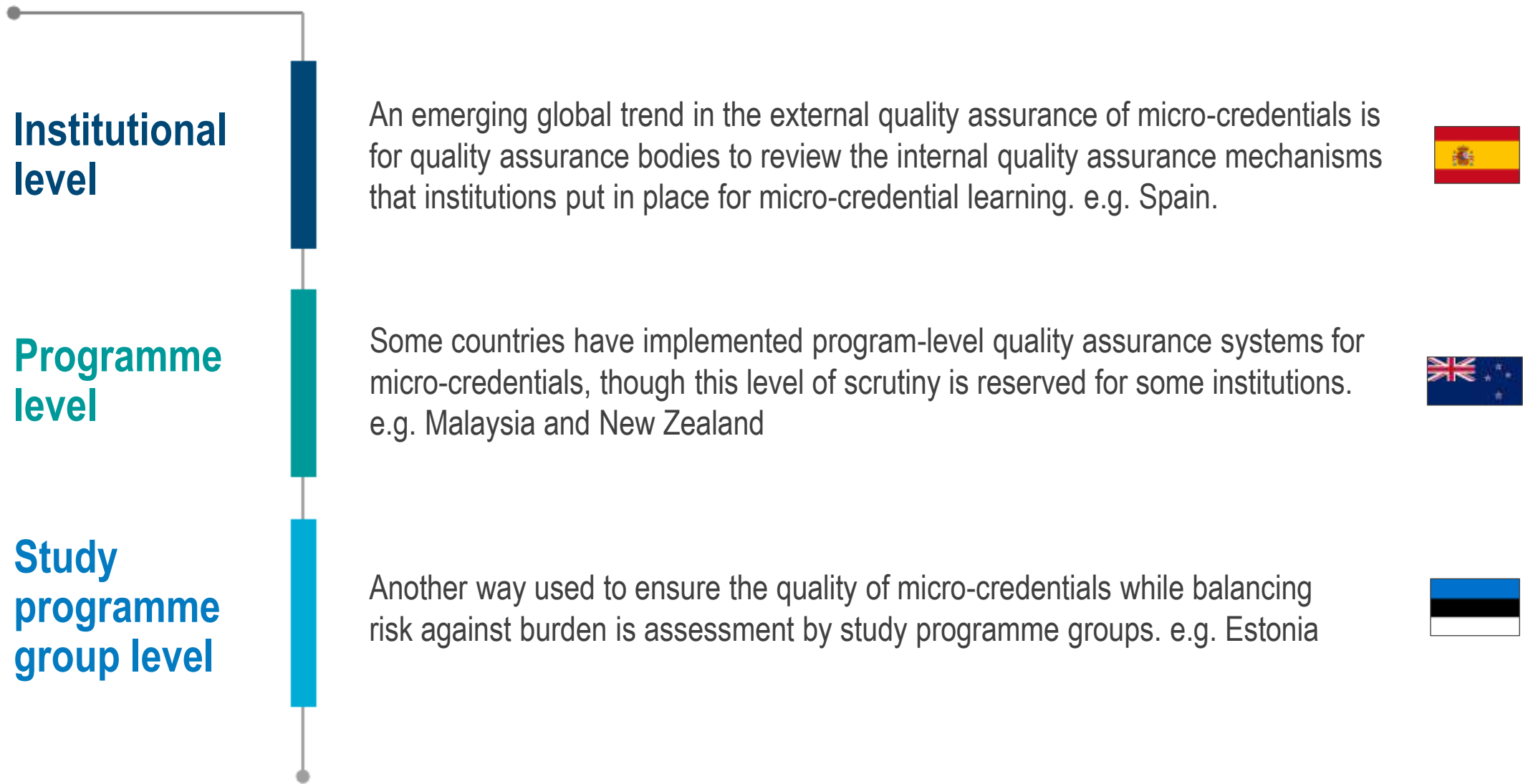
### Individual learning accounts



Croatia and Czechia: Ongoing ILA pilots fund some micro-credential programmes.



## C. Quality assurance mechanisms – example uses



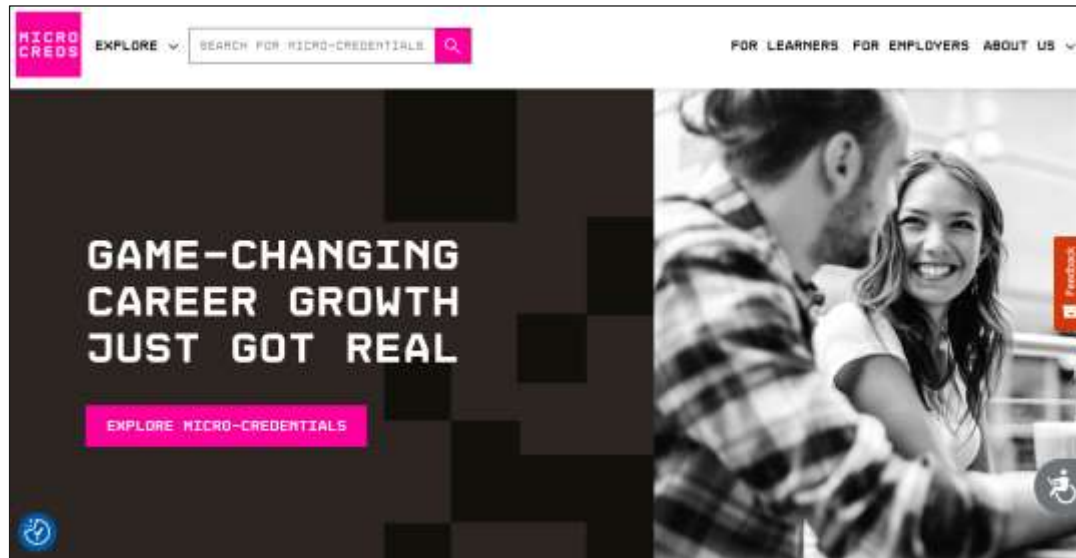


## D. Information systems – example uses

### Ireland MicroCreds



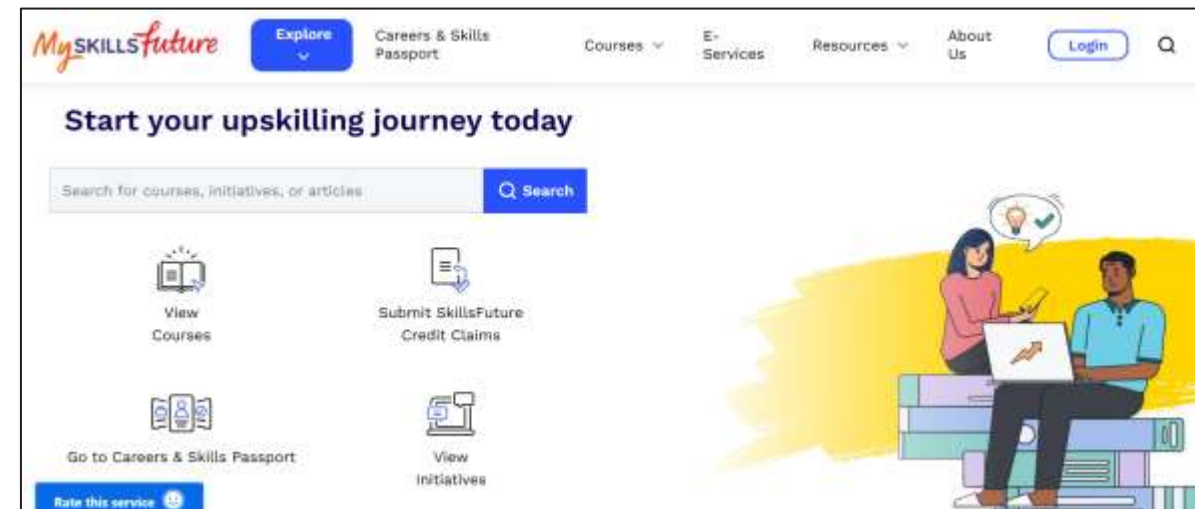
The Irish Universities Association launched an online portal that lists programmes offered by seven public universities that participate in the [MicroCreds](#) project in 2023.



### Singapore MySkillsFuture



[MySkillsFuture](#) is a one-stop portal that supports individuals in their lifelong learning journey. Users can explore training opportunities, manage their ILAs, and more.



## Links to relevant OECD publications

- > OECD (2024), Bridging Talent Shortages in Tech: Skills-first Hiring, Micro-credentials and Inclusive Outreach, Getting Skills Right, OECD Publishing, Paris, <https://doi.org/10.1787/f35da44f-en>.
- > OECD (2023), "Public policies for effective micro-credential learning", OECD Education Policy Perspectives, No. 85, OECD Publishing, Paris, <https://doi.org/10.1787/a41f148b-en>.
- > OECD (2023), "Micro-credential policy implementation in Finland, the Slovak Republic, Slovenia and Spain", OECD Education Policy Perspectives, No. 86, OECD Publishing, Paris, <https://doi.org/10.1787/c3daa488-en>.
- > OECD (2023), "Micro-credentials for lifelong learning and employability: Uses and possibilities", OECD Education Policy Perspectives, No. 66, OECD Publishing, Paris, <https://doi.org/10.1787/9c4b7b68-en>.
- > OECD (2023), Flexible adult learning provision: What it is, why it matters, and how to make it work, <https://www.oecd.org/content/dam/oecd/en/topic/policy-sub-issues/adult-learning/booklet-flexibility-2023.pdf>.
- > OECD (2021), "Micro-credential innovations in higher education: Who, What and Why?", OECD Education Policy Perspectives, No. 39, OECD Publishing, Paris, <https://doi.org/10.1787/f14ef041-en>.
- > OECD (2021), "Quality and value of micro-credentials in higher education: Preparing for the future", OECD Education Policy Perspectives, No. 40, OECD Publishing, Paris, <https://doi.org/10.1787/9c4ad26d-en>.
- > Kato, S., V. Galán-Muros and T. Weko (2020), "The emergence of alternative credentials", OECD Education Working Papers, No. 216, OECD Publishing, Paris, <https://doi.org/10.1787/b741f39e-en>.
- > OECD (2025), Advancing Adult Skills through Individual Learning Accounts: A Step-by-Step Guide for Policymakers, Getting Skills Right, OECD Publishing, Paris, <https://doi.org/10.1787/08e1bdaf-en>.

# Thank you!



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Fraunhofer Institute for Systems and  
Innovation Research ISI

**Dr. Steffen Preissler**

**Leipzig, September 4th, 2025**

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The German Innovation System: Specific  
Building Blocks of University-Industry Relations



# Content

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**Innovation System**

**German Innovation System**

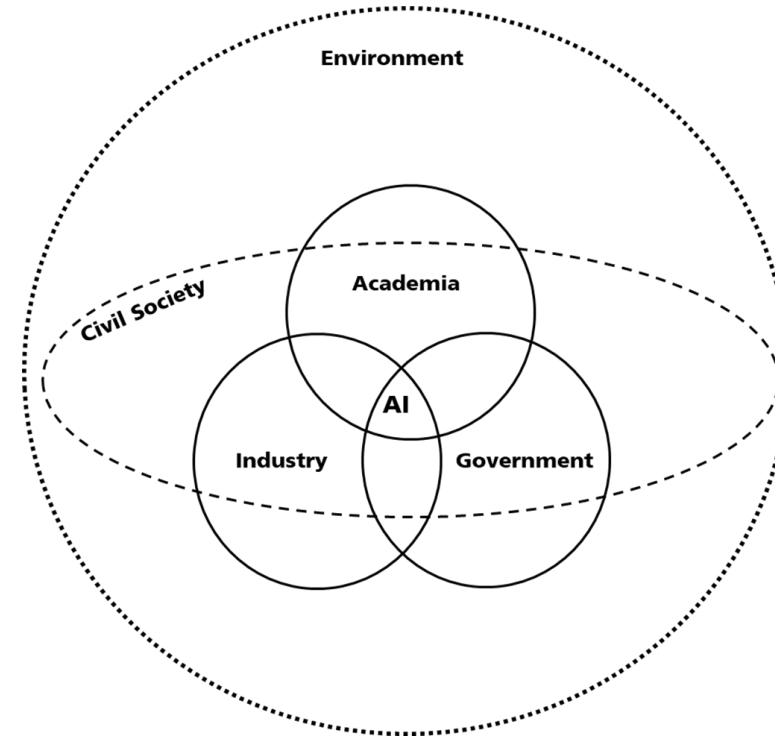
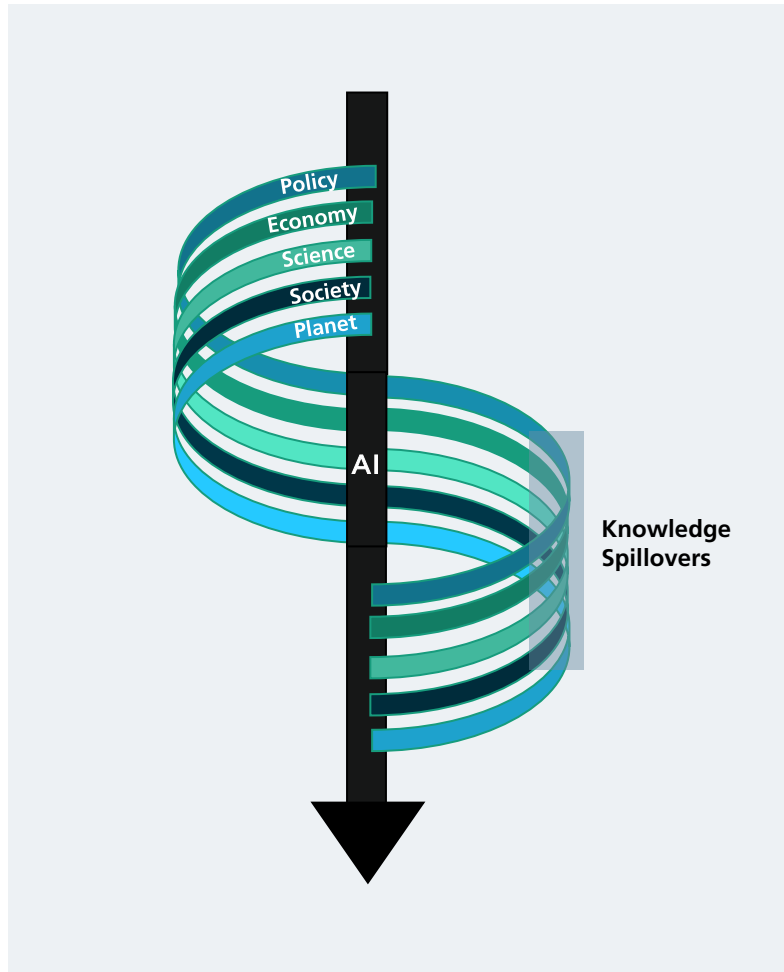
**University-industry partnerships and collaboration – case of Fraunhofer**

**Building blocks of university-industry relations**

**Take aways**

# Innovation System

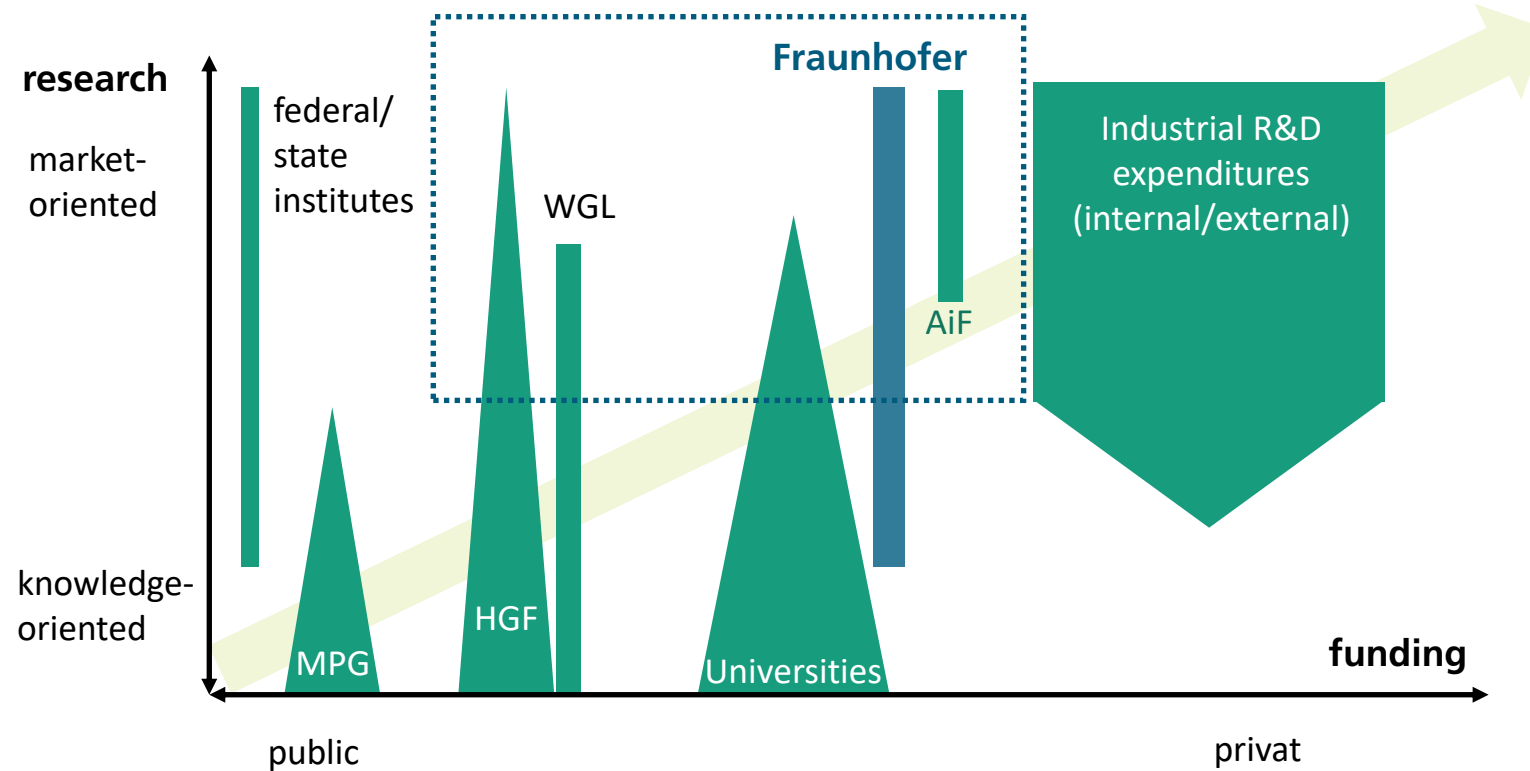
## Quintuple Innovation Helix plus AI (QIH-AI)



Source: E. G. Carayannis, T. Posselt and S. Preissler, "Toward Industry 6.0 and Society 6.0: The Quintuple Innovation Helix With Embedded AI Modalities as Enabler of Public Interest Technologies Strategic Technology Management and Road-Mapping," in IEEE Transactions on Engineering Management, vol. 71, pp. 11238-11252, 2024, doi: 10.1109/TEM.2024.3406427.

# The German Innovation System

specialized organizations

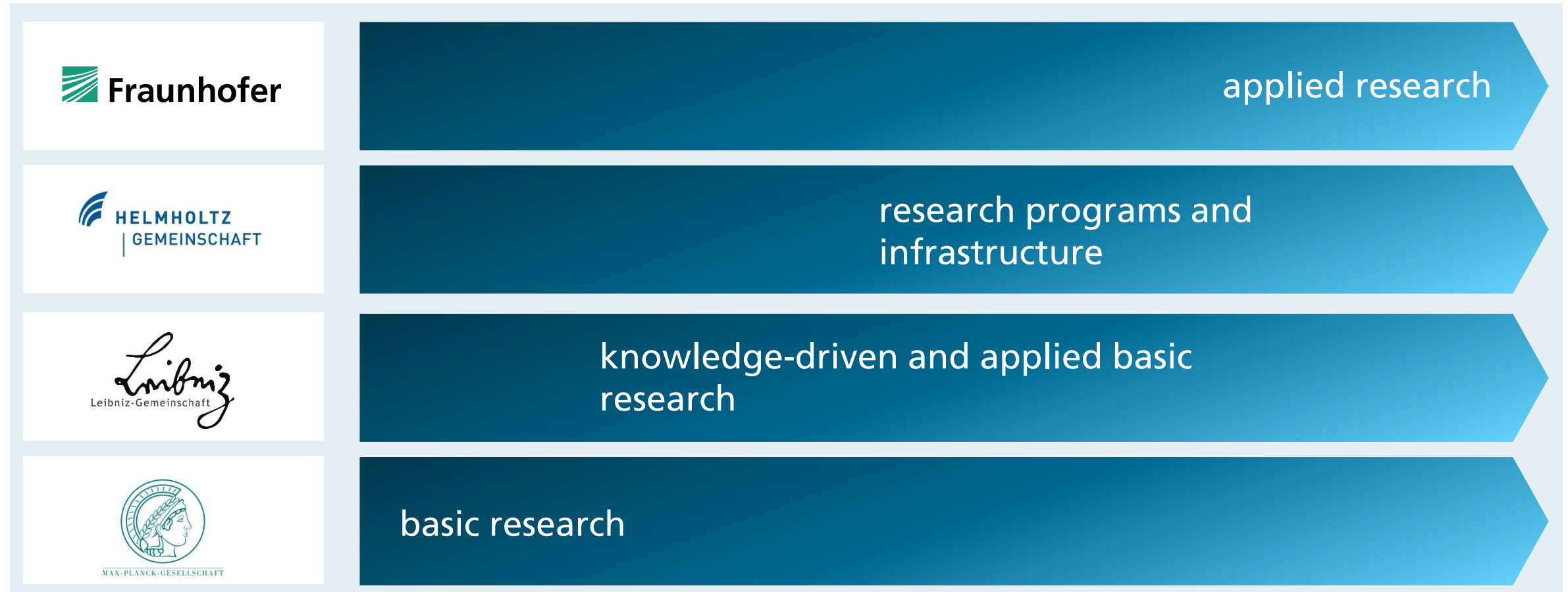


- HGF** Hermann von Helmholtz-Gemeinschaft
- WGL** Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz
- AiF** Arbeitsgemeinschaft industrieller Forschungsvereinigungen
- MPG** Max-Planck-Gesellschaft

Quelle: Stifterverband für die Deutsche Wissenschaft

# German Innovation System

The major non-academic research organizations



# University-industry partnerships and collaboration

## case of Fraunhofer



> 30,000 employees



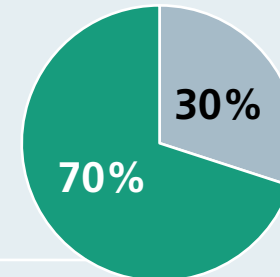
76 institutes and research units

€ 3.0 billion business volume  
€ 2.6 billion contract research



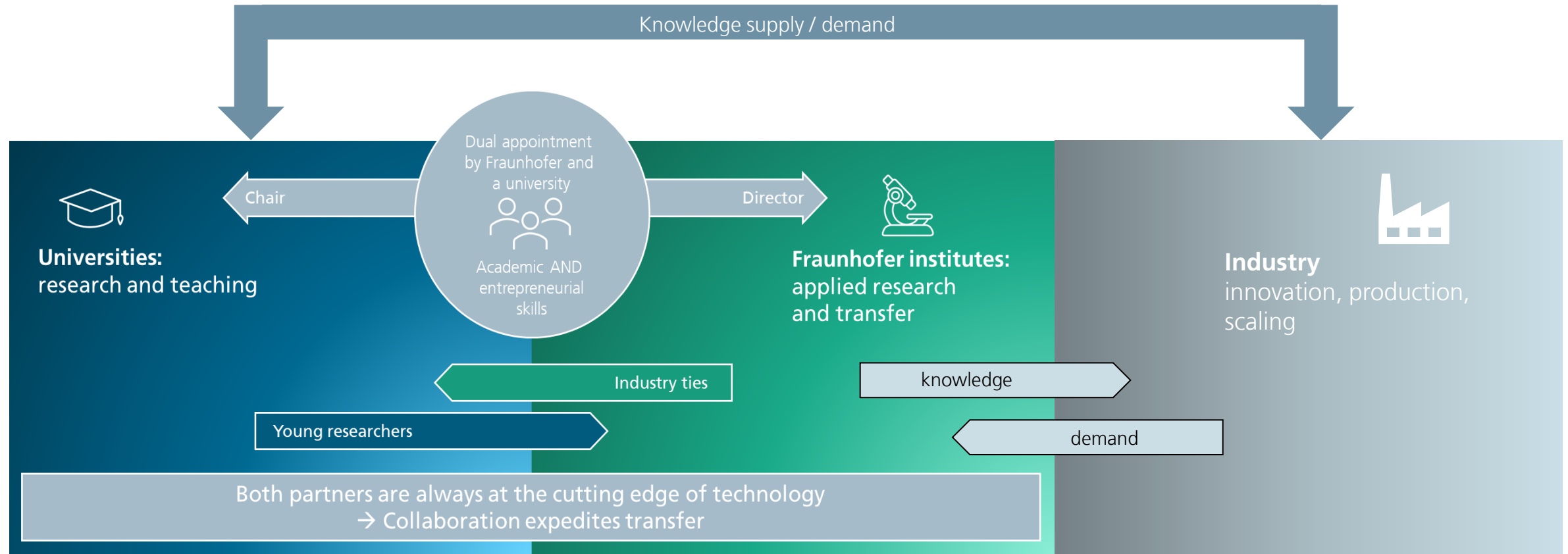
base funding from Germany's federal and state governments

70% industrial contracts and publicly-funded research projects



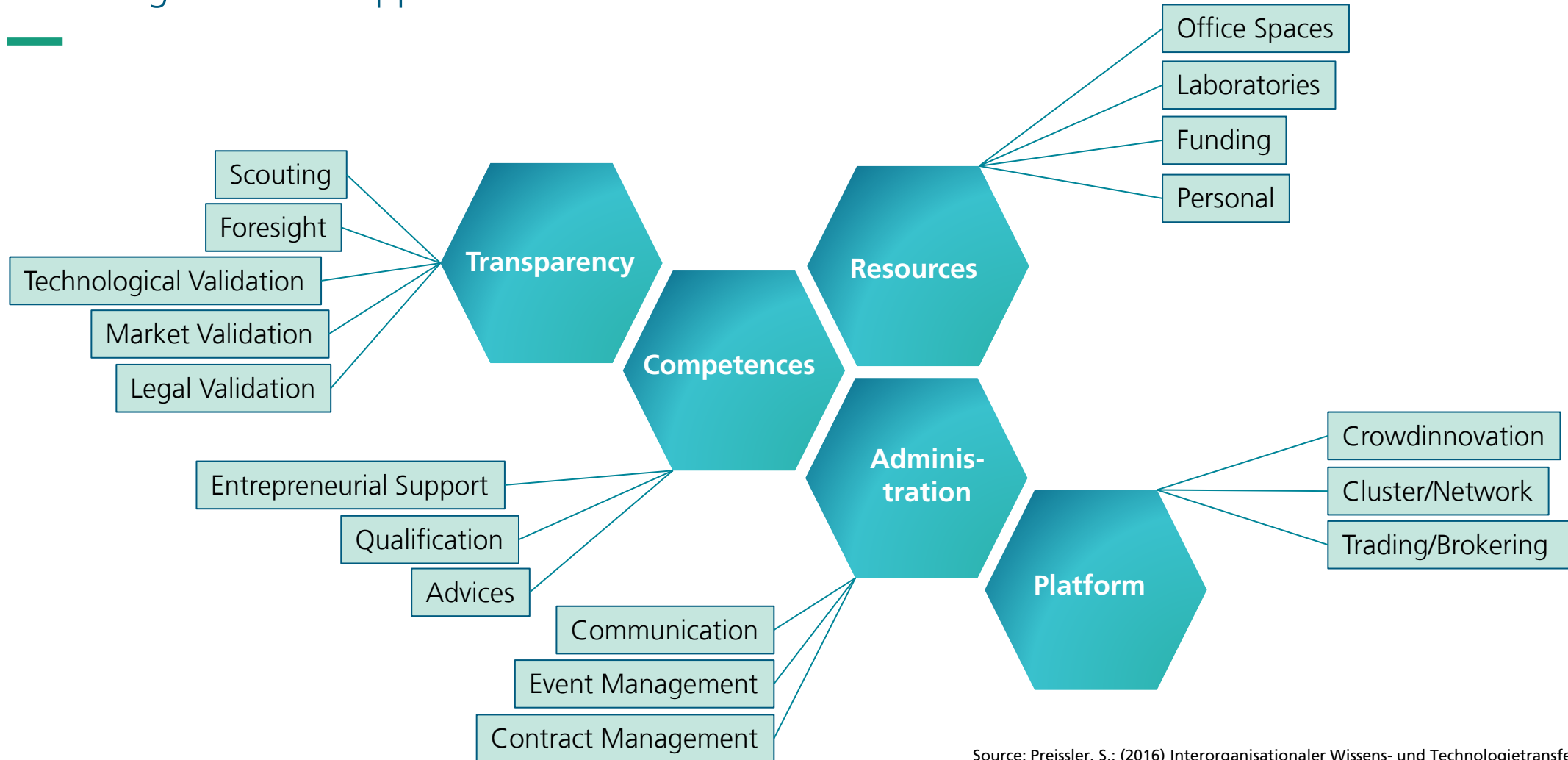
# University-industry partnerships and collaboration

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# Building blocks of university-industry relations

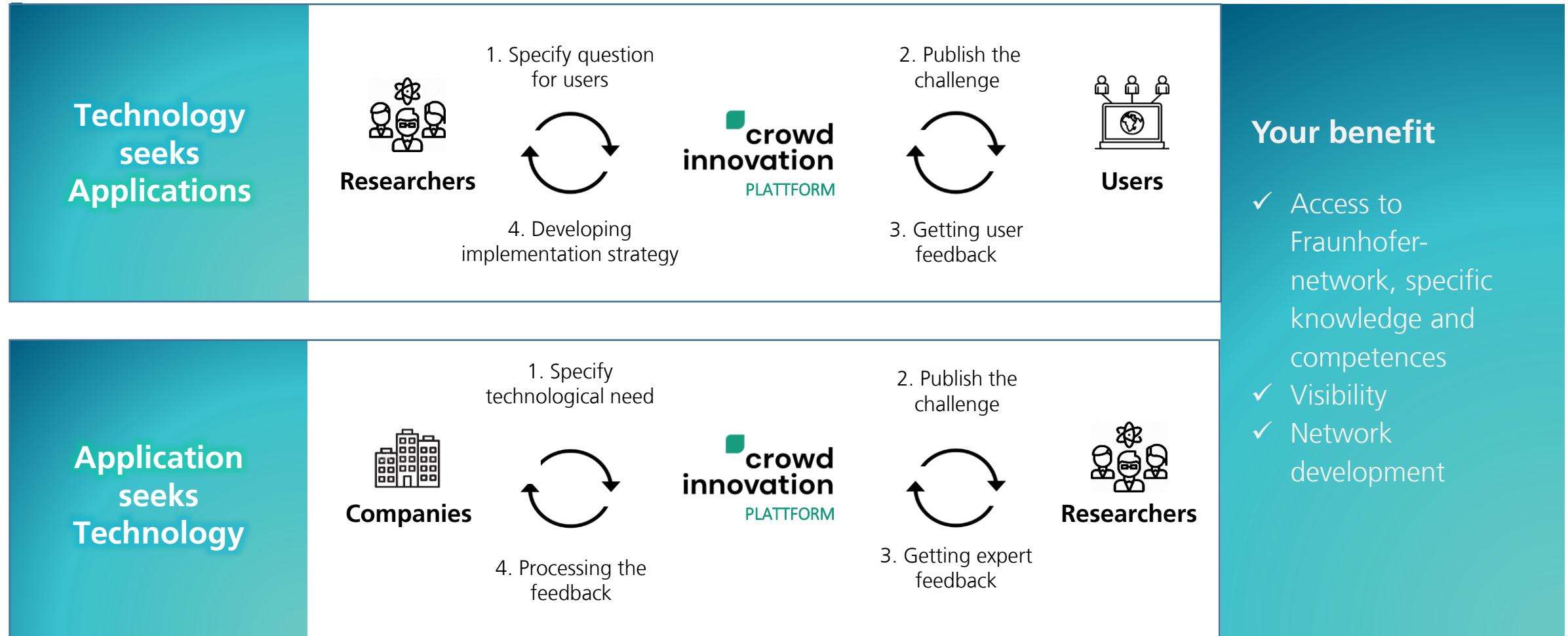
knowledge transfer support services



Source: Preissler, S.: (2016) Interorganisationaler Wissens- und Technologietransfer, Verlag Springer Fachmedien Wiesbaden, <https://doi.org/10.1007/978-3-658-15454-7>

# Building Blocks of University-Industry Relations

Crowdinnovation – stakeholder involvement



# Take aways

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## University-Industry Relations

- Distinguish between universities (education, research, transfer) with transfer support units and market-driven research organizations (Fraunhofer)
- Don't forget the ecosystem (players, relations, interests, resources)
- Transfer is people's business (bureaucracy vs. trust)
- Specialize, digitalize, network

# Thank you for your attention

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# DNA of Tomorrow's Organizations: An Approach to Digital Leadership

Exploring the digital leadership blueprint  
required to shape the organizations of  
tomorrow



# Life's Adventure

The intersection of technology, leadership, and the future of work is a visually striking and dynamic landscape. As advancements in automation, artificial intelligence, and digital transformation continue to reshape the workplace, effective leadership that embraces these changes will be crucial for organizations to thrive in the years ahead.



# From IT Service Provider to Digital Leadership

● **1993**

Established EWERK as an IT service provider, focused on system integration and technical support.

● **1995**

Expanded services to include web development and internet-based solutions as the digital revolution accelerated.

● **2004**

Shifted focus to emerging enterprise software and cloud computing, helping clients leverage new technologies.

● **2010**

Identified the demand for digital guidance and initiated digital transformation planning.

● **2015**

Crafting customized digital solutions for vital infrastructure clients

● **2020**

EWERK's expansion was facilitated by a financial institution's investment

● **A GROWING TEAM**

The EWERK Group encompasses approximately 8 firms and over 400 staff

# Development of a digital corporate culture as a Core challenge for employees and management

*From ...*



**Culture of avoiding risks & uncertainties,**  
fear of making mistakes.



**Channel & technology-oriented**  
development of products & services



**Rigid sequence of processes & slow**  
decision making



Focus on **business operations** & maintaining  
the status quo.



**Silo thinking** with little communication &  
sharing between groups

# Development of a digital corporate culture as a Core challenge for employees and management

*From ...*

-  **Culture of avoiding risks & uncertainties**, fear of making mistakes.
-  **Channel & technology-oriented** development of products & services
-  **Rigid sequence of processes** & slow decision making
-  Focus on **business operations** & maintaining the status quo.
-  **Silo thinking** with little communication & sharing between groups

*To ...*

-  **Positive handling of uncertainty** & "fail fast"/"test and learn" thinking.
-  **Innovations** based on **customer orientation** & cross-industry best practices
-  **Paradigm shift** towards an **agile way of working** & fast implementation
-  Atmosphere of **continuous innovation** & improvement
-  **Collaboration** instead of command & control centers

# The Skills Gap: The Rise of the Creative Generalist

We need to prepare the workforce for the new era and reskill them to embrace adaptability and a digital mindset, which are vital for navigating the evolving landscape

Adaptability  
and a digital  
mindset are  
vital for  
navigating the  
evolving  
landscape.





# The Digital Mindset: A (new) Way of Thinking

- CONSISTENT CUSTOMER/USER ORIENTATION
- ACTIVE COLLABORATION/NETWORKING IN DIVERSE TEAMS.
- SYSTEMATIC PROBLEM EXPLORATION
- PRACTICAL LEARNING THROUGH EXPERIMENTATION
- COURAGEOUS HANDLING OF UNCERTAINTY AND CHANGE
- RADICAL IDEA FOR REDESIGNVOPEN TO THE USE OF INNOVATIVE TECHNOLOGY POTENTIALS
- OPEN TO THE USE OF INNOVATIVE TECHNOLOGY POTENTIALS



# The Future of Organizations: A Diverse Workforce



1 CREATIVE GENERALISTS

2 AUGMENTED HUMANS

3 AI AGENTS

# AI: Empowering the Next Generation of Skilled Employees

## **AI-POWERED AUGMENTATION**

AI can enhance and amplify the capabilities of skilled employees, enabling them to achieve greater productivity, efficiency, and innovation.



**BY HARNESSING THE POWER OF AI, ORGANIZATIONS CAN EMPOWER THEIR SKILLED EMPLOYEES TO REACH NEW HEIGHTS OF PRODUCTIVITY AND SUCCESS, TRANSFORMING THEM INTO 'SUPER EMPLOYEES' WHO CAN DRIVE INNOVATION AND GROWTH.**

# AI as an Elastic Workforce for Organizations



## AI AS AN ELASTIC WORKFORCE

AI agents can be deployed and scaled as needed, providing organizations with a flexible and adaptable workforce



## AUTOMATED DECISION-MAKING

AI agents can make decisions and take actions autonomously, improving efficiency and response times



## AUGMENTED HUMAN CAPABILITIES

AI agents can assist and enhance the capabilities of human workers, enabling them to focus on higher-level tasks



## CONTINUOUS OPTIMIZATION

AI agents can continuously analyze data and optimize processes, leading to ongoing improvements in organizational performance

**BY INTEGRATING AI AS AN ELASTIC WORKFORCE, ORGANIZATIONS CAN LEVERAGE THE BENEFITS OF AUTOMATION, DECISION-MAKING, AND AUGMENTED HUMAN CAPABILITIES TO DRIVE INNOVATION AND IMPROVE OVERALL EFFICIENCY.**

# The Adaptive Leader

**1 AGILITY AND RESILIENCE**

**2 EMBRACING UNCERTAINTY**

**3 COLLABORATIVE  
DECISION MAKING**

**4 CONTINUOUS LEARNING**

# Characteristics of Digital Leaders

- **DIGITAL MINDSET**

Cultivate a forward-thinking, tech-savvy culture across the organization.

- **INNOVATIVE APPROACH**

Innovative digital leaders foster a climate of calculated risk-taking and relentlessly explore emerging technologies to propel transformative change.

- **DATA-DRIVEN DECISION MAKING**

Data-driven digital leaders harness analytics to inform decisions. Leveraging AI and tech tools, they glean insights that power efficient, effective choices.

- **COLLABORATIVE LEADERSHIP**

Visionary leaders cultivate a collaborative workspace, enabling their teams to share insights and harness technology to realize shared objectives. They nurture a culture of ongoing learning and skill enhancement.

- **ADAPTABILITY AND AGILITY**

Nimble and adaptable, digital vanguards thrive in uncertainty, readily adjusting their approach to shifting market dynamics and technological breakthroughs.

- **LIFE LONG LEARNING**

Continuously expand knowledge to drive innovation and adaptability



# The DNA of Future Organizations

## DIGITAL MINDSET

Organizations that embrace a digital mindset are equipped to navigate the rapidly evolving technological landscape. They leverage data-driven insights, adopt agile methodologies, and foster a culture of continuous learning and innovation.

## QUANTUM & DIGITAL LEADERSHIP

Quantum leadership principles empower organizations to thrive in complexity and uncertainty. These principles include embracing multiple perspectives, fostering collaborative decision-making, and cultivating adaptability and resilience.

## AI COLLABORATION

By leveraging AI-powered tools and platforms, organizations can augment human expertise, automate mundane tasks, and unlock new levels of efficiency and productivity. Successful organizations will harness the power of AI to enhance collaboration, enable real-time insights, and drive continuous improvement.

## THE DNA METAPHOR

Just as DNA serves as the fundamental building blocks of life, the elements of digital mindset, quantum leadership, and AI collaboration form the core of the organizational DNA that will shape the future. These interwoven strands of innovation, adaptability, and collaboration will be the foundation upon which the most successful organizations of the future will be built.

# The Role of Education in the AI Era



## FOSTERING DIGITAL MASTERY

Education should help students bridge the experience gap by teaching practical digital skills like AI and data analytics, preparing them for real-world challenges, ensuring that graduates can confidently navigate and shape the digital landscape.



## CULTIVATING CRITICAL THINKING

Curricula should emphasize the development of critical thinking skills, enabling students to analyze problems, evaluate information, and make informed decisions in the face of technological advancements.



## PIONEERING SOLUTIONS AND CREATIVITY

In the AI-driven age, educators should promote interdisciplinary, project-based learning that cultivates students' capacity to identify, analyze, and resolve intricate challenges through creative and critical thinking.

**EDUCATIONAL INSTITUTIONS MUST EMPOWER STUDENTS TO NAVIGATE THE EVOLVING WORK AND INNOVATION LANDSCAPE BY EQUIPPING THEM WITH KNOWLEDGE AND SKILLS THROUGH CURRICULA THAT INTEGRATE DIGITAL SKILLS, CRITICAL THINKING, PROBLEM-SOLVING, AND INTERDISCIPLINARY LEARNING.**

# Key Takeaways: Building the Future

Empowering Leaders, Embracing AI, and Cultivating Innovation



The future of work is being shaped by AI and automation, requiring adaptability and a digital mindset.



The rise of the creative generalist is essential for navigating the complexities of the digital age.



Adaptive leaders who embrace change, empower their teams, and leverage data-driven decision-making will thrive.



Cultivating a culture of innovation and lifelong learning is crucial for organizational success.



Embracing AI collaboration and human-AI partnerships will unlock new possibilities and drive future growth.

“The future belongs to those who believe in the beauty of their dreams.”

ELEANOR ROOSEVELT