Supporting University-Industry-Government Cooperation in

Romania

TRAINING WORKSHOPS
17-20 November 2020

European Commission

Joint Research Centre

MODULE 3: FOCUS ON KNOWLEDGE TRANSFER PROFESSIONALS

European Commission

Joint Research Centre

WORKSHOP CALENDAR

Day 1
17 Nov. 2020

KICK-OFF SESSION

09.00 - 11.00

MODULE 1
Focus on government (national and regional authorities)

11.30 - 14.00

Day 2
18 Nov. 2020

MODULE 2
Focus on universities and public research institutes

09.00 - 14.00

Day 3
19 Nov. 2020

MODULE 3
Focus on knowledge transfer professionals

09.00 - 14.00

Day 4
20 Nov. 2020

MODULE 4
Focus on firms and clusters

09.00 - 12.00

WRAP–UP SESSION

12.30 - 14.00

EXPERTS

Dr. Victoria Galán-Muros

Dr. Todd Davey

Dr. Marina Ranga

MODULE 3: FOCUS ON KNOWLEDGE TRANSFER PROFESSIONALS

AIM:

- Develop a deeper understanding of UI cooperation, benefits, key success factors
- Understand technology transfer mechanisms, barriers, drivers and facilitators
- Explore tech transfer processes and new ventures development
- Learn how to build strategic partnerships

AGENDA

09.00 – 09.05	Welcome and introduction
09.05 – 09.15	Knowledge and technology transfer models: characteristics, advantages and disadvantages – *Todd Davey*
09.15 – 09.45	The profile of a boundary spanner – *Todd Davey*
09.45 – 10.30	Actors in the knowledge transfer process: drivers, barriers, facilitators and managing expectations – *Victoria Galan-Muros*
10.30 – 10.45	BREAK
10.45 – 11.45	Technology readiness levels and technology transfer basics – *Marina Ranga*
11.45 – 12.00	Targeting different types of organizations and researchers in their knowledge and technology transfer– *Todd Davey*
12.00 – 12.30	Intellectual property: what, when and why protect? – *Victoria Galan-Muros*
12.30 – 12.45	BREAK
12.45 – 13.00	Managing the stairway model to starting and building strategic partnerships – *Todd Davey*
13.00 – 13.45	Good practices in tech transfer and how to position your TTO and yourself as a trusted and efficient facilitator – *Victoria Galan-Muros*
13.45 – 14.00	Conclusions and key success factors

Knowledge and technology transfer models:
Characteristics, advantages and disadvantages

Todd Davey

European Commission

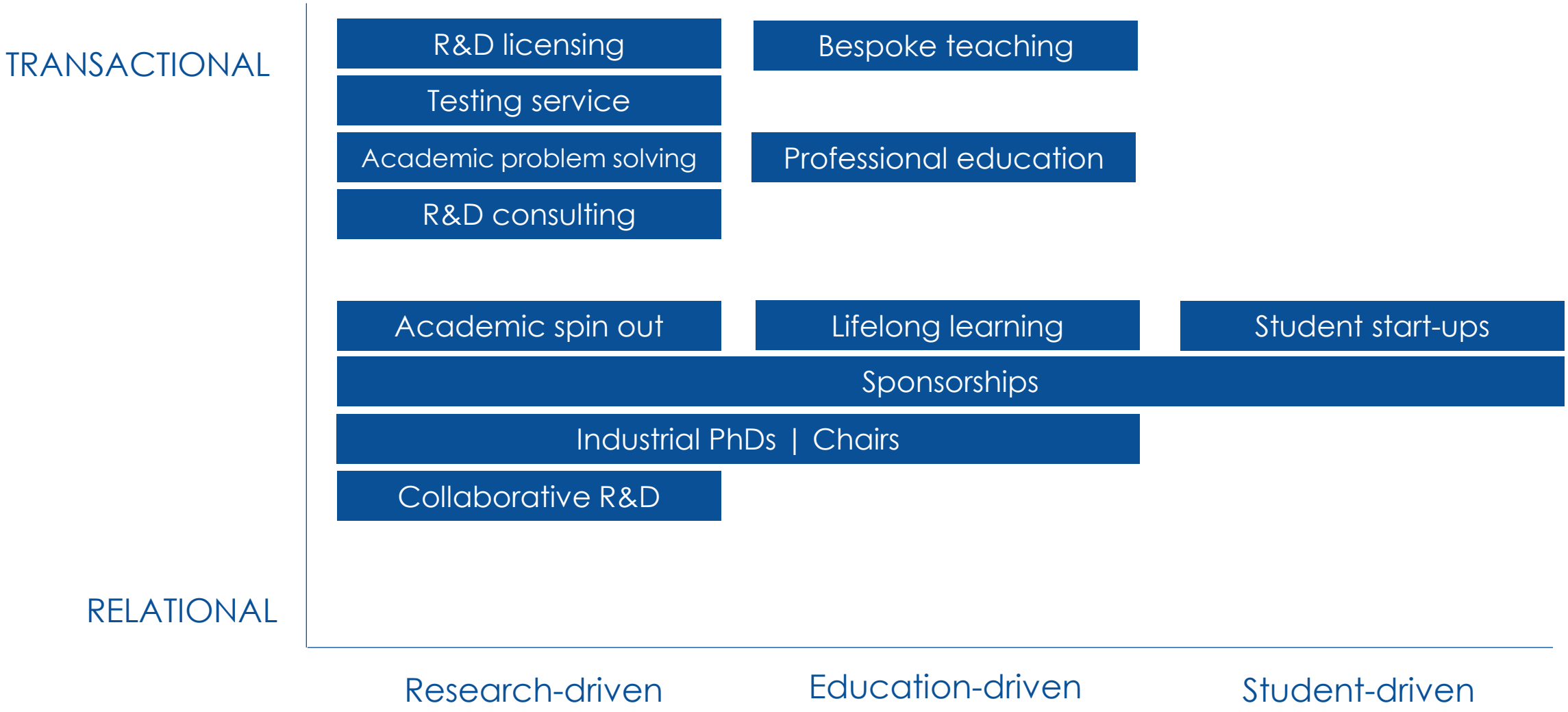
Joint Research Centre

TRADITIONAL KNOWLEDGE AND TECHNOLOGY TRANSFER

> Any activities aimed at transferring knowledge or technology that may help either the company or the academic institute – depending on the direction of transfer – to further pursue its activities.

Source: Arvanitis, S., Kubli, U., Woerter, M., (2008a), University-industry knowledge and technology transfer in Switzerland: What university scientists think about co-operation with private enterprises ,Research Policy, 37(10), 1865–1883.

Traditional knowledge and technology transfer modes



Traditional knowledge and technology transfer modes

	Description	Advantages*	Disadvantages*
R&D licensing	A formal agreement that allows the transfer of technology between two parties	• Upfront and reoccurring fee possible • Uniqueness, point of difference	• Further involvement often required to make it work • Cost: Patents, legal fees, fees
Testing service	Work involves analysis, measurement or testing and a high degree of intellectual input	• Fee for work • Can lead to consulting work • Scientific validity	• Takes the academic away from other research work • Fees, timeframe uncertain
Academic problem solving	Advisory services provided by individual academic researchers to their industry clients	• Fee for work • Can be lucrative • Direct result	• Takes the academic away from other research work • Can be costly
R&D consulting	Directly commercially relevant research to firms and is explicitly commissioned by firms to be applied	• Fee for work • Solves immediate problems	• Takes the academic away from other research work • Lack of investment from academic
Academic spin out	A new company founded to exploit a piece of IP created in an academic institution	• Academic autonomy • Research/tech-driven leads to potentially higher returns	• Time consuming and bureaucratic • Takes the academic away from other research work
Collaborative R&D	Joint research funded by both business supplemented with govt. funds or academic time dedicated	• Funded research • New knowledge and technologies • Builds reputation	• Differences in motivations and desired outcomes • No result emerges

MODERN KNOWLEDGE AND TECHNOLOGY TRANSFER

Exchanging, co-creating

People with knowledge and technology

“Any activities aimed at transferring knowledge or technology that may help either the company or the academic institute – depending on the direction of transfer – to further pursue its activities.”

Networks
Innovation / supply chains

Academics
Students

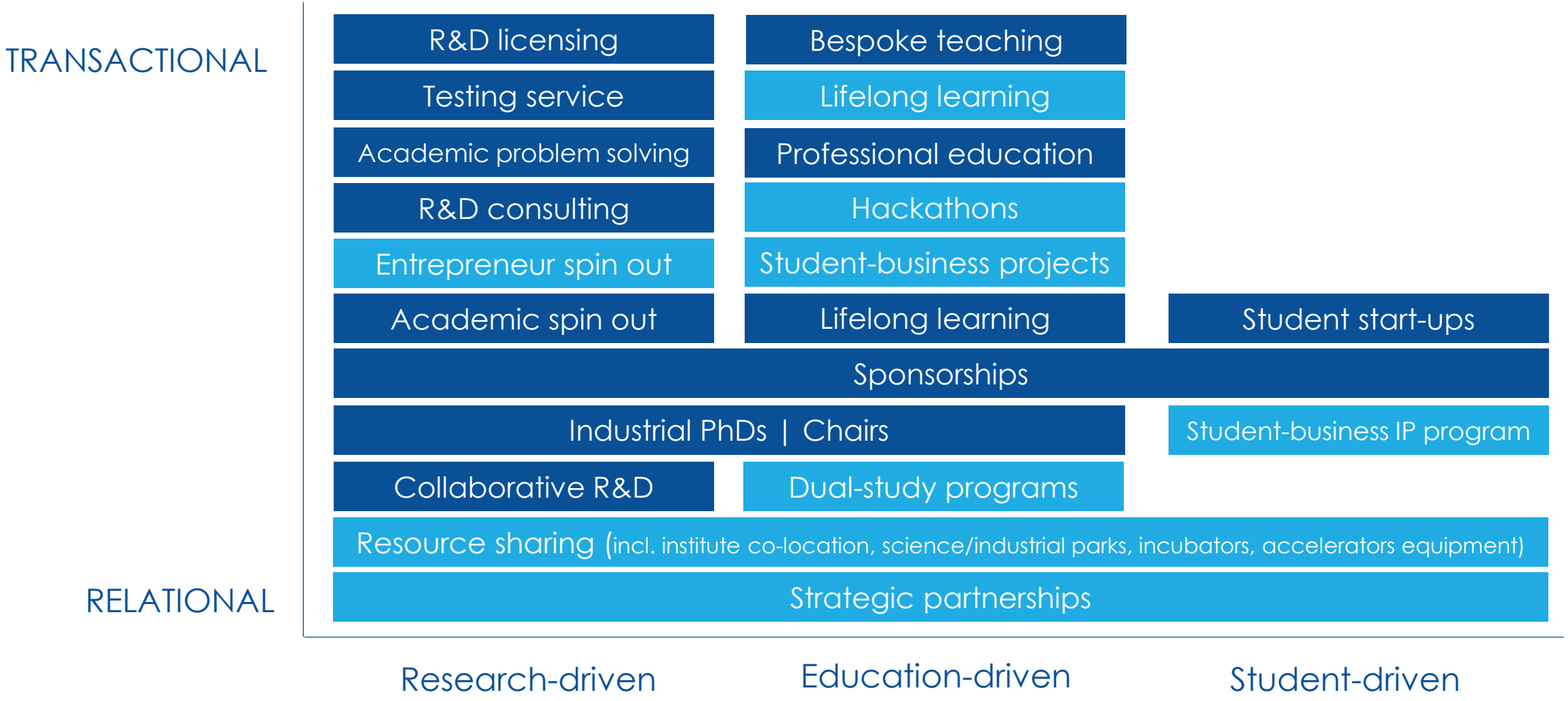
Society
Government

Startups
SMEs
Large

Campus as a platform | Digital platform

Source: Arvanitis, S., Kubli, U., Woerter, M., (2008a), University-industry knowledge and technology transfer in Switzerland: What university scientists think about co-operation with private enterprises ,Research Policy, 37(10), 1865–1883.

Modern knowledge and technology transfer modes



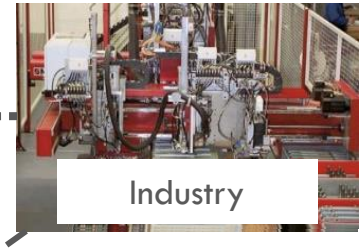
Early-stage (strategic) research partnerships

Münster University of Applied Sciences, Germany

FH MÜNSTER
University of Applied Sciences

Old paradigm of technology transfer

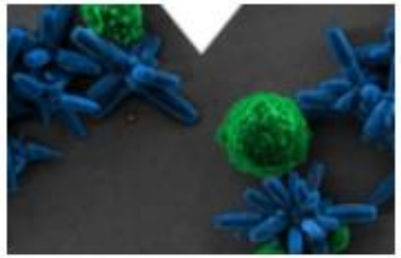
?



New paradigm of knowledge transfer through early-stage partnering

Shared resources

Flinders University, Tonsley Campus Australia



Flinders Microscopy and Microanalysis

Our equipment and facilities are world class and often custom built. Many are one-of-a-kind in Australia—or even the world.

Find out more ›

Flinders Analytical

A dedicated analytical facility that provides analytical services for both students and researchers located within Flinders University.

Find out more ›

Sleep Research Laboratory

Sleep Research Laboratory is equipped to record EEG, EMG, movement, breathing, and body temperature and transmit this data to

Find out more ›

Institute for Nanoscale Science and Technology

Our equipment and facilities are cutting - edge. They are funded by grants from state and federal government, Microscopy Australia.

Find out more ›

Flinders Genomics Facility

The Flinders Genomics Facility is a specialised environment for conducting high-throughput genetic and genomic research.

Find out more ›

Flinders Surgical Lab

The Flinders Surgical Lab at Tonsley is a state-of-the-art facility where surgeons learn to use the latest products and equipment.

Find out more ›

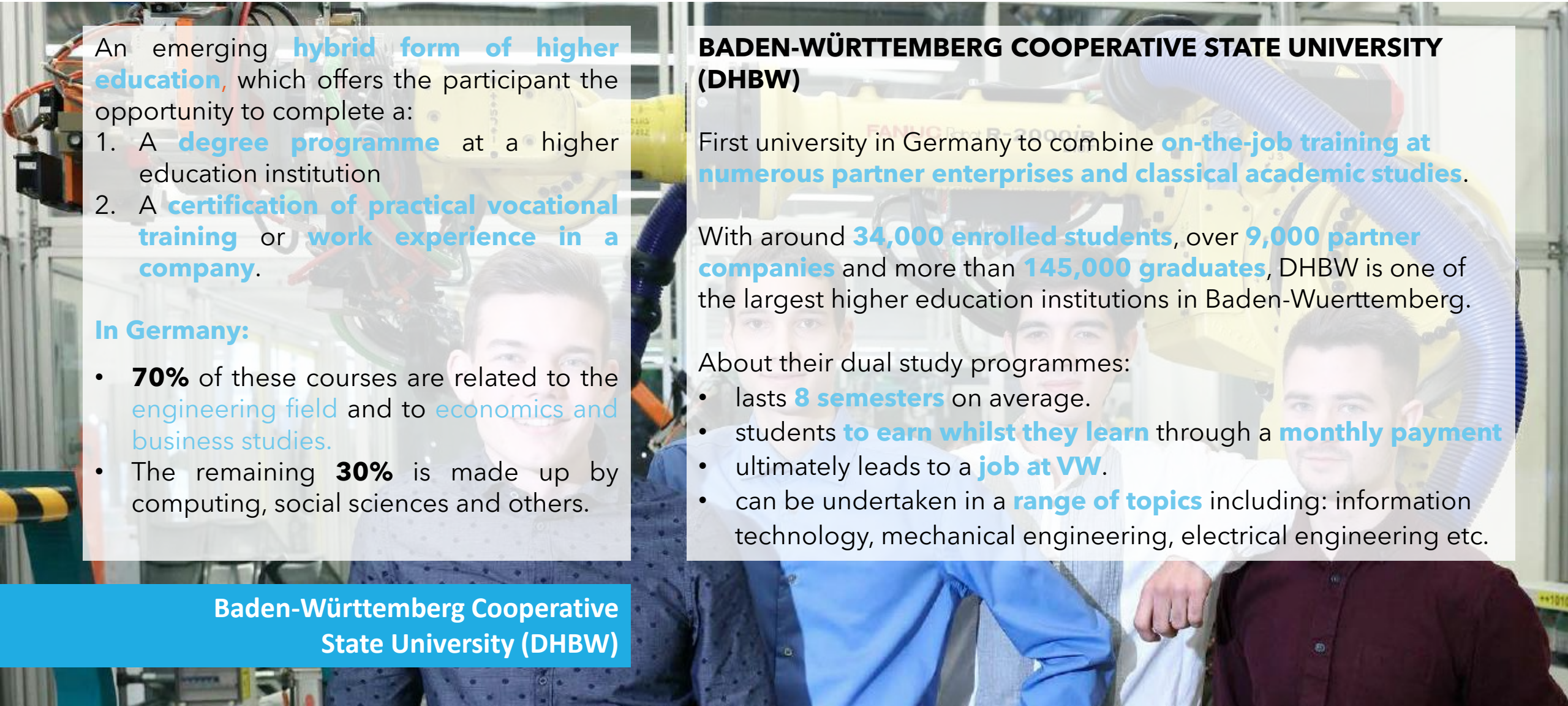
GLOBAL CENTRE FOR MODERN AGEING

FLINDERS UNIVERSITY

- Shared laboratory
- Shared building
- Shared investment and costs
- Incubator with startups
- Supply chain partners invited

Dual study programmes

Baden-württemberg Cooperative State University, Germany



An emerging **hybrid form of higher education**, which offers the participant the opportunity to complete a:

1. A **degree programme** at a higher education institution
2. A **certification of practical vocational training** or **work experience in a company**.

In Germany:

- **70%** of these courses are related to the engineering field and to economics and business studies.
- The remaining **30%** is made up by computing, social sciences and others.

Baden-Württemberg Cooperative State University (DHBW)

BADEN-WÜRTTEMBERG COOPERATIVE STATE UNIVERSITY (DHBW)

First university in Germany to combine **on-the-job training at numerous partner enterprises and classical academic studies**.

With around **34,000 enrolled students**, over **9,000 partner companies** and more than **145,000 graduates**, DHBW is one of the largest higher education institutions in Baden-Wuerttemberg.

About their dual study programmes:

- lasts **8 semesters** on average.
- students **to earn whilst they learn** through a **monthly payment**
- ultimately leads to a **job at VW**.
- can be undertaken in a **range of topics** including: information technology, mechanical engineering, electrical engineering etc.

Student-Business IP Program

Tampere, Finland

DEMOLA

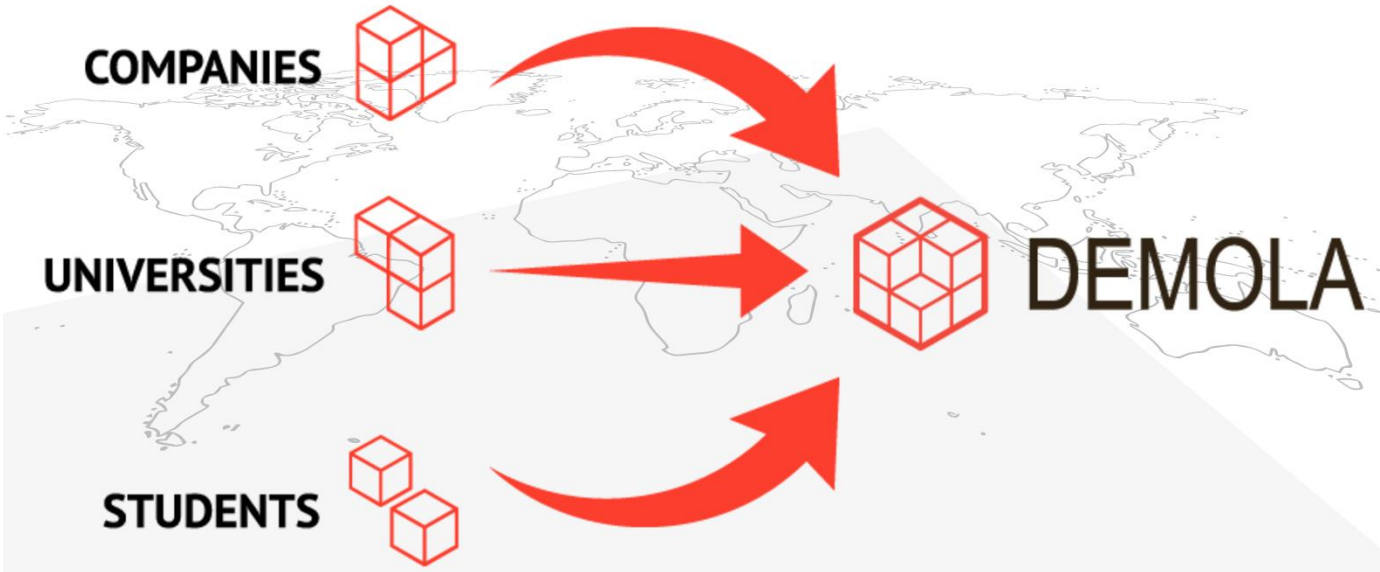
BUSINESS - **Bring business challenges, technologies, ideas** to students. Businesses buy the idea back at the end of the project based on three models

STUDENTS - (cross-disciplinary) Develop **solutions, new technologies and new business concepts** over 4 months, including 3 pitches and creation of a prototype. Get to own the **idea if the business doesn't want it, gets paid if they do.**

UNI - manage the **programme** and IP, provide **mentorship** and assign marks and credit points to students

RESULT

- 96% of completed Demola projects are licensed by the project partners.
- Over 10% of students are headhunted by the companies they worked with; and all students get a taste of entrepreneurship.



Entrepreneur-academic spin-out

Flinders University, Australia

- University recruited an entrepreneur to develop the academic spin-out within the university incubator.
- University provides the patent license and incubation and takes a share in the enterprise

- **EXAMPLE**: RE-TIMER
  - Partnered with an industry partner: SMR Automotive, a medium-sized Australian contract manufacturer who wanted to grow and diversify.
  - Competencies in lighting and injection moulding
  - The incubator supplied the entrepreneur and technology
  - International (expert) focus

Student-business projects

Münster University of Applied Sciences, Germany

Student certificate

Press release

Poster for centre

Deliverables for everyone

€7,500 each project used in research centre for:

- Travel to conferences
- Employing student workers
- Subject books
- Paying for equipment (mobile screens, board table, presenters)
- Supporting guest positions
- Material for teaching
- Student excursions
- Tea, coffee and other “essentials”

Potential material for publication

Fee of €7,500

Infrahack Hackathons

Global

"Hackathons are a testing ground for new ideas. They attract a diverse pool of participants, bringing multiple perspectives. The time-sensitive nature of a hackathon creates a uniquely productive atmosphere that encourages participants to distil their ideas into actionable solutions. After all, necessity is the mother of invention."

Format

- Short design sprints that aim to solve specific challenges or problems
- The teams consist of data scientists, designers, developers, and entrepreneurs, and the solution can take the form of software, an app, a website, and more

Themes

- Digital Twins: Can digital replicas of infrastructure be used for better planning and maintenance?
- Energy Utilisation: How can we accelerate the adoption of clean energy and utilise energy more efficiently?
- Defect Detection: How can we use artificial intelligence to predict and prevent faults from occurring?
- Connected Infrastructure: What can we achieve if our assets are allowed to talk to each other?

Challenge Projects

Institute Mines Telecom Business School, France

WHAT IS AN URBAN CHALLENGE?

'Students' incl

- Bachelor
- Master
- Phd
- Academics
- Industry
- Societal actors
- …

… act as consultants to solve city/regional issues

(delivered in a programme run by universities)

Elements:

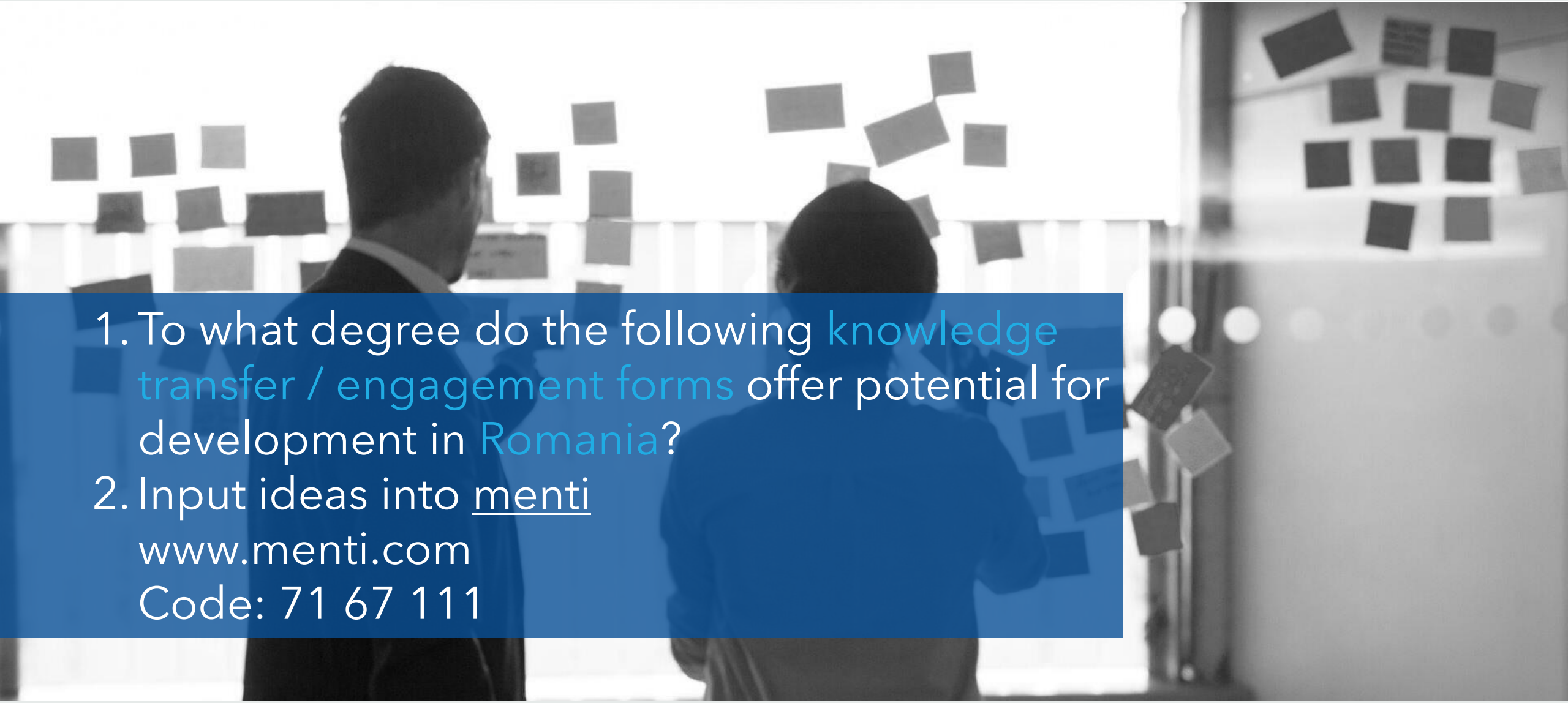
- Seminars | Master classes
- Workshops
- Immersion (site visit)
- Mentors
- Online system support
- Tools

Timeframes:

- 2 days
- Semester long
- Summer school
- Curricula bound or extra curricula

EXAMPLE: URBAN CHALLENGE

UIC SUPPORTING MECHANISMS | DISCUSSION



1. To what degree do the following knowledge transfer / engagement forms offer potential for development in Romania?
2. Input ideas into menti
   www.menti.com
   Code: 71 67 111

A *VISION* for Knowledge Transfer 3.0

Based upon international best practice and evidence from that State of University-Business Cooperation in Europe study, the knowledge transfer function (3.0) of the university would:

- Like a **corporate relations** office, an **innovation centre**, a **TTO employment agency** or entrepreneurship **incubator** (or all 4)
- Take a long term, **ecosystem-building** perspective incl. local SME, International companies, local government etc.
- Build **relationships** rather than making transactions (these result from relationships)
- Focus on **early-stage** research partnerships
- Not just facilitating research collaboration but also **education** and **other engagement** measures e.g. Grand Challenge
- Support **existing collaborators** with **project management** and **bureaucratic** support
- Drive **entrepreneurship** initiatives such as education, incubators, hackathons, events, networks and seed capital

HOW CAN WE DRIVE THIS?

- Be directed by a Vice Rector or board member
- Externalising the KTO/TTO to increase flexibility (owned by uni.)
- Employ true 'boundary spanners' who have experience in industry and academia
- Some aspect of location with a combined physical / digital element
- Stable and committed long term funds
- Promotion and professional education for the support of UIGC

The profile of a **Boundary Spanner**

Todd Davey

European Commission

Joint Research Centre

How did an academic boundary spanner create more than 40 new businesses and have model replicated in 15 countries?

How did a true 'academic entrepreneur superhero' developed eleven biomedical companies?

Spanning Boundary Agent

Defining the spanning boundary agents:

All of the following are initiating, coordinating and supporting cooperation between university and industry.

1. **Protagonists**

   Working in university / industry. May or may not be involved in the cooperation they coordinate:

   a) *Academic SBA*

   b) *Business SBA*

2. **Intermediary SBA:**

   Working between university and business

   a) *Internal intermediary* – employed by of one of the cooperating organisations

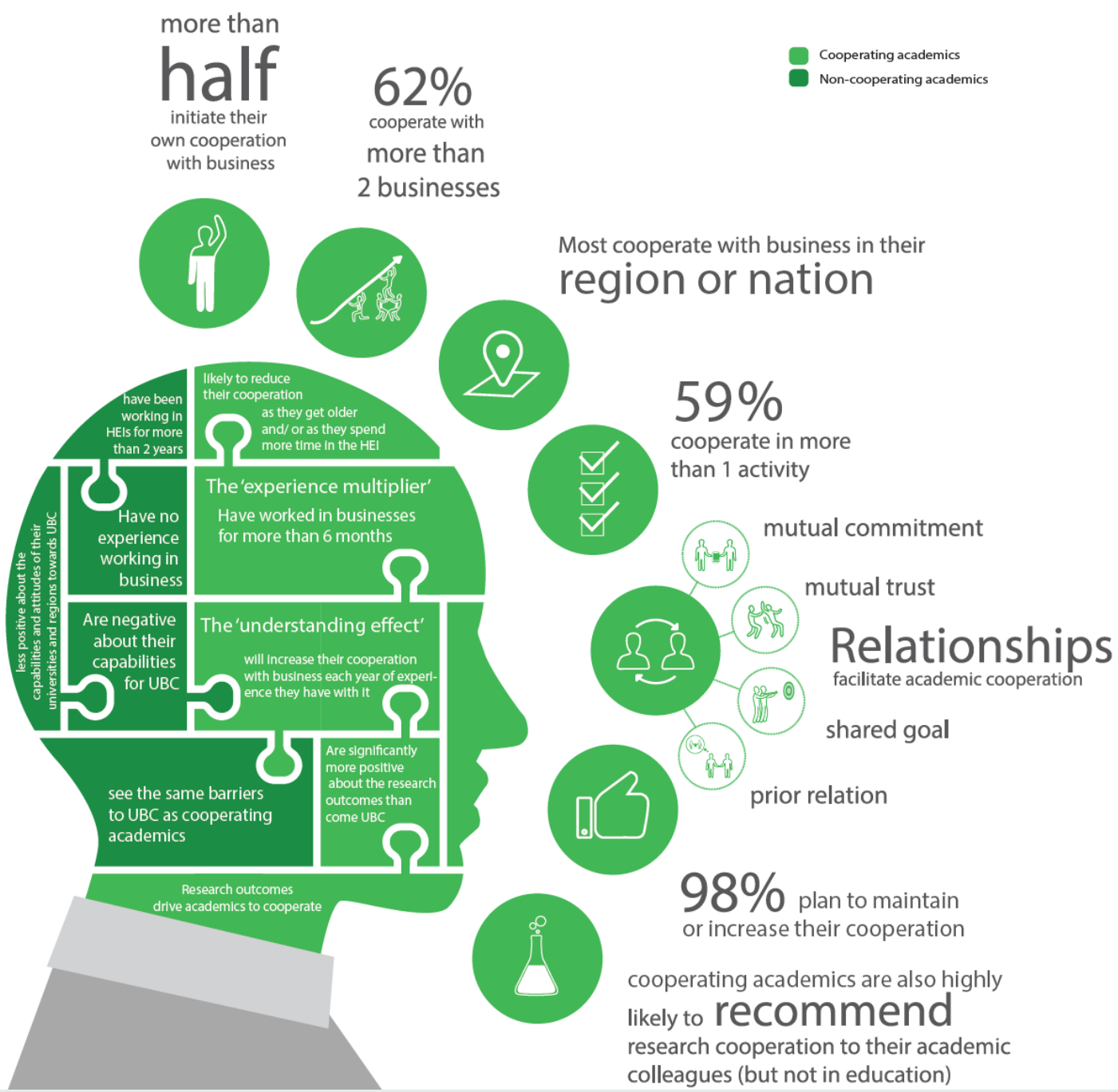
   b) *External intermediary* – are **not** employed by one of the cooperating organisations

Source: Spanning Boundaries
www.spanning-boundaries.eu/

SPANNING BOUNDARIES

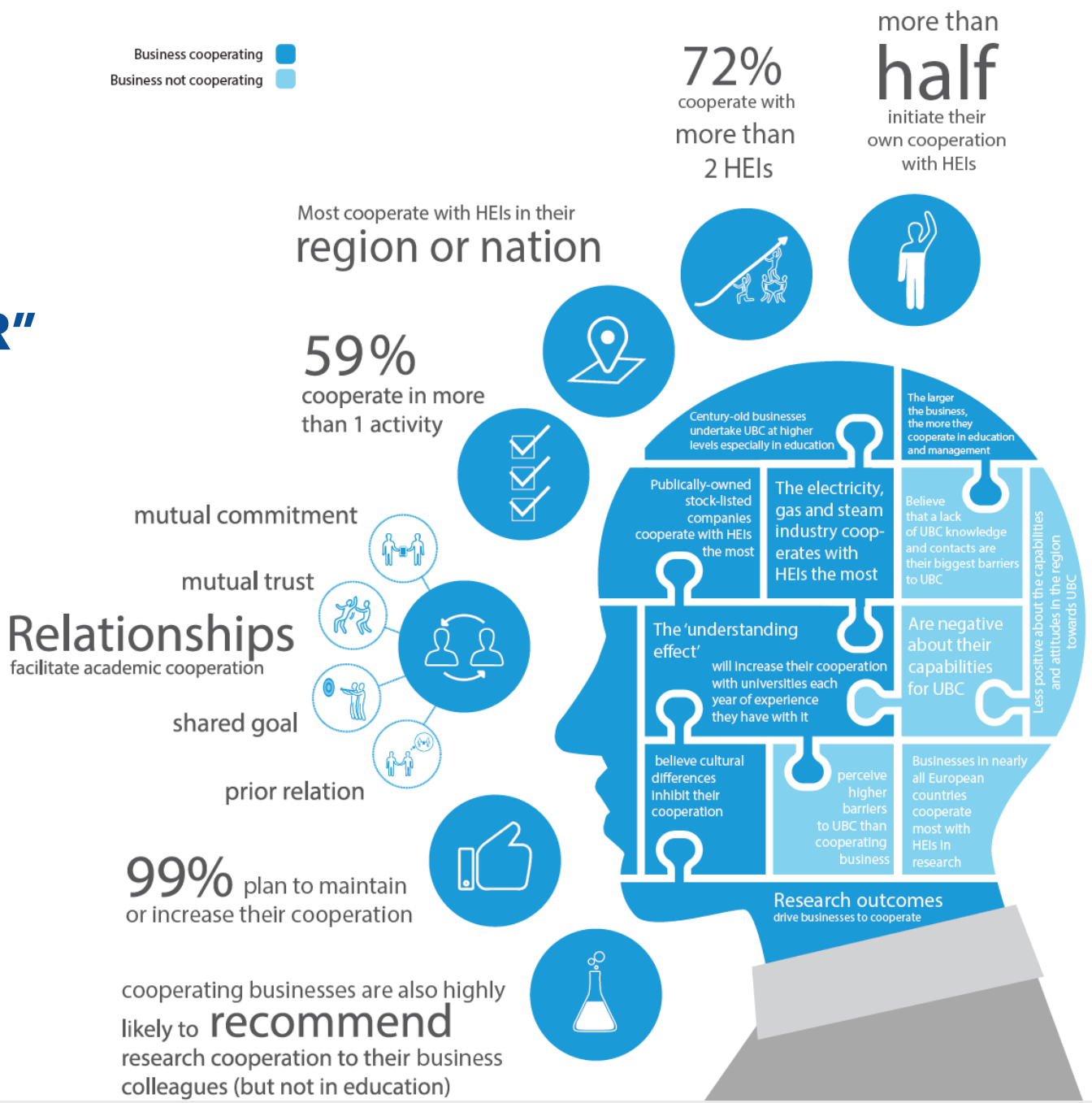
Co-funded by the Erasmus+ Programme of the European Union

PROFILE OF THE "ACADEMIC COLLABORATOR"



Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

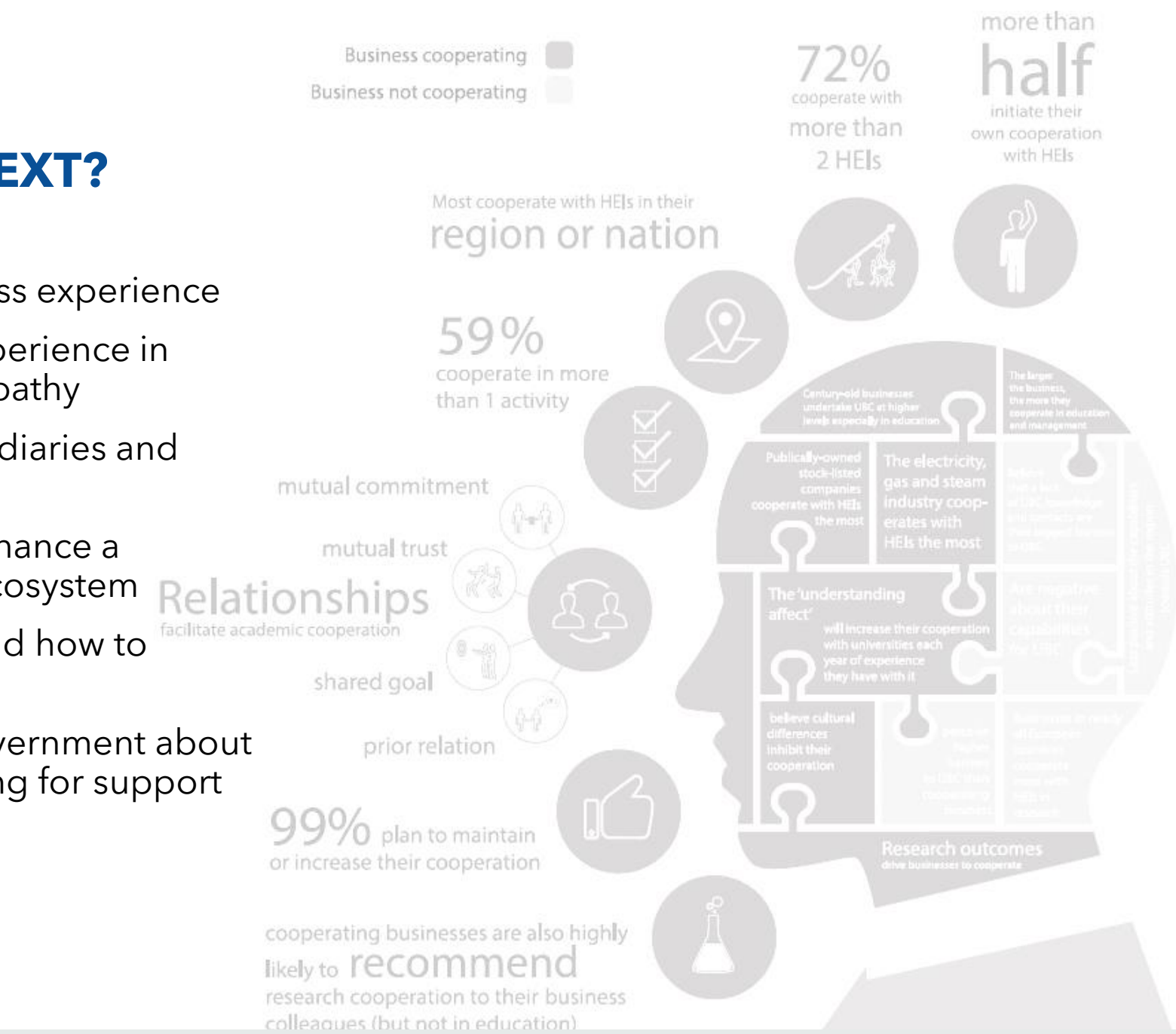
PROFILE OF THE "BUSINESS COLLABORATOR"



Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

MANAGING …CONTEXT?

- Hire academics with business experience
- Hire intermediaries with experience in academia and industry, empathy
- Provide training for intermediaries and academics
- Collaborate to establish/enhance a local/regional innovation ecosystem
- Get to know SMEs better and how to engage with them
- Lobby to influence your government about the need for UIC while asking for support



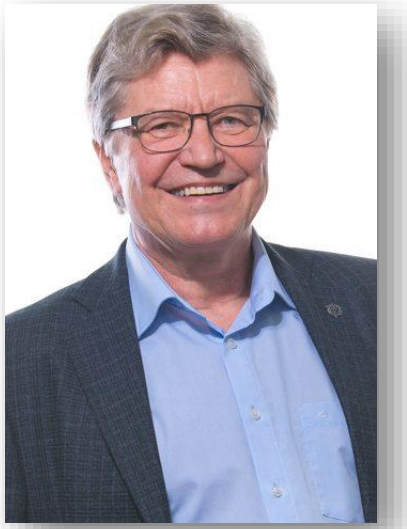
Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

Manuel Pérez Alonso

Founder, Imegen et al.

University of Valencia

Spain



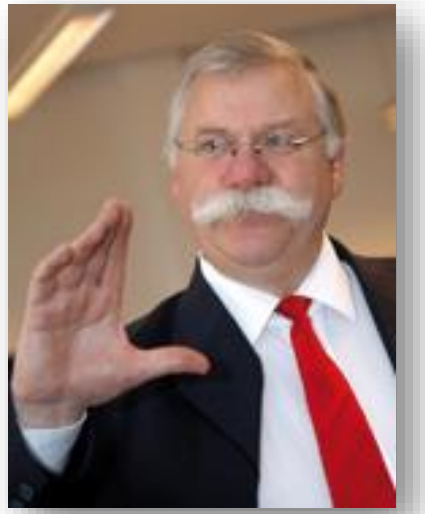
Johannes Partanen

Founder, Tiimiakatemia

Applied Sciences

University of Jyväskylä

Finland



Thomas Baaken

Founder, Science-to-Business Marketing Research Centre,

Germany

ADD BOUNDARY SPANNER MASTERIES

Manuel Pérez Alonso

Founder, Imegen et al.

University of Valencia

Spain

A true 'academic entrepreneur superhero', Manuel Pérez Alonso, professor of genetics in University of Valencia (Spain), has migrated from the university lab to the foundation and management of eleven biomedical companies director of the Institute of Genomic Medicine (Imegen).

His activity as a researcher focuses on Molecular Genetics and Genomics Applied to Medicine. He has participated in numerous international research programs, including three genome sequencing consortia. He has directed more than 20 research projects and is the author of more than 50 international scientific publications, including three articles in the prestigious journal Nature. He is the author of three biotechnology patents that have been licensed to the biotechnology industry. As an entrepreneurial scientist, he is the promoter and founding partner of several biotechnology companies dedicated to Biomedicine. Founded in 2009 by a team of scientists with more than 20 years of business experience, Imegen has established itself as a leader in the field of genetics and genomics.

Tiimiakatemia (Team Academy)

Timeline

Image Credit: Team Academy Int. ©

The need to enhance the employability of the graduates, introduce innovative methods of teaching

January 1993

"Do you want to go on at trip around the world and learn some marketing on the side?" – initiative by Johannes Partanen, a marketing lecturer at JAMK to introduce a new educational method for teaching business and marketing

Introduction of a new experiential course (Kold's theory of experiential learning):

- No classrooms
- Mo teachers
- No lectures
- Practice
- A trip around the world

First cohort: 24 students

1996

- **Growth to 80 students**
- **Innaguration of new facilities – JAMK hired 900m2 office space**

New Name: Tiimiakatemia

Focus: Marketing

1997

Gaining independence from JAMK business school

Acquisition of funding independently according to the number of students

Financial Support form national and EU organisations

2001

Switch from educational focus on marketing to coaching entrepreneurship and strengthening business sector in Finland

Commercialising the model - Head Coach Johannes Partanen setting the learnign methods for entrepreneurship training in motion

2006

Tiimiakatemia Wins **Entrepreneurial Europe Competition, 1st Prise**

Focus: entrepreneurship

2010

Johannes Partanen is nominated with the Honorary Title of Councellor of Education by the President of Finland

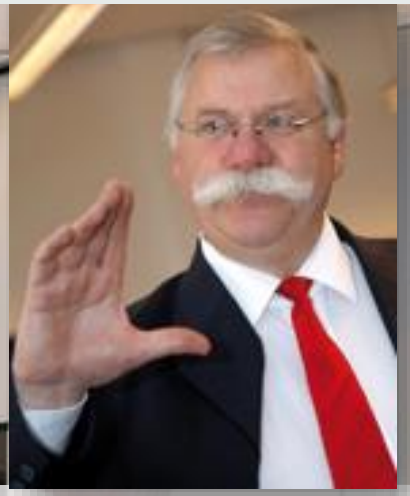
Ulla Luukas (head coach) is nominated as "the 50 Most Innovative Leaders" by The World CSR

Over 40 new businesses created, the model replicated in 15 countries

- 96% of graduates are already active in the job market six months after graduation
- 39% are entrepreneurs six months after they finish university
- 42% become entrepreneurs within two years of graduating

Science-to-Business Marketing Research Centre, Germany

- Thomas Baaken was appointed as Vice Rector Research and Technology Transfer and applied the concept of marketing to the university's research and technology transfer activities.
- High performance in getting money for projects and research results from companies and non-profit organisations.



Thomas Baaken

Founder, Science-to-Business Marketing Research Centre

2002 Foundation of the centre

2003 First international conference

2005 First PhD completed

2007 Award: Stifterverband

2009 TechAdvance™ commercialised globally

2010 Spin-off apprimo

2012 Spin-off UIIN

2017 15th Anniversary

2018 3 Junior Professorships

Science-to-Business Marketing Research Centre, Germany

Key success factors

1. Vision for centre
2. Selected the right people and cared about them
3. Gave them space and freedom to work e.g. Own hours
4. Aligned the centre vision with the individuals objectives
5. Finance: Student-business projects (spending), funded projects (salary)
6. Exhibited the behaviour he expected e.g. Sought & delivered projects
7. Bend/break the rules in the university
8. Serious - fun... With a family atmosphere

MASTERIES OF A BOUNDARY SPANNER

Source: Spanning Boundaries www.spanning-boundaries.eu/

Co-funded by the Erasmus+ Programme of the European Union

MASTERIES (Master of..

ATTRIBUTES (To know, to understand or be able to...)

MASTERY	SKILLS, KNOWLEDGE & COMPETENCIES (To know, to understand or be able to...)
Master of Strategy & Vision	To be able to apply the existing knowledge of collaboration partners to solve the problem at hand To be able to develop an image of how a cooperation should work in ideal conditions To be able to develop a clear and consistent vision for what one wants to achieve from the specific collaboration activities
Master of Collaboration	To know who to approach for collaboration To know how to evaluate knowledge for its potential usefulness to others To know how to value knowledge To be … network To be …
Master of Entrepreneurial Thinking & Acting	To be … To be … To be able to think creatively and originally To be able to conceive alternative solutions to challenges To know how to explain something in an attractive way To know how to support others in entrepreneurial activity To be able to take on and solve ambiguities and problems
Master of Partner Understanding	To know the aims / priorities of the collaboration partner(s) To understand the needs and wants of collaboration partners To understand the different languages and cultures of different types of collaboration pa To understand the differing motivations of the collaboration partners
Master of Knowledge Transfer & Engagement processes	To know knowledge transfer and engagement processes To know IP regulations related to knowledge transfer To know what structures are in place to support knowledge transfer and engagement To know innovation processes To know the human resources processes of industry To know scientific / R&D processes To know educational processes of higher education institutions
Master of Resource Acquisition & Mobilisation	To be able to obtain funding / financial resources for collaboration activities To be able to mobilise non-financial resources (e.g. infrastructure, equipment, people) fo To know how to get resources to support knowledge transfer and engagement
Master of Negotiation	To be able to negotiate trade-offs and issues between collaboration partners To be able to negotiate reasonable goals between collaboration partners To be able to identify and secure collaboration from others to access knowledge

SPANNING BOUNDARY AGENTS

Results from a large international survey of boundary spanning agents:

- Most developed in leadership skills and creativity skills
- Least developed in mobilising resources and entrepreneurship skills

Differences between academic, business, and intermediary SBAs:

1. Business SBA
   - More developed in complex problem solving and diverse knowledge
   - Needs to develop collaboration skills
2. Academics SBA more developed mastery in creativity and specific expertise
3. Intermediaries more developed mastery in:
   - leadership
   - technical knowledge (Internal Intermediaries)
   - value of knowledge (External Intermediaries)

Actors in the knowledge transfer process: main drivers, barriers & facilitators and managing expectations

Victoria Galan-Muros

European Commission

Joint Research Centre

Actors in the knowledge transfer process: main drivers, barriers & facilitators and managing expectations

Victoria Galan-Muros

European Commission

Joint Research Centre

Society needs effective collaboration between HEIs/RIs and industry

… but unfortunately, University-Industry relationships don't (*naturally*) work

- Lack of risk
- Long term orientation
- Routine
- Knowledge and accuracy
- Rules to follow

- Medium-high risk
- Short term orientation
- Dynamism
- Intuition
- Bend (make, or break) rules

… but unfortunately, University-Industry relationships don't (*naturally*) work

Alignment of:

- expectations
- risk profile
- time orientation
- mindset
- goals
- attitude to rules

> There are barriers and inhibiting factors that are reducing or preventing university and industry to cooperate

UBC BARRIERS ROMANIA | Top 3 most relevant

University Management

Lack of government funding for UBC	7.1
FUNDING FOR COOPERATION	
Limited resources of SMEs	7.1
Lack of business funding for UBC	7.1

Academics

Lack of government funding UBC	7.2
FUNDING FOR COOPERATION	
Limited resources of SMEs	7.1
Lack of business funding for UBC	7.1

Business

Bureaucracy related to UBC in universities	6.3
BUREAUCRACY, TIME AND FUNDING	
Differing time horizons between universities and business	6.1
Lack of government funding for UBC	6.0

Scale: 1 = “Not at all relevant” to 10 = “Extremely relevant”

“Drivers incorporate both the reasons (motivators) for cooperating and the factors that underpin or support (facilitators) university and industry to cooperate successfully”

UBC MOTIVATORS ROMANIA | Top 3 most relevant

University Management

Improves graduate employability	8.7
GRADUATES EMPLOYABILITY	8.6
Obtain funding/financial resources	8.5

Academics

Improves graduate employability	8.6
GRADUATES EMPLOYABILITY	8.3
Improves teaching	8.3

Business

Positively impact society	8.3
SOCIAL IMPACT	8.1
Improve our innovation capacity	8.1

Scale: 1 = “Not at all relevant” to 10 = “Extremely relevant”

UBC FACILITATORS ROMANIA | Top 3 most relevant

University Management

Interest of the university in accessing business-sector R&D facilities	8.0
Existence of funding to undertake the cooperation	8.0
Interest of business in accessing scientific knowledge	7.6

Academics

Existence of funding to undertake the cooperation	8.1
Existence of shared goal	7.8
Interest of the university in accessing business-sector R&D facilities	7.8

Business

Prior relation with the university partner	7.8
Existence of share goal	7.3
Existence of funding to undertake the cooperation	7.3

EXISTENCE OF FUNDING

SHARE GOAL

PRIOR RELATION

Scale: 1 = “Not at all relevant” to 10 = “Extremely relevant”

At least respect… and ideally value

Ask them what they want / expect from the collaboration


Manage their expectations
Norms
Expect ation
Society
Social Media
Racism
Doubt
Gender
HATE

Find and present (enough)win-(enough)win situation


Raise cross-cultural
understanding

Translate

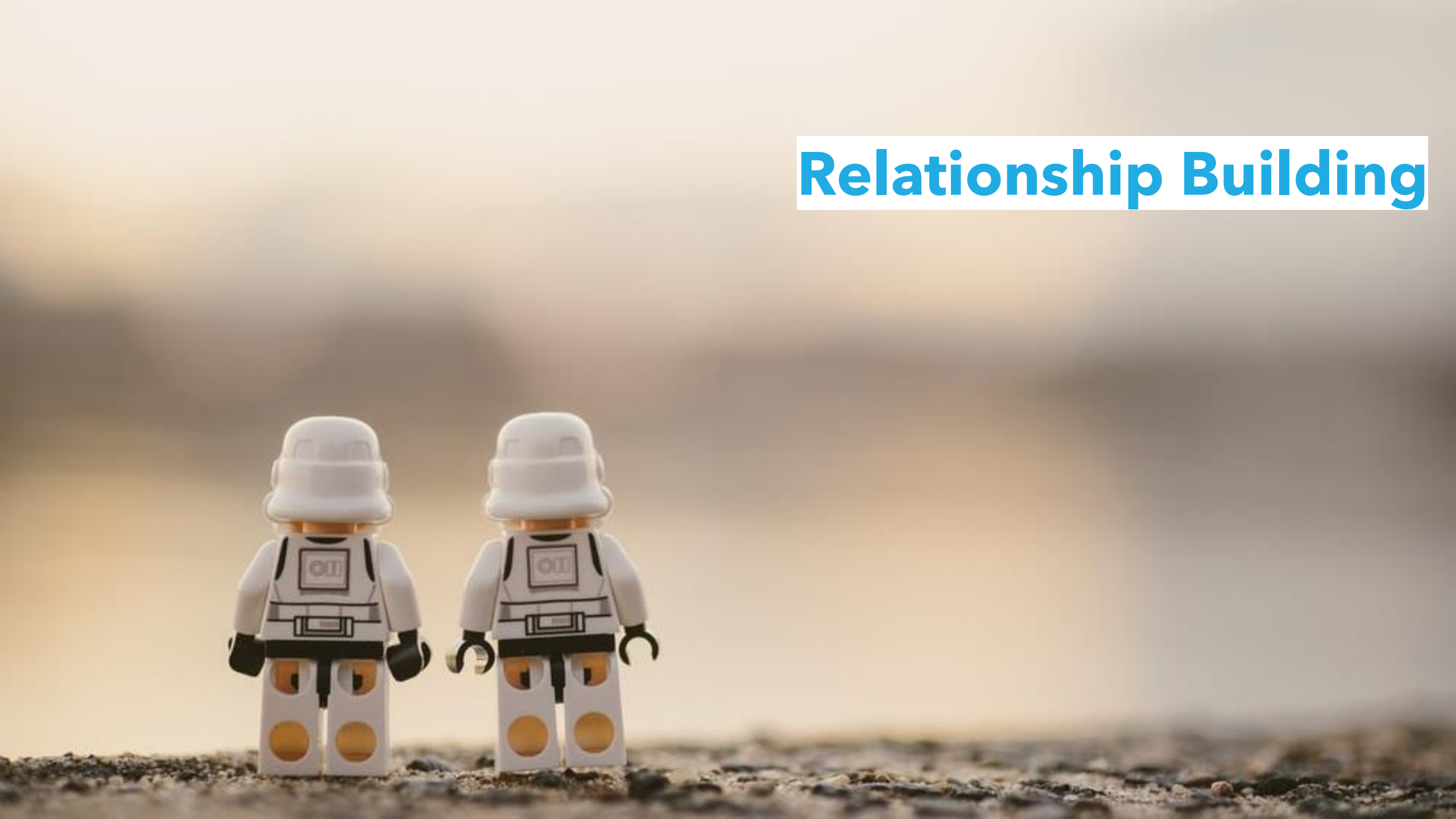

VIELE KLEINE LEUTE DIE IN VIELEN
KLEINEN ORTEN VIELE KLEINE DINGE
TUN, KÖNNEN DAS GESICHT DER WELT
MANY SMALL PEOPLE WHO IN VERÄNDERN
MANY SMALL PLACES DO MANY SMALL THINGS
THAT CAN ALTER THE FACE OF THE WORLD
Afrikanische Weisheit

Excuse them (up to a point)

Follow -up

Start Small

Relationship Building



BREAK

European Commission

Joint Research Centre

Actors in the knowledge transfer process: main drivers, barriers & facilitators and managing expectations

Victoria Galan-Muros

European Commission

Joint Research Centre

WHAT IS INTELLECTUAL PROPERTY?

Intellectual property (IP) refers to creations of the mind, such as inventions; literary and artistic works; designs; and symbols, names and images used in commerce (World Intellectual Property Organization). Is divide into two categories:

- **Industrial Property:** Patents, trademarks, industrial designs and geographical indicators

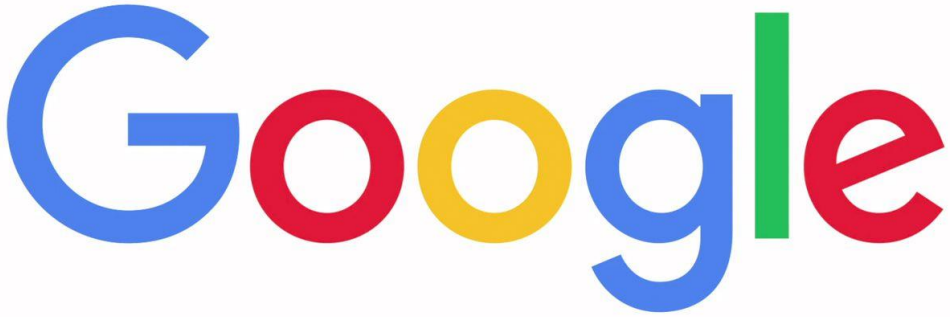
- **Copyright**

Source: WIPO

WHAT IS INTELLECTUAL PROPERTY?

Legal Right	What for?	How?
Patent	New Invention	Application and examination
Copyright	Literary and artistic creations	Automatically exists
Trademark	Distintive sign for good and services	Use and/or registration
Industrial Design	External Appearance	Registration
Geographica Indicators	Qualities or reputation attached to that origin	Registration

HOW IS THIS PROTECTED?



ALGORITH

FORMULA

TRADE SECRET

COULD BE PROTECTED? HOW?

Software is patentable in the **USA (USTPO)**

The **European Patent** Convention states that **software** is not patentable. But laws are always interpreted by courts, and in this case interpretations of the law differ. So the **European Patents** Office (EPO) grants **software patents** by declaring them as "computer implemented inventions".

COULD BE PROTECTED? HOW?

The **picture** is protected automatically by **copyright**

The **painting** technique can be **patented**

COULD BE PROTECTED? HOW?

European Parliament: No Patents on Naturally Obtained Plants and Seeds News

New non-legislative resolution: The members of the European Parliament (MEP) agreed that fruit, vegetables or animals obtained from conventional breeding processes should not be patentable.

Patent-free access to biological plant material is essential to boost innovation and competitiveness of the European plant-breeding and farming sectors, to develop new varieties, improve food security and tackle climate change, MEPs stressed in the resolution. Furthermore, access to genetic resources must not be restricted, as this could lead to a situation where a few multinational companies have a monopoly on plant breeding material, to the detriment of EU farmers and consumers, many MEPs said in Monday's plenary debate.

The non-legislative resolution the Parliament adopted on Thursday comes ahead of the 1 October deadline for submitting statements on the patentability of naturally obtained plants to the final appellate instance in the European Patent Office (EPO). The final judgement will come from the EPO's Enlarged Board of Appeal.

Search

Upcoming events

Webinar on the New Copyright Directive
THURSDAY, 19.11.2020

Webinar: Impact and Innovation in Horizon 2020 – a Guide for Proposers
TUESDAY, 24.11.2020

Webinar: IP Management in ICT Projects
THURSDAY, 26.11.2020

See all events

Latest news All

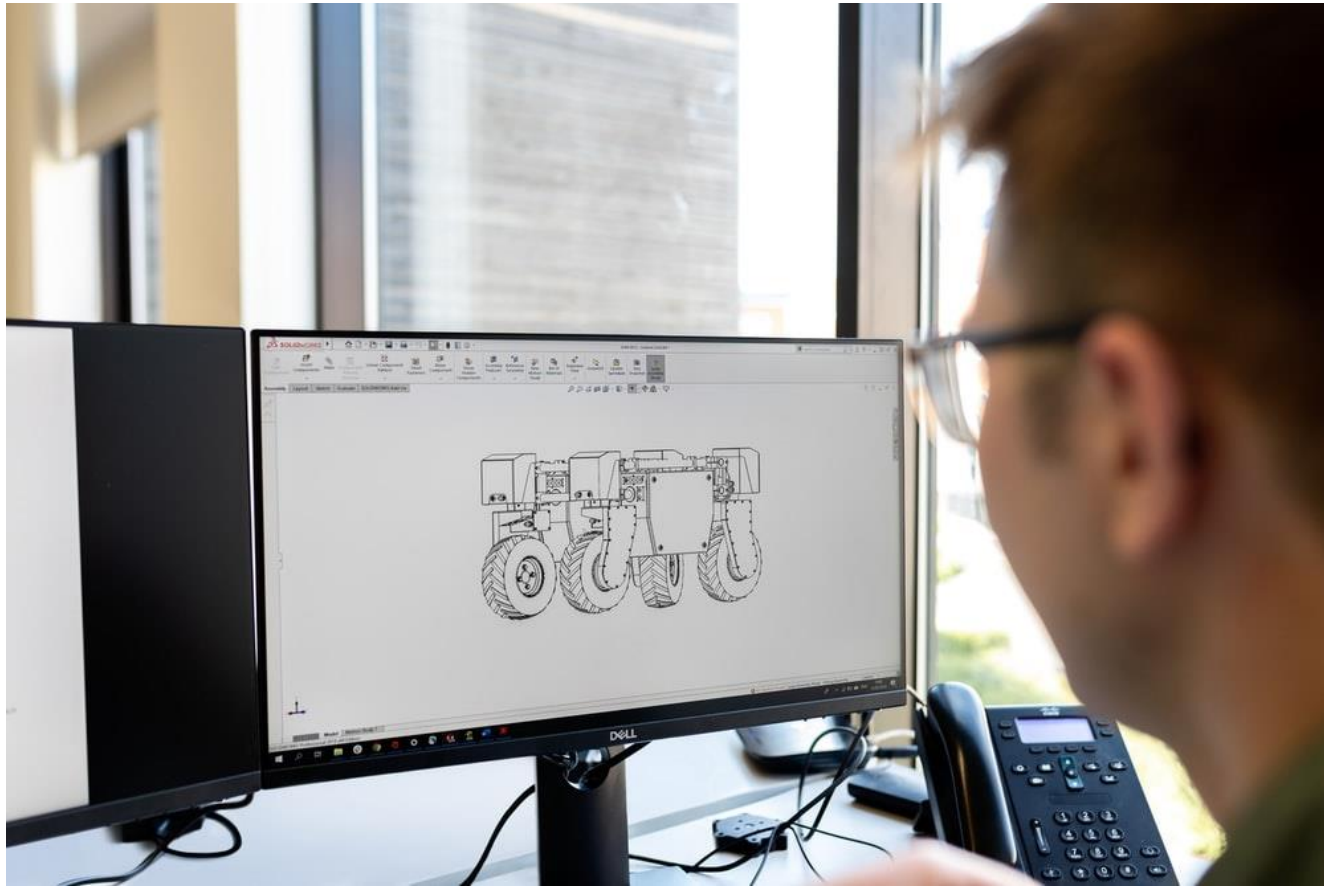
Future EU IP Policy: Council Adopts Conclusions

WHEN PROTECT?

If your invention is :

- **New** (novel),
- **Useful**: improves life or solve a problem
- **Not obvious** to someone working in the related field.

You should protect it.



SHOULD YOU?

WHY PROMOTE AND PROTECT?

- The **progress and well-being** of humanity rest on its capacity to create and invent new works in the areas of technology and culture.

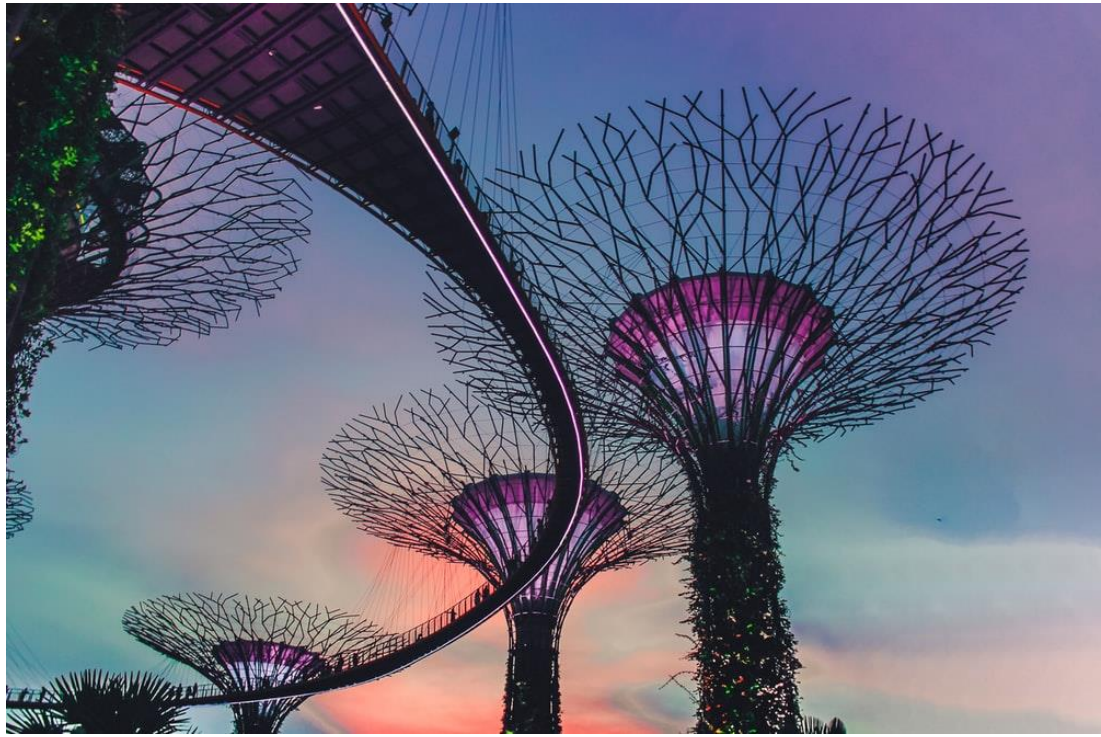
- Without the **rewards** provided by the patent system, researchers and inventors would have little **incentive to continue producing better and more efficient** products for consumers.

- The promotion and protection of intellectual property spurs **economic growth, creates new jobs and industries**, and enhances the **quality and enjoyment of life**.

Source: WIPO, What is IP?

A PATENT CAN:

- **Recognize and reward** inventors
- **Finance** further technological research and development through commercialization revenues
- Turns an **inventor's know-how into a commercially** tradeable asset
- Make **small business more attractive** to investors
- **Spark new ideas** and promote new inventions



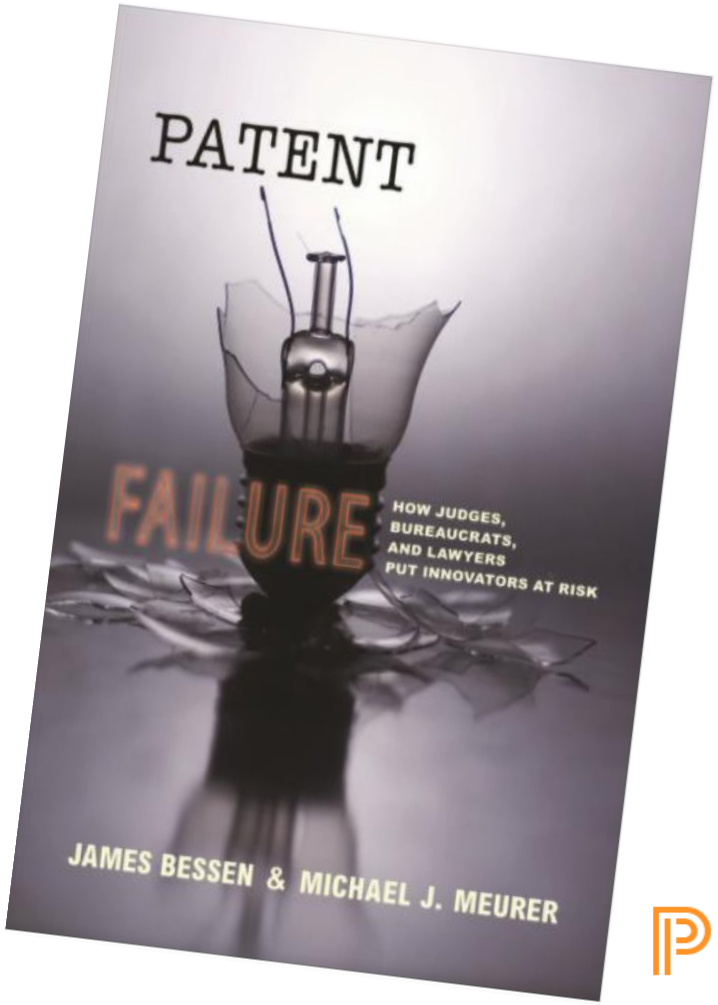
Source: WIPO, 2017

DOES IT ALWAYS?

PATENT FAILURE

¨While patents do provide incentives to invest in research, development, and commercialization, for most businesses today, patents fail to provide predictable property rights. Instead, they produce costly disputes and excessive litigation that outweigh positive incentives. Only in some sectors, such as the pharmaceutical industry, do patents act as advertised, with their benefits outweighing the related costs.¨

Bessen and Meurer (2009) Patent Failure



https://press.princeton.edu/books/paperback/9780691143217/patent-failure

“

Patents can cost from 15.000 € (simple ideas and DIY approach) to +100.0000 € (more complex ideas & legal support)

”

“Over 95% of the patents filed are never commercialized or licensed”

OPPORTUNITY COST

IS IT WORTH IT?

US PROMINENCE IN:
SCIENCE
TECHNOLOGY
INNOVATION
HIGHER EDUCATION

HOW MUCH OF THIS IS APPLICABLE TO EUROPEAN COUNTRIES?

So, should we just commercialise reaserch more?

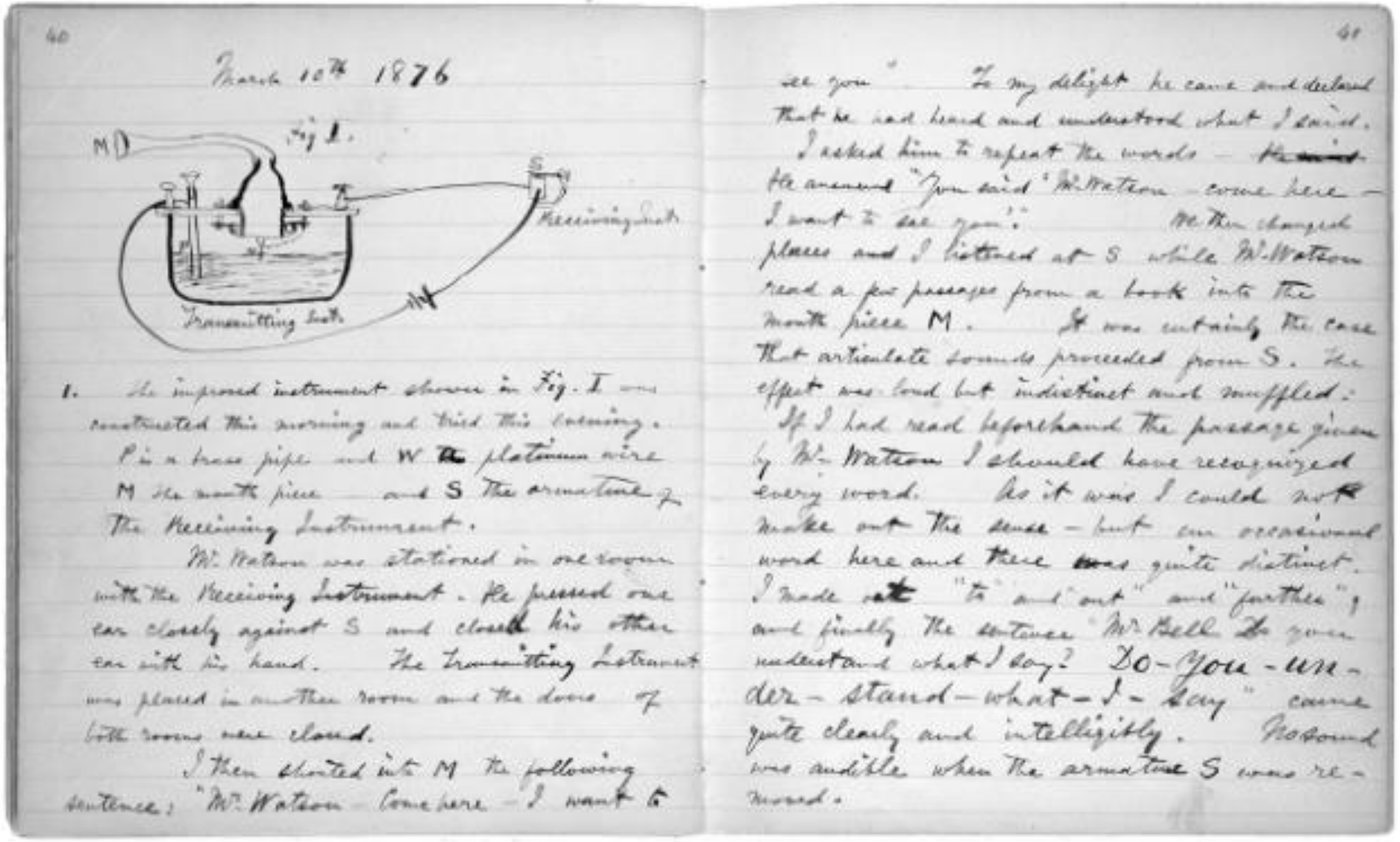
"In 1991, the total license revenue for US universities was $130 million, in 2018 it was $2.9 billion."

"However, 15 US universities produce nearly 70% of the US license income."

"Since 1970, Stanford had over 5,000 patents issued, only 79 of those generated more than a million, only 3 generated more than $100 million."

LABORATORY NOTEBOOK

The 1876 notebook of Alexander Graham Bell, who patented the first practical telephone



40

March 10th 1876

Fig 1.

1. The improved instrument shown in Fig. I was constructed this morning and tried this evening. P is a brass pipe and W the platinum wire M the mouth piece and S the armature of the Receiving Instrument.

Mr. Watson was stationed in one room with the Receiving Instrument. He pressed one ear closely against S and closed his other ear with his hand. The Transmitting Instrument was placed in another room and the doors of both rooms were closed.

I then shouted into M the following sentence: "Mr. Watson – Come here – I want to

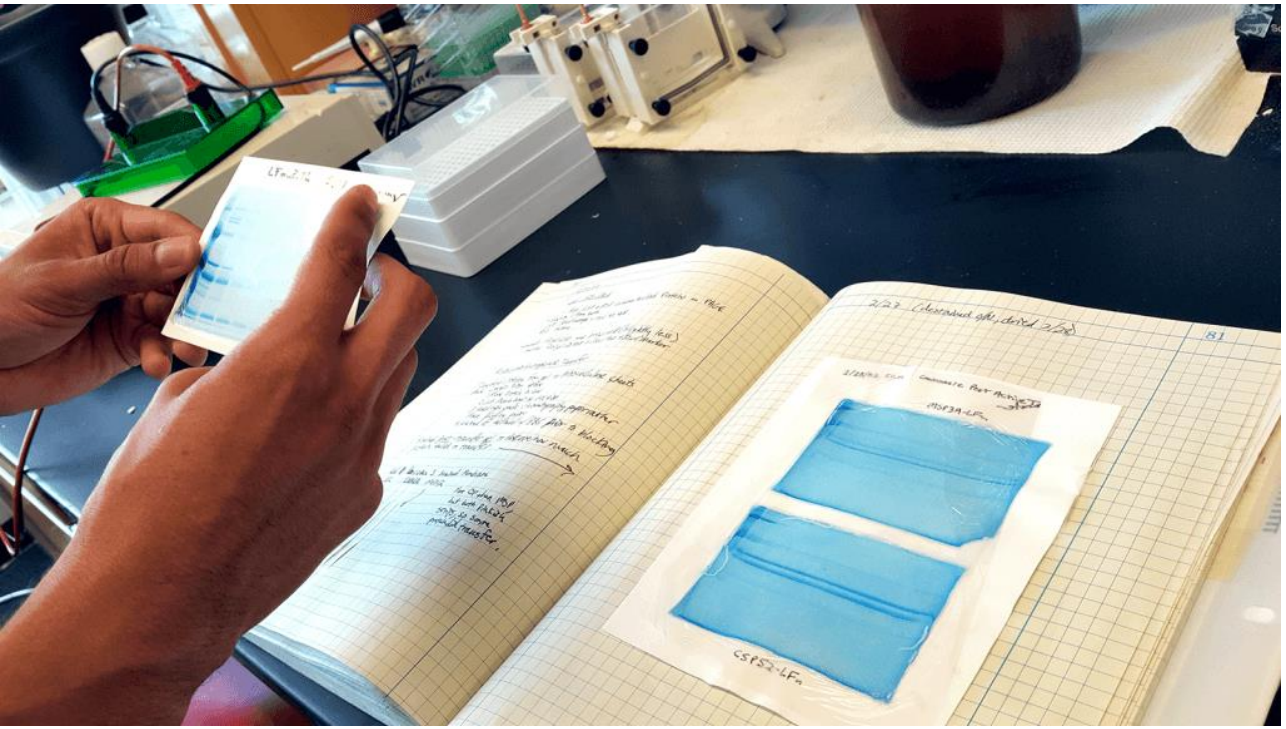
41

see you." To my delight he came and declared that he had heard and understood what I said.

I asked him to repeat the words – He ~~said~~ replied "You said 'Mr Watson – come here – I want to see you'." We then changed places and I listened at S while Mr. Watson read a few passages from a book into the mouth piece M. It was certainly the case that articulate sounds proceeded from S. The effect was loud but indistinct and muffled.

If I had read beforehand the passage given by Mr. Watson I should have recognized every word. As it was I could not make out the sense – but an occasional word here and there was quite distinct. I made out "to" and "out" and "further" and finally the sentence "Mr Bell do you understand what I say? Do-you-understand-what-I-say" came quite clearly and intelligibly. No sound was audible when the armature S was removed.

LAB NOTEBOOK



It is personal. One per lab member.
It should :

- Include the how, when and why of each task
- Be understandable to others and in enough detail to allow another scientist to repeat the work and obtain the same results.
- Be a bound notebook with numbered pages.
- Not have any pages skipped or removed.
- Have its entries made in ink and dated
- Be as clean as possible, but to correct a mistake, a line should be drawn through the original entry, rather than erasing it.
- All corrections and alterations should be dated
- Be keep safe
- Electronic?

Targeting different types of organizations and researchers in their knowledge and technology transfer

Todd Davey

European Commission

Joint Research Centre

How could you find potential collaborators and increase collaboration?

How could you find potential collaborators and increase collaboration?

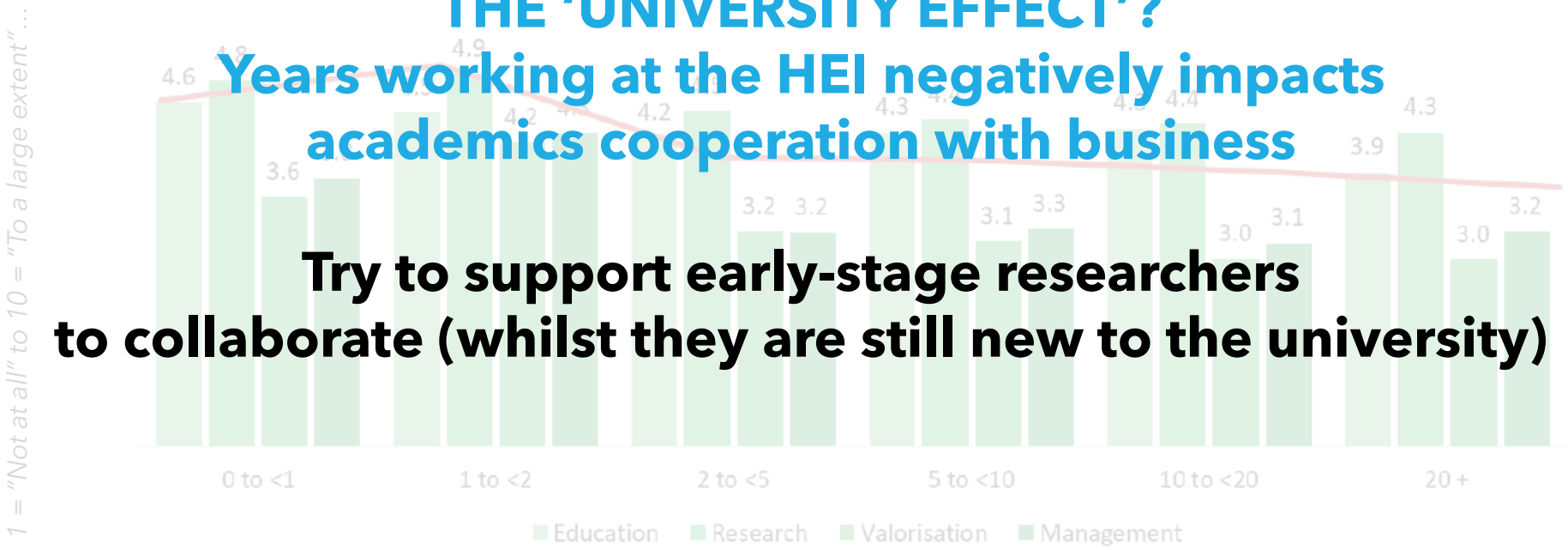
A key success factor in UIC is
finding the right people & organisations to work with

Academics **Business**

ACADEMICS | YEARS WORKING IN HEI vs. AMOUNT OF COOPERATION

The 'university influence'? – The greater the number of years that an academic works at an HEI the less they tend to cooperate with business

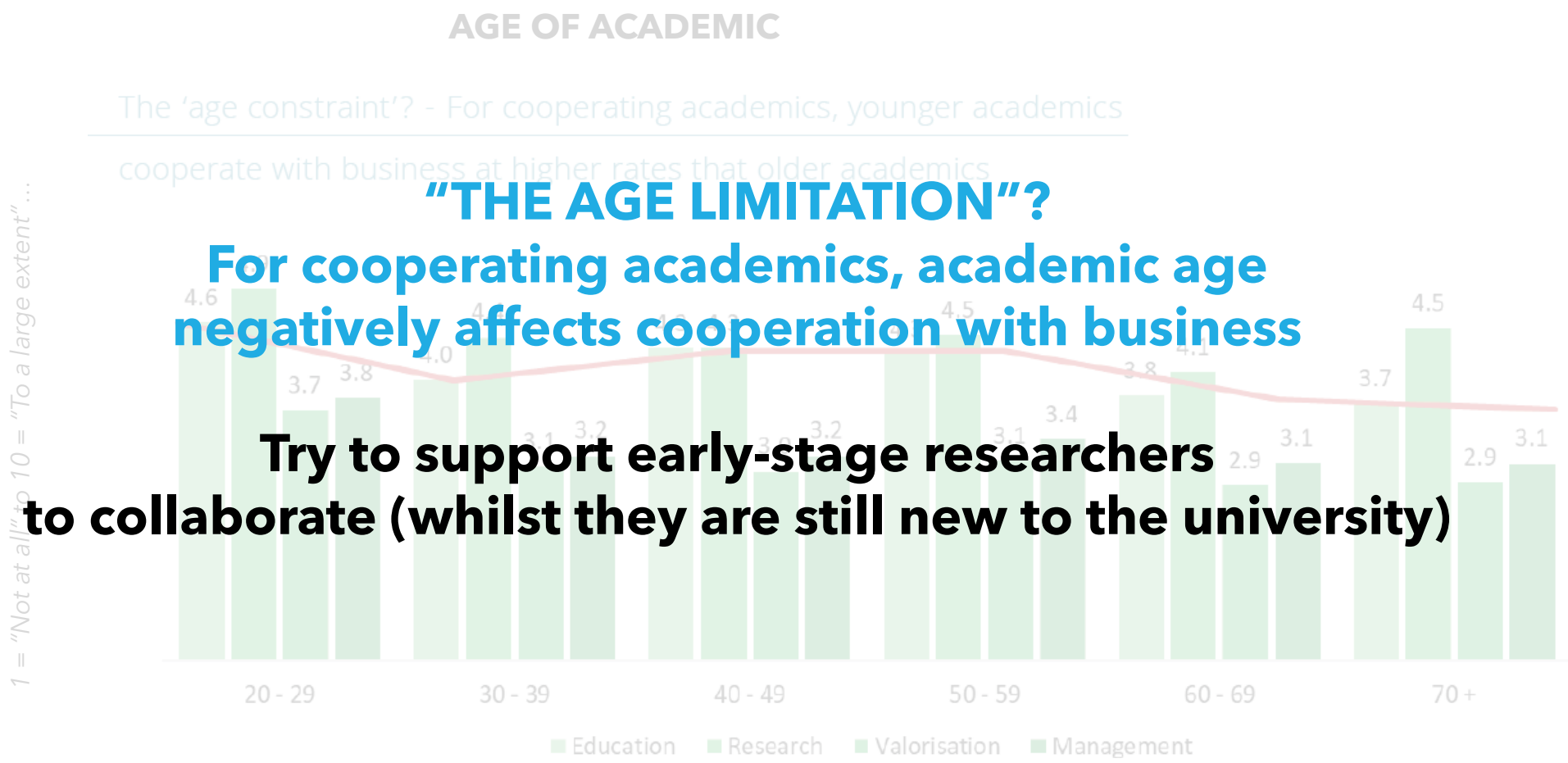
THE 'UNIVERSITY EFFECT'?
Years working at the HEI negatively impacts academics cooperation with business



Try to support early-stage researchers to collaborate (whilst they are still new to the university)

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

ACADEMICS | AGE vs. AMOUNT OF COOPERATION

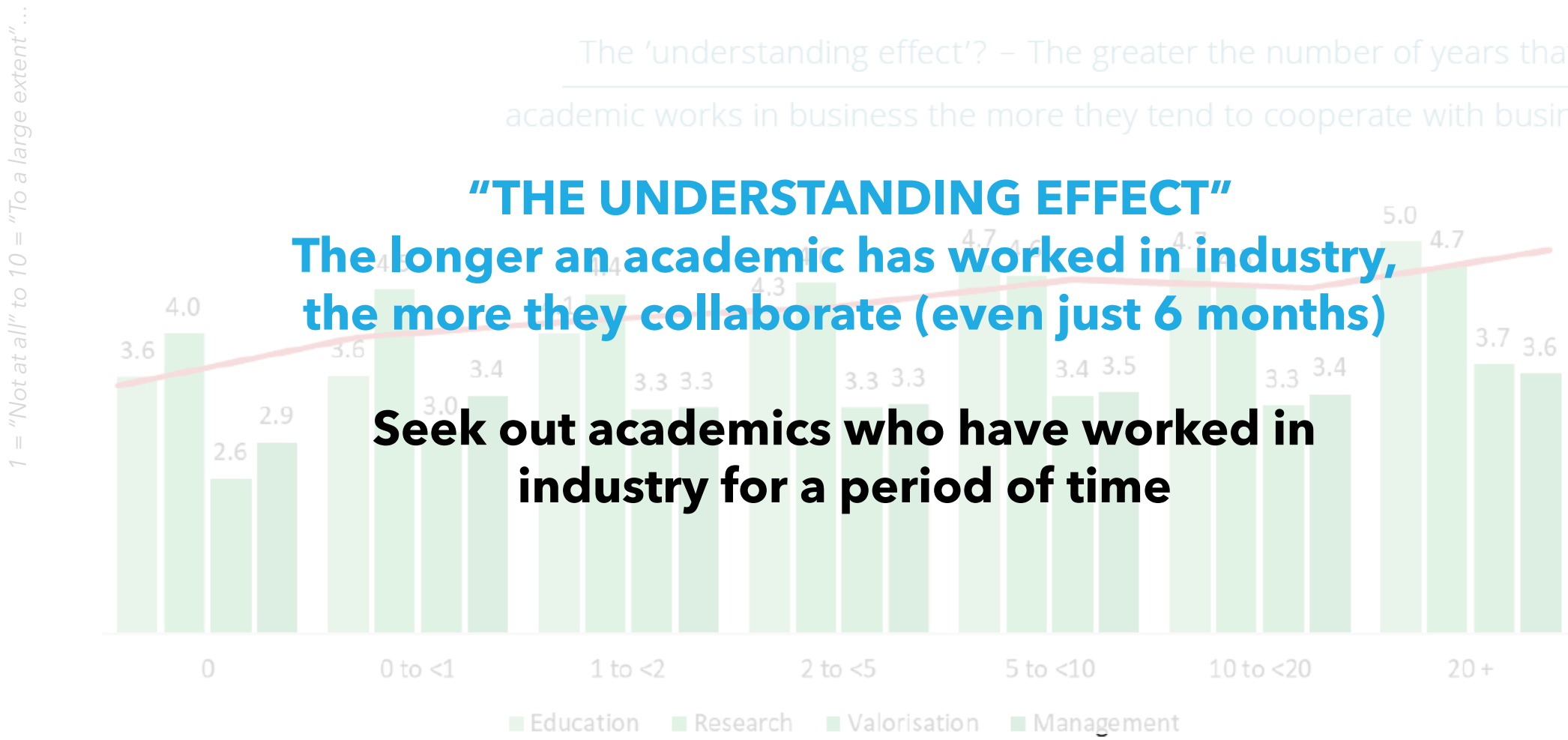


"THE AGE LIMITATION"?
For cooperating academics, academic age negatively affects cooperation with business

Try to support early-stage researchers to collaborate (whilst they are still new to the university)

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-

ACADEMICS | YEARS WORKING IN INDUSTRY vs. AMOUNT OF COOPERATION

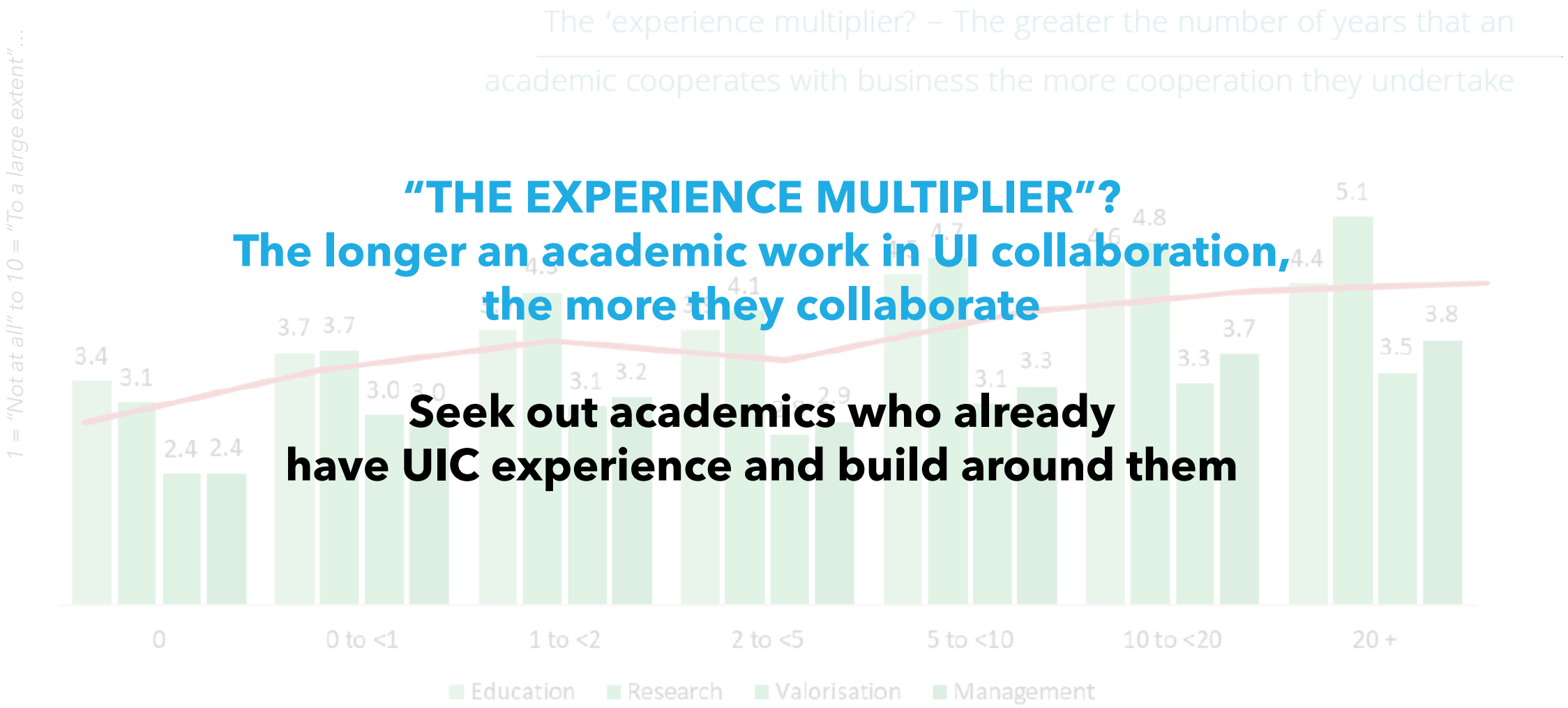


"THE UNDERSTANDING EFFECT"
The longer an academic has worked in industry, the more they collaborate (even just 6 months)

Seek out academics who have worked in industry for a period of time

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

ACADEMICS | YEARS WORKING IN UIC vs. AMOUNT OF COOPERATION

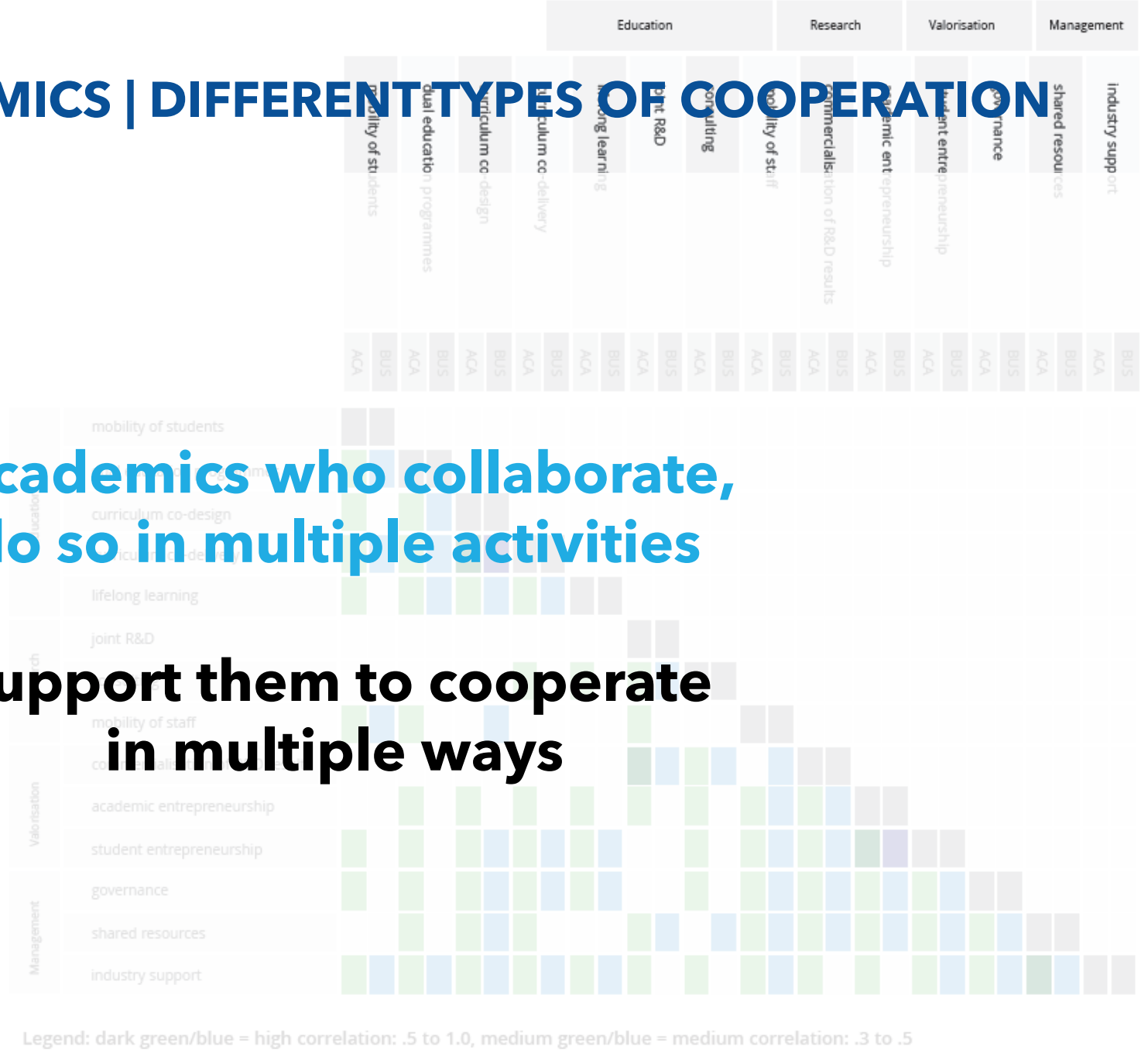


"THE EXPERIENCE MULTIPLIER"?
The longer an academic work in UI collaboration, the more they collaborate

Seek out academics who already have UIC experience and build around them

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATING ACADEMICS | DIFFERENT TYPES OF COOPERATION



Academics who collaborate, do so in multiple activities

Support them to cooperate in multiple ways

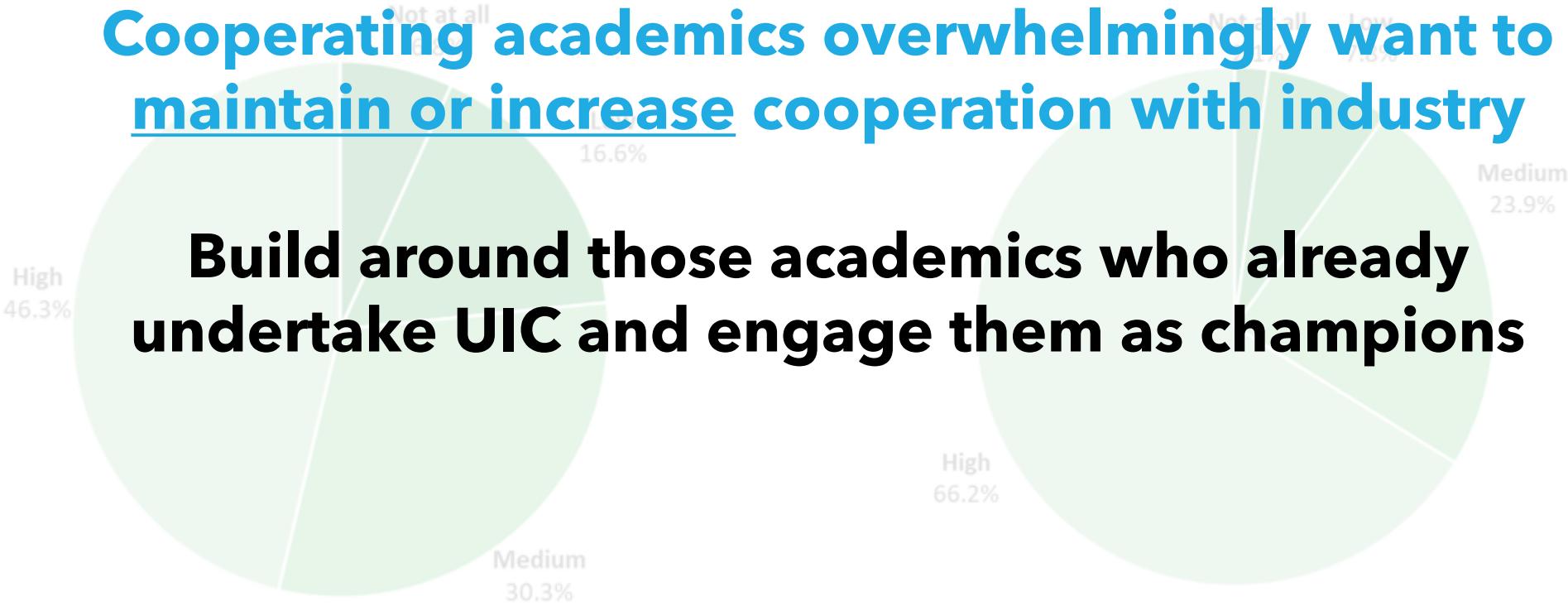
Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATING ACADEMICS | DESIRE TO CONTINUE COLLABORATING

UBC indicators answered by cooperating academics

How likely is it that you would recommend to an academic colleague to engage in UBC for education?

How likely is it that you would recommend to an academic colleague to engage in UBC for research?



Cooperating academics overwhelmingly want to maintain or increase cooperation with industry

Build around those academics who already undertake UIC and engage them as champions

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

POTENTIAL COLLABORATORS

PhD students are presently underutilised

Focus on PhD students?

Embrace and support them and get them engaged

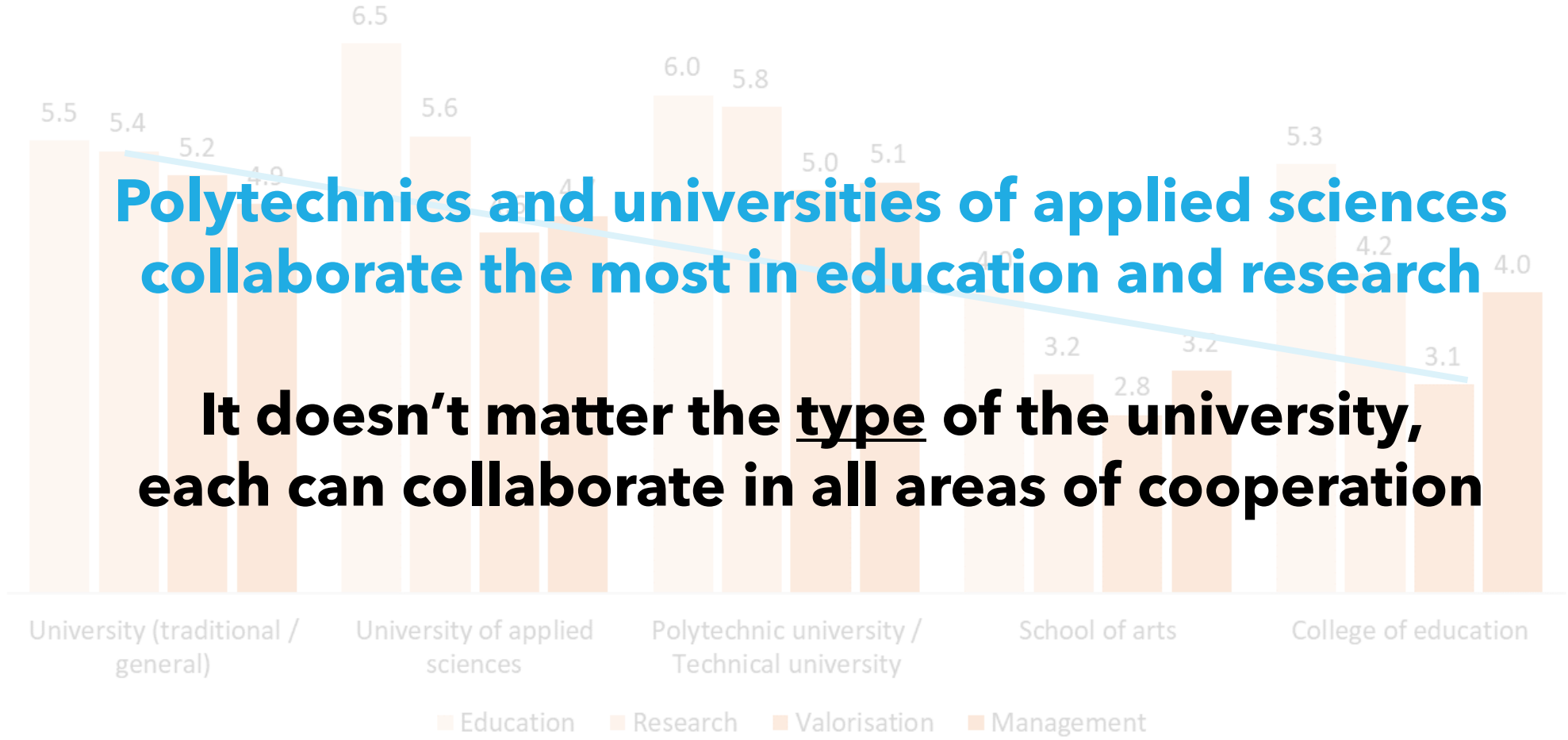
(Industry or entrepreneurship PhDs)

"One thing many PhD students have in common is dissatisfaction. Some describe their work as "slave labour".

There is an oversupply of PhDs. Although a doctorate is designed as training for a job in academia, the number of PhD positions is unrelated to the number of job openings. Meanwhile business leaders complain about shortages of high-level skills, suggesting PhDs are not teaching the right things. The fiercest critics compare research doctorates to Ponzi or pyramid schemes."

- The Economist

SIZE OF UNIVERSITY | AREAS OF COOPERATION

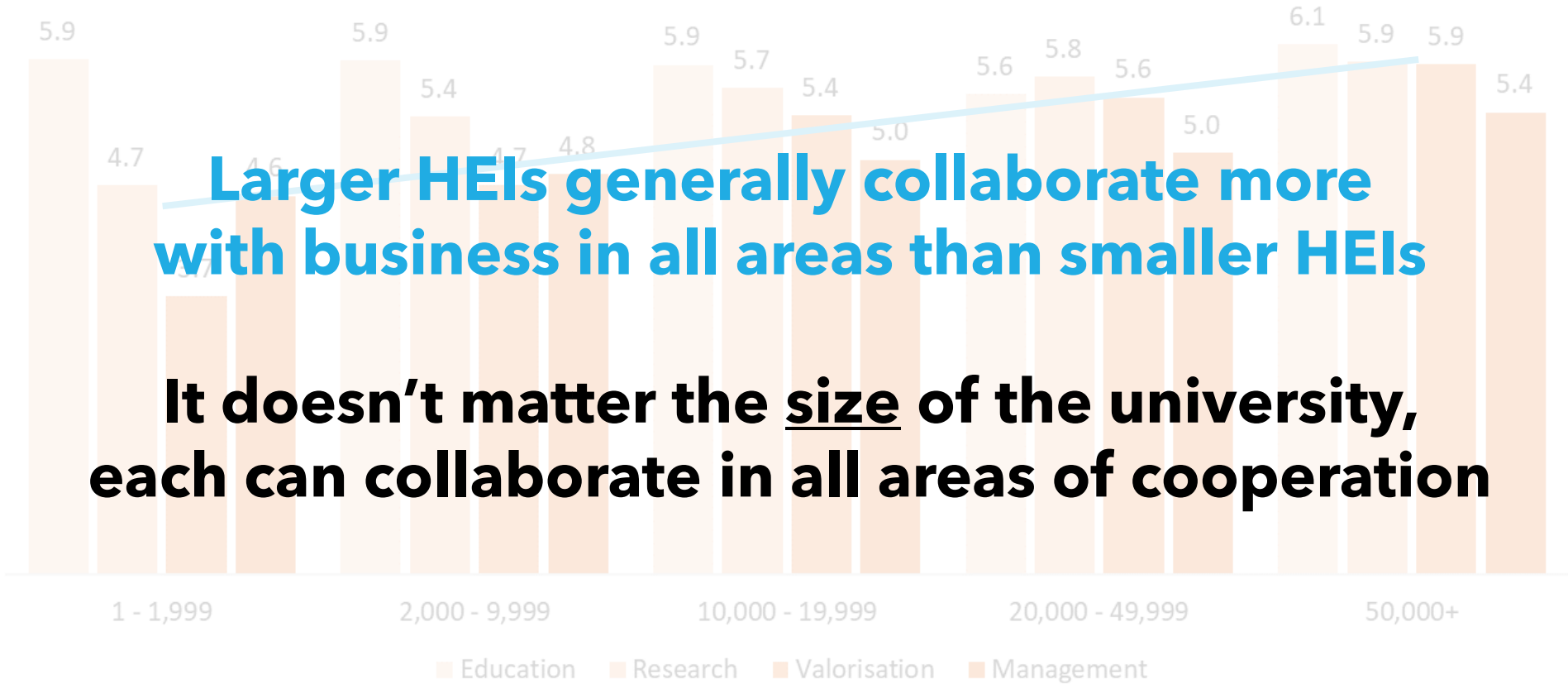


Polytechnics and universities of applied sciences collaborate the most in education and research

It doesn't matter the <u>type</u> of the university, each can collaborate in all areas of cooperation

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

SIZE OF UNIVERSITY | AREAS OF COOPERATION



Larger HEIs generally collaborate more with business in all areas than smaller HEIs

It doesn't matter the <u>size</u> of the university, each can collaborate in all areas of cooperation

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

How could you find potential collaborators and increase collaboration?

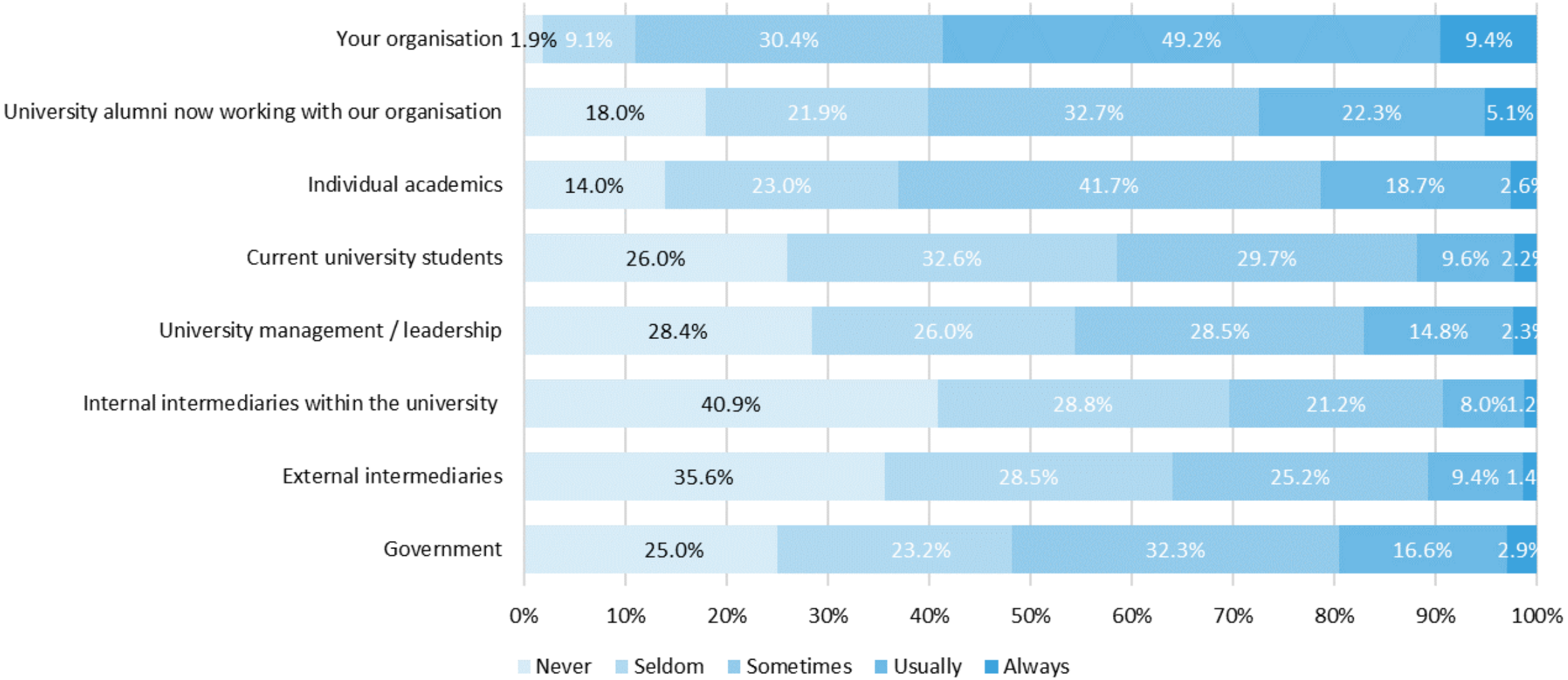
A key success factor in UIC is
finding the right people & organisations to work with

Academics **Business**

COOPERATING BUSINESS | WHO INITIATES COOPERATION?

The company themselves (or alumni or academics) mostly initiate UIC according to businesses

Make it easy to identify you, encourage them to connect through alumni, support new connections through targeted introductions



Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

Science-to-Business Marketing Research Centre, Germany

Study on customer (industry partners) satisfaction for university-business cooperation

Those companies that had a R&D department or PhD student were found to have significantly higher satisfaction levels in the cooperation

This was also true for measures such as timeliness, mutual goals as well as overall research outcome

Companies (and people) with understanding of research are potentially good partners

Focus on companies with research understanding (PhD students, R&D department, …)

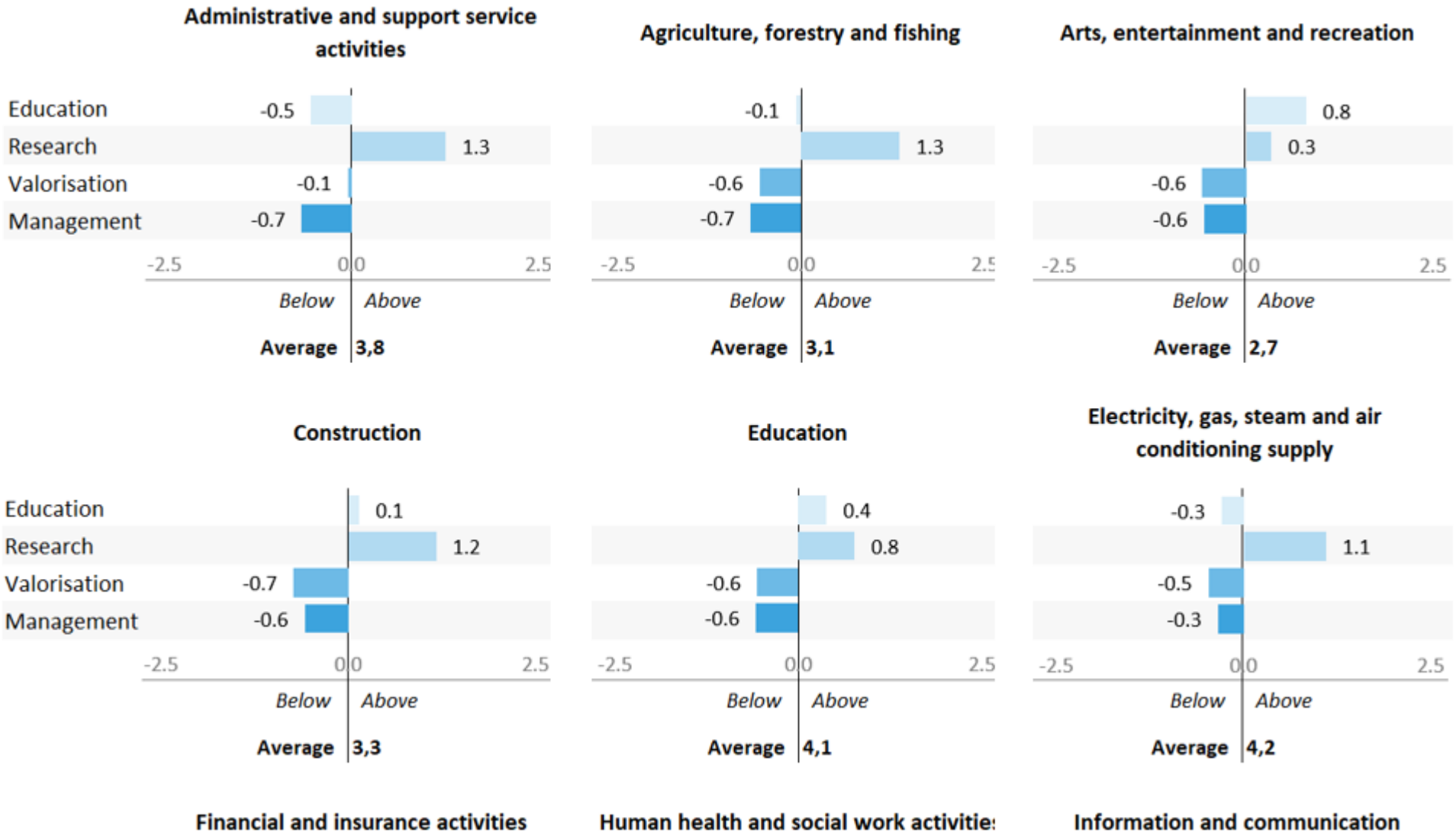
COOPERATING BUSINESS | AMOUNT OF BUSINESS PARTNERS

Businesses collaborate with multiple universities

Seek companies already collaborating (at other universities ☺)

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATION BY INDUSTRY | AMOUNT & TYPE OF COOPERATION



Different industries collaborate to different extents and in different activities

Have some clarity about who needs you, what for and then approach them

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

SIZE OF BUSINESS | AMOUNT & AREA OF COOPERATION

The larger the business, the more education and management cooperation they undertake

Figure 93 BUSINESSES WHO COOPERATE- How do businesses of different sizes cooperate with HEIs and to what extent?

Scale: 1 = not at all developed, 10 –Highly developed

All size businesses can cooperate in different ways

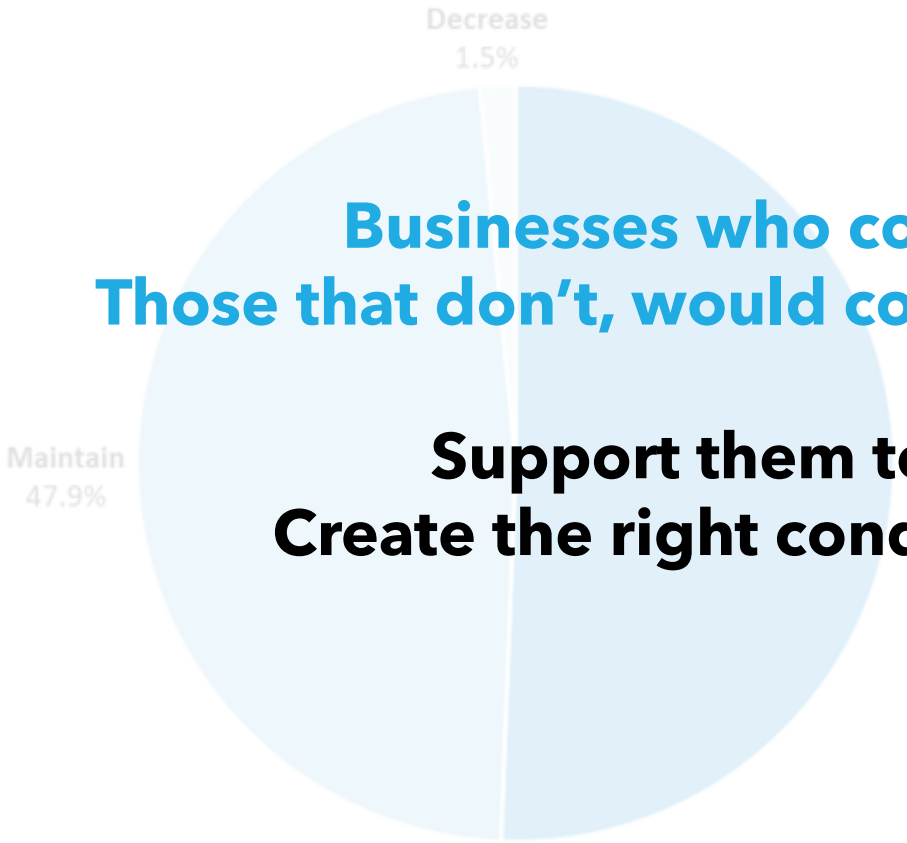
Cooperation in education and management are more likely to be undertaken by larger companies

Tailor the offer to the company you are dealing with

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATING & NON-COOPERATING BUSINESS | DESIRE TO COOPERATE

Cooperating businesses overwhelmingly want to continue if not increase their UIC in the future



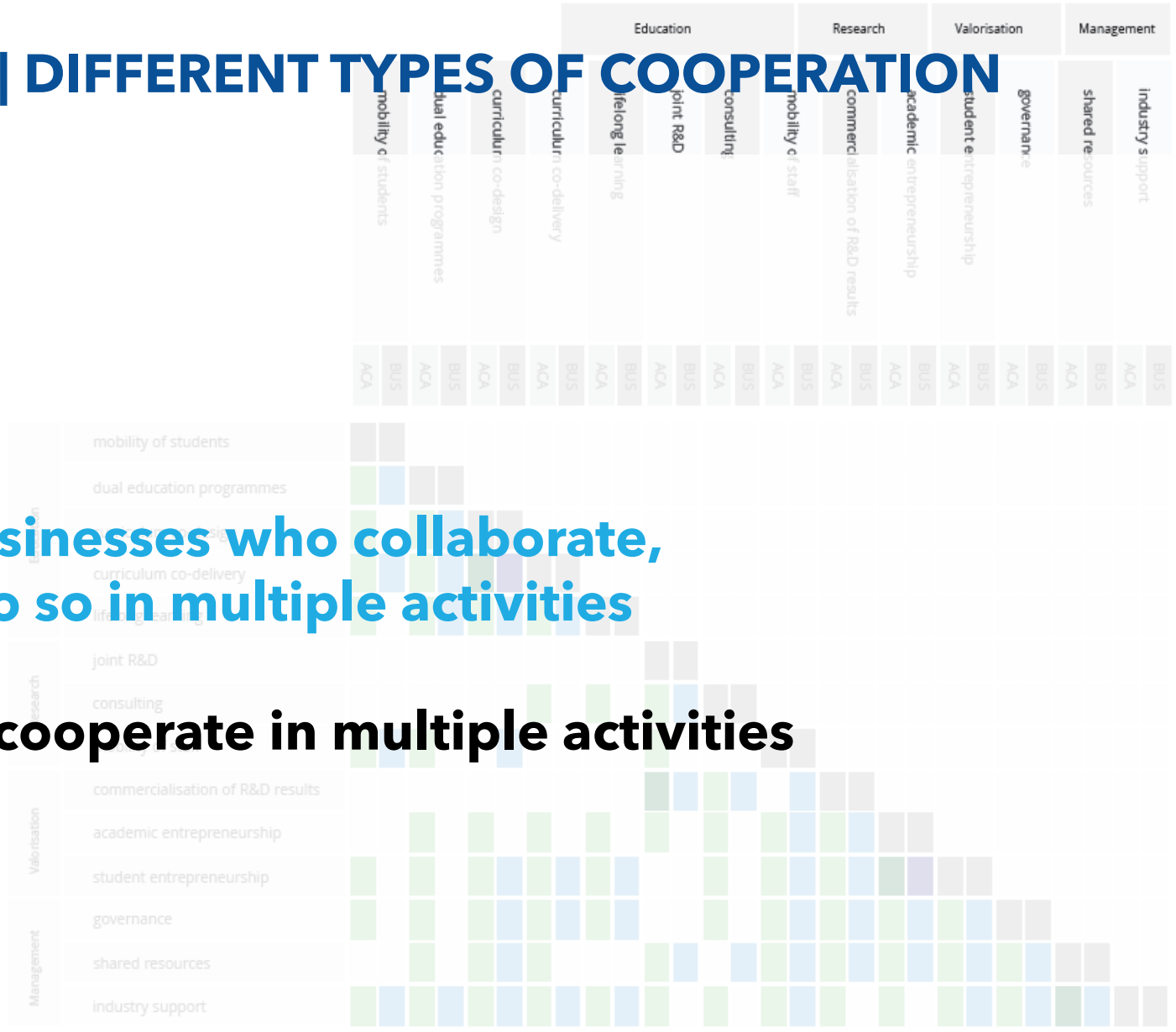
Non-cooperating business are interested to undertake UIC given the right conditions

Businesses who collaborate, want to continue
Those that don't, would consider it given the right conditions

Support them to continue to cooperate
Create the right conditions for them to cooperate

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATING BUSINESS | DIFFERENT TYPES OF COOPERATION



Businesses who collaborate,
Do so in multiple activities

Seek to cooperate in multiple activities

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

COOPERATING UNIVERSITIES | LOCATION OF BUSINESS PARTNER

HEIs & business mostly collaborate with regional partners

Look locally (regional/national) for likely candidates

Source: Davey, T., Meerman, A., Galan Muros, V., Orazbayeva, B., Baaken, T., (2018). State of University-Business Cooperation in Europe, European Commission, www.ub-cooperation.eu/img/finalreport2018.png

In the time of COVID19?

- *It is more difficult to create new relationships*
- *Draw on existing relationships and networks*
- *Strategically select the collaborations for mutual benefit*

Intellectual property: what, when and why protect?

Victoria Galan-Muros

European Commission

Joint Research Centre

BREAK

European Commission

Joint Research Centre

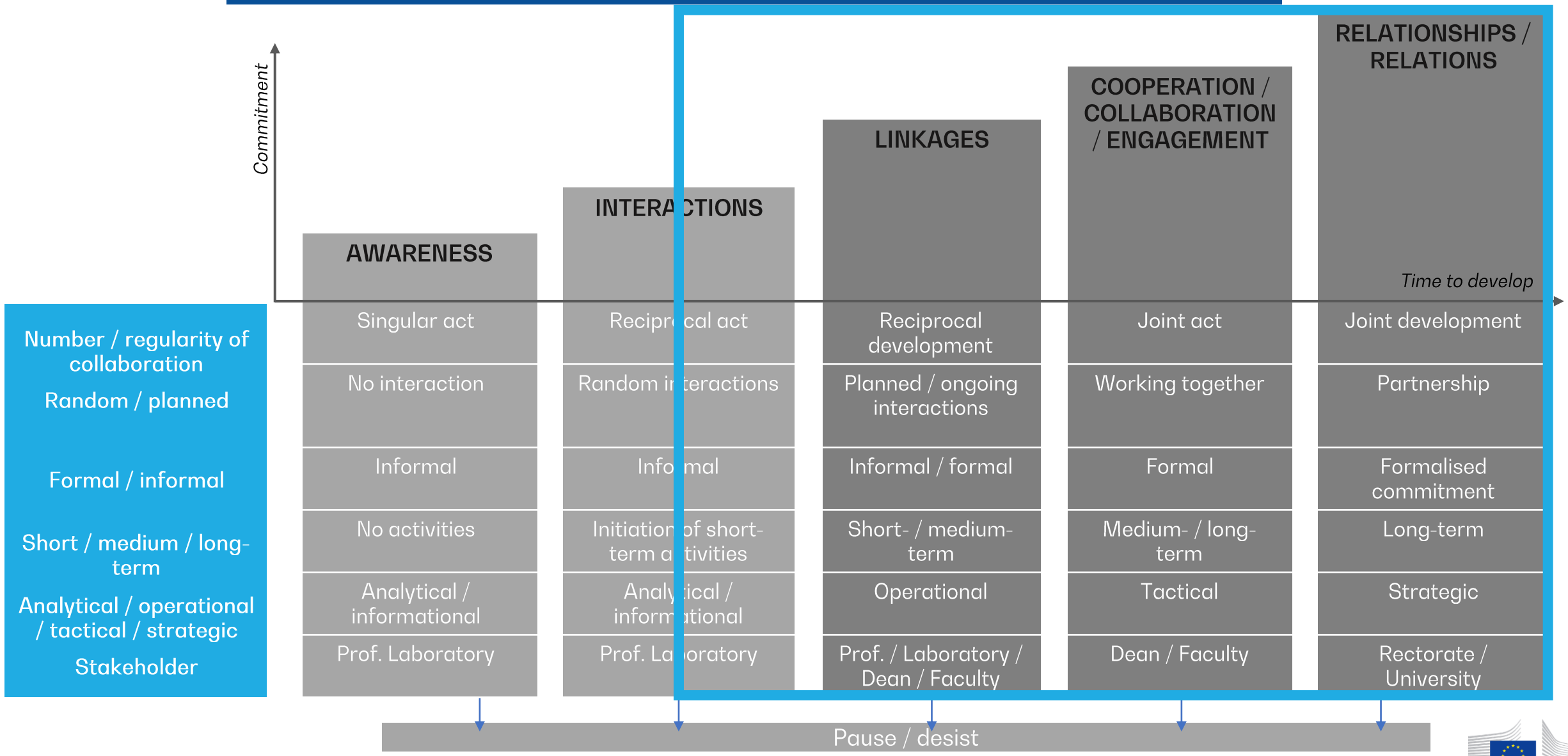
Managing the stairway model to starting and building strategic partnerships

Todd Davey

European Commission

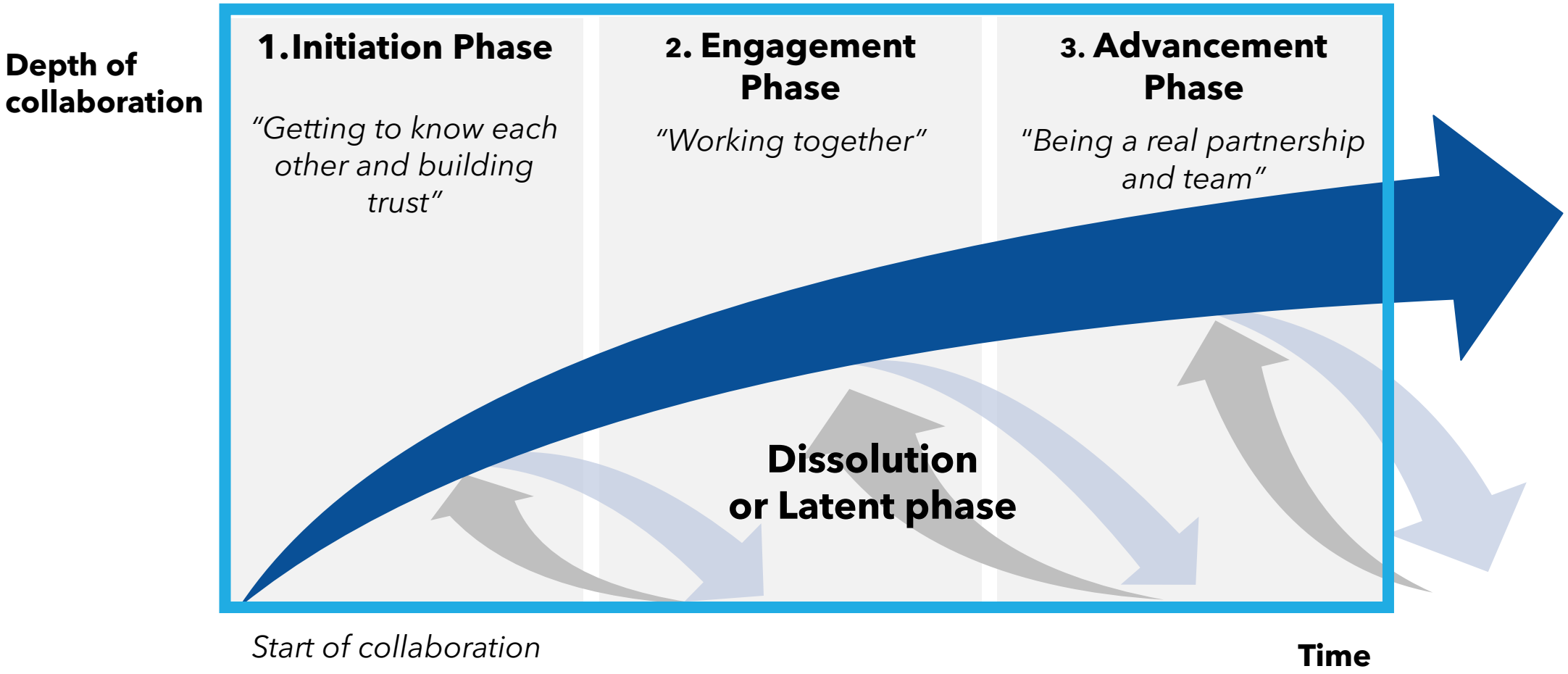
Joint Research Centre

PARTNERSHIP STAIRWAY MODEL



SOURCE: Adapted from Baaken (2010)

THE DIFFERENT PHASES OF ENGAGING IN UIC



SOURCE: Plewa, Korff, Johnson, Macpherson, Baaken and Rampersad (2013) The evolution of university-industry linkages – a framework. *Journal of Engineering and Technology Manage*ment, 30 (1), 21-44.

THE DIFFERENT PHASES OF ENGAGING IN UIC

Depth of collaboration	**1. Initiation Phase** "Getting to know each other and building trust"	**2. Engagement Phase** "Working together"	**3. Advancement Phase** "Being a real partnership and team"
Communication	Quality of communication	Bi-directional, open communication	Discussions going beyond project
Understanding	Understanding of partner's needs	Understanding partner & its environment	Acting in an integrated manner
Trust	Trust in reputation and credibility	Trust in the individual	Trust in the relationship
Individual	Synergy, based on similarity	Development of personal relationship	Personal relationship, often friendship

Start of collaboration

Time

Stage of UIC development effects what is important to focus on

Apply strategies for companies depending Their experience with UIC

Good practices in tech transfer and how to position your TTO and yourself as a trusted and efficient facilitator

Victoria Galan-Muros

European Commission

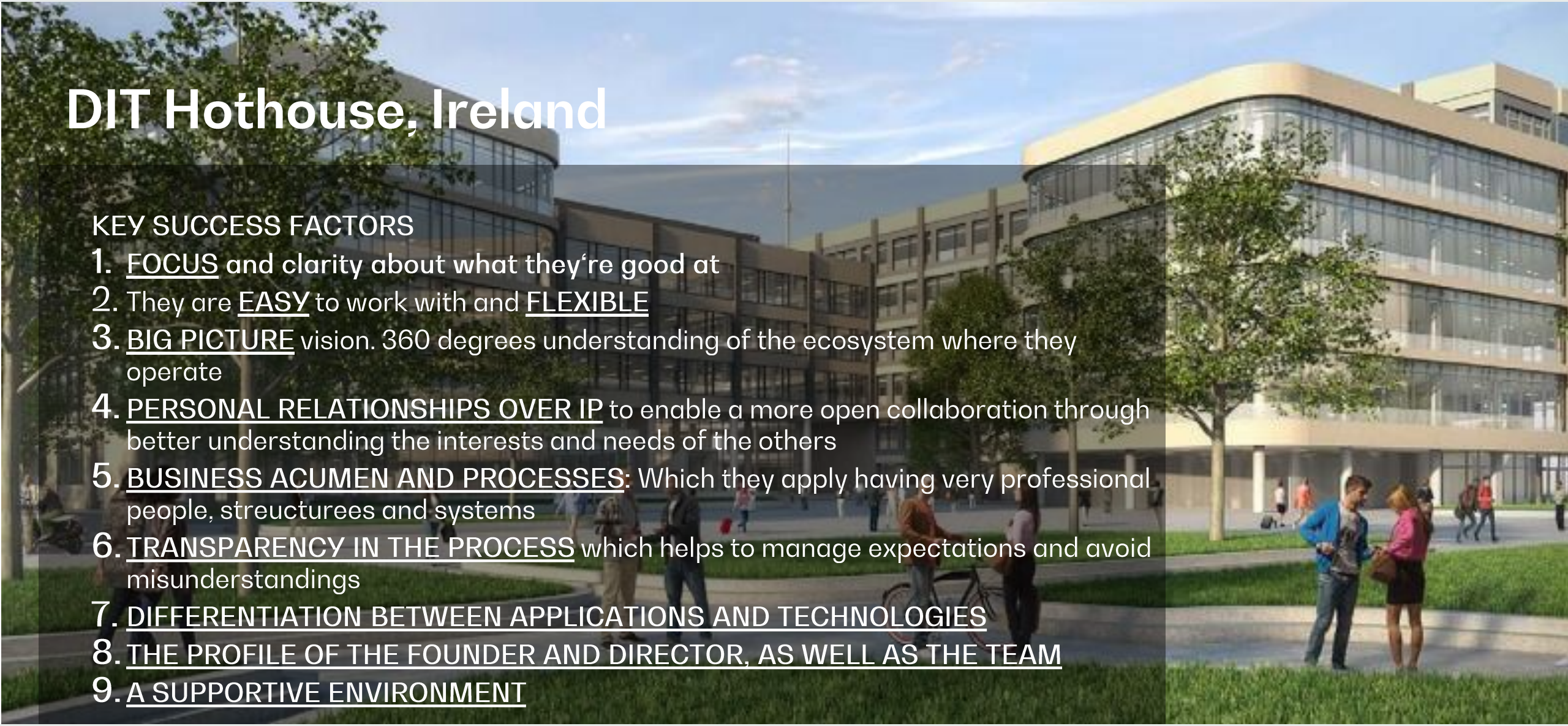
Joint Research Centre

TU Dublin Hothouse is the **award-winning Knowledge Transfer and Incubation Centre at Technological University Dublin**; responsible for the commercialisation of intellectual property arising from TU Dublin research.

Dublin Hothouse has a range of **spinout technologies** available to industry across: Life Sciences, Food, ICT, Software, Industrial Technology, Manufacturing and Clean Technologies.

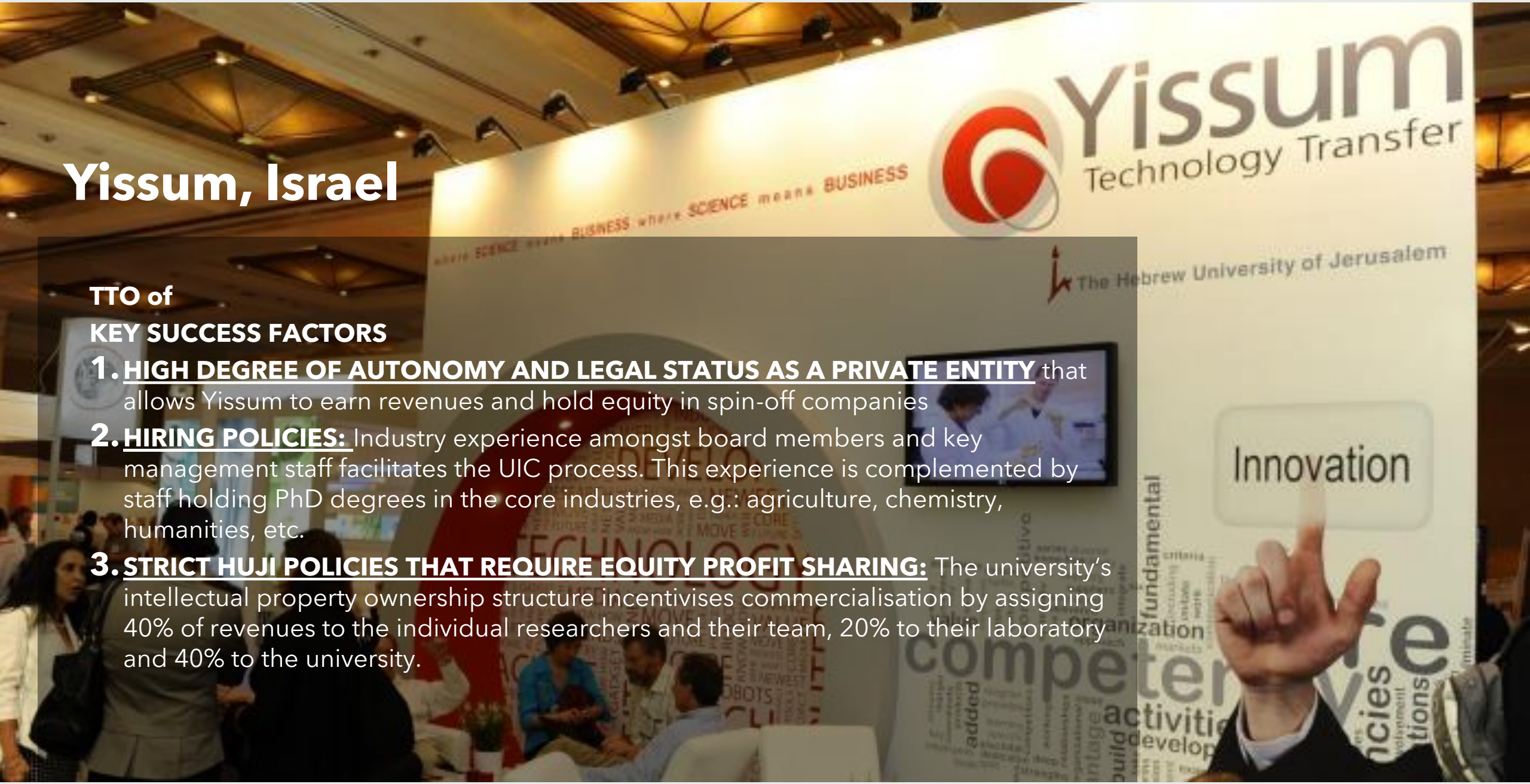
From 2017 to 2019, Hothouse helped create nearly **400 sustainable businesses** that attracted over **€200 million** in equity **investment** and created approximately **1,700 quality jobs**.

DIT Hothouse, Ireland



KEY SUCCESS FACTORS

1. FOCUS and clarity about what they're good at
2. They are EASY to work with and FLEXIBLE
3. BIG PICTURE vision. 360 degrees understanding of the ecosystem where they operate
4. PERSONAL RELATIONSHIPS OVER IP to enable a more open collaboration through better understanding the interests and needs of the others
5. BUSINESS ACUMEN AND PROCESSES: Which they apply having very professional people, streucturees and systems
6. TRANSPARENCY IN THE PROCESS which helps to manage expectations and avoid misunderstandings
7. DIFFERENTIATION BETWEEN APPLICATIONS AND TECHNOLOGIES
8. THE PROFILE OF THE FOUNDER AND DIRECTOR, AS WELL AS THE TEAM
9. A SUPPORTIVE ENVIRONMENT



Yissum, Israel

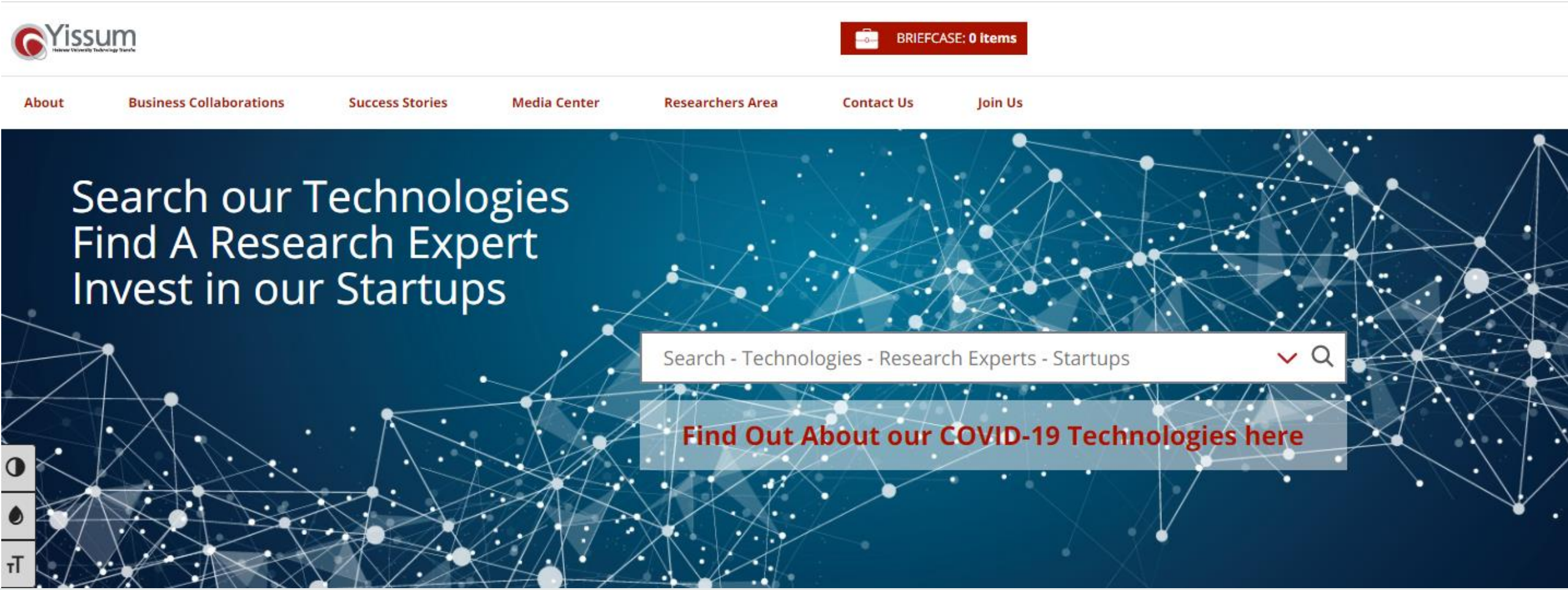
TTO of

KEY SUCCESS FACTORS

1. **HIGH DEGREE OF AUTONOMY AND LEGAL STATUS AS A PRIVATE ENTITY** that allows Yissum to earn revenues and hold equity in spin-off companies
2. **HIRING POLICIES:** Industry experience amongst board members and key management staff facilitates the UIC process. This experience is complemented by staff holding PhD degrees in the core industries, e.g.: agriculture, chemistry, humanities, etc.
3. **STRICT HUJI POLICIES THAT REQUIRE EQUITY PROFIT SHARING:** The university's intellectual property ownership structure incentivises commercialisation by assigning 40% of revenues to the individual researchers and their team, 20% to their laboratory and 40% to the university.

Yissum, Israel

http://www.yissum.co.il/



unitectra

Universität Basel

UNIVERSITÄT BERN

Unitectra is the technology transfer organization of the Universities of Basel, Bern and Zurich.

The main services of Unitectra are:

- Support for the creation of new spin-off companies
- Negotiation of research agreements
- Contact point for business partners with regard to technology transfer issues
- Training and education for scientists in the field of technology transfer

Results from 1999 to 2019:

- Evaluations of 2000 invention disclosures
- 200 spin-off companies
- 100 products under license
- 18,000 research project negotiated

BME FIEK – BUSINESS INTEGRATION

The BME Centre for University-Industry Cooperation (BME FIEK) was established in 2017 as the joint project of four large corporations and the Budapest University of Technology and Economics.

AIM: Promote the market utilization of scientific results generated by the University, technology and knowledge transfer, supports research, development and innovation cooperation between the University and the business community.

In FIEK projects, industrial colleagues, associate researchers and students work together. The result is the Industry-University **win-win model** resulting in a joint R&D capacity.

Funding: government funded (2/3) and self-funded (industrial partners, 1/3)

BME FIEK includes 5 applied research laboratories and aims to serve industries as a whole

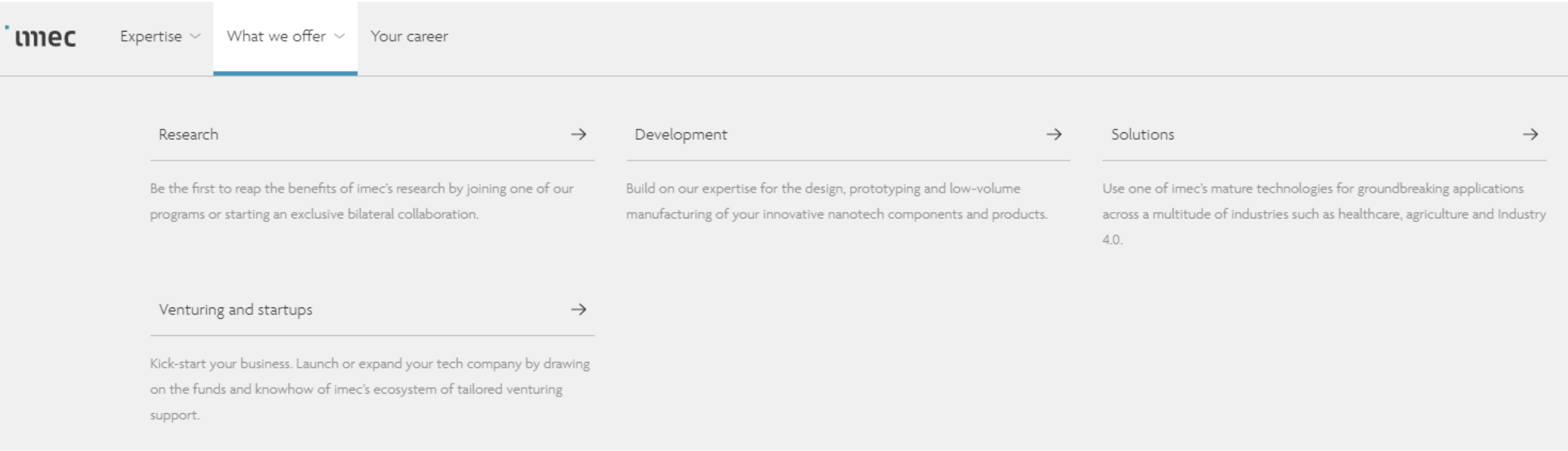
PUSHING THE BOUNDARIES OF TECHNOLOGY

iMinds has been established in 2004 by the **government of the Flemish Region**. The activities of iMinds was centred **on two pillars**: [1] collaborative and **demand-driven research**, and [2] **foster entrepreneurial behaviour amongst researchers** and externals and supporting commercialisation.

In 2016, the initiative **became an additional business unit of Imec**, a world-leading research and innovation hub in nanoelectronics and digital technologies headquartered in Leuven, Belgium.

Imec has distributed R&D groups at several **Flemish** universities, in the **Netherlands, Taiwan, USA**, and offices in China, India and Japan. In **2019, imec's revenue (P&L) totaled 640 million euro**.

PUSHING THE BOUNDARIES OF TECHNOLOGY



https://www.imec-int.com/en

ONE-STOP SHOP FOR INNOVATORS

UNIVERSITY OF CAMBRIDGE
enterprise

Part of the University of Cambridge, Cambridge Enterprise supports academics, researchers, staff and students in achieving knowledge transfer and research impact.

- Income from knowledge and technology transfer:
  £32.3 million
- Distributions to academics, the University and others:
  £16.5 million
- Costs (staff and other operating costs):
  £5.4 million

The university has helped academic and governmet partners around the globe that want to achieve growth by commercialising ther resaserch and knowledge base. Some of them are Botswana, Brasil, Chile, China, Colombia, Czech Republic, Finland, Poland, Pakistan.

Additionally, Cambridge Enterprise offers a Research Commersialisation Open Programme.

2018-2019

13
pre-seed investments

£6.6m
invested in 27 spin-out companies

10
seed companies formed

£19.9m
returned to Cambridge Enterprise and University of Cambridge

CUMULATIVE

£1.8bn
in follow-on funding raised by portfolio companies since 1995

£25.8m
invested over fund lifetime

Impact
notable spin-outs: Quethera, BlueGnome and Solexa

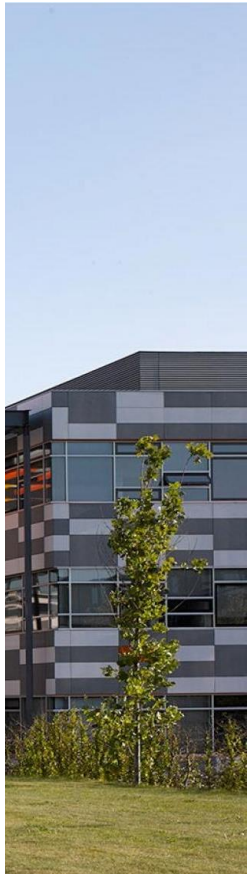
4.4x
multiple across realised investments

Investment in numbers

214 investments
made in 126 companies

£56.4m
current portfolio value

UNIVERSITY OF CAMBRIDGE
enterprise



Our team

At Cambridge Enterprise we work together to provide support to University staff and students interested in commercialisation. Whether you're ready to form a spin-out or just want to have an informal chat about the applications of your research, please get in touch.

In the interests of reducing spam, we have removed individual email addresses. If you would like to contact someone, please use firstname.lastname@enterprise.cam.ac.uk. Our general email address is enquiries@enterprise.cam.ac.uk.

Our Board

Executives

Consultancy Services

Seed Funds

Technology Transfer

International Outreach

Finance and Operations

Business Support

Marketing and Communications

Information Technology

UNIVERSITY OF CAMBRIDGE
enterprise

TRANSFORMING IDEAS AND INVENTIONS INTO COMMERCIAL AND SOCIAL ENTERPRISES

https://www.enterprise.cam.ac.uk/about-us/our-team/

FROM RESEARCH TO SPIN –OFF: A COLLABORATION CASE

The **microfluidic technology of Tide Microfluidics was discovered** when founder Mr. Wim van Hoeve investigated the principles underlying microbubble formation **as part of his PhD-thesis at the University in Twente.**

The technology works by enabling the controlled creation of micro particles—either bubbles or droplets—in a highly controlled environment. Such an environment ensures that gas bubbles are produced one at a time and in the same repeatable manner, giving same-sized bubbles each time.

The University of Twente and the University of Sevilla jointly own the patent protecting this technology, with an **exclusive license granted to Tide Microfluidics** to develop and commercialise the technology.

Source: WIPO, Case of Studies

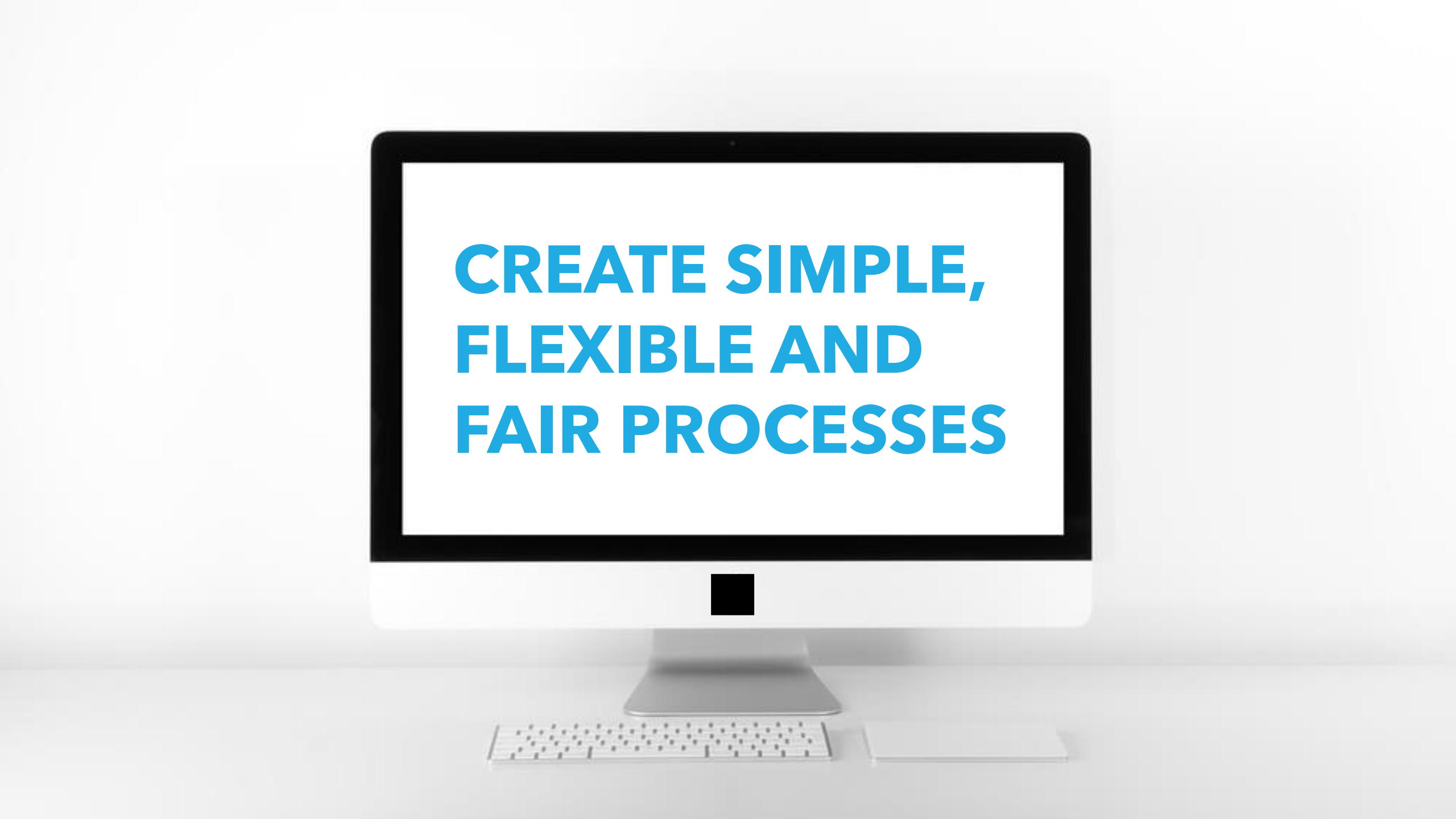
Conclusions and key success factors

European Commission

Joint Research Centre

Promote your work


Put together a smart complementary team


CREATE SIMPLE,
FLEXIBLE AND
FAIR PROCESSES


Be a connector

FIND THE WAY,
even if it is not a straight-forward road

Be creative and resilient

Focus on people, not patents


Bring people together as early as posible in the process

LIS  TEN

Focus on their individual benefits


BUILD
TRUST

Supporting University-Industry-Government Cooperation in

Romania

TRAINING WORKSHOPS
17-20 November 2020

European Commission

Joint Research Centre