Suite Ost, 11:30-12:45

Industry & innovation

Martin Raditsch

Victoria Galán-Muros

Mikael Östling

Balzhan Orazbayeva

AESIS

Industry & innovation

Martin Raditsch (Chair)

President of ASTP Proton
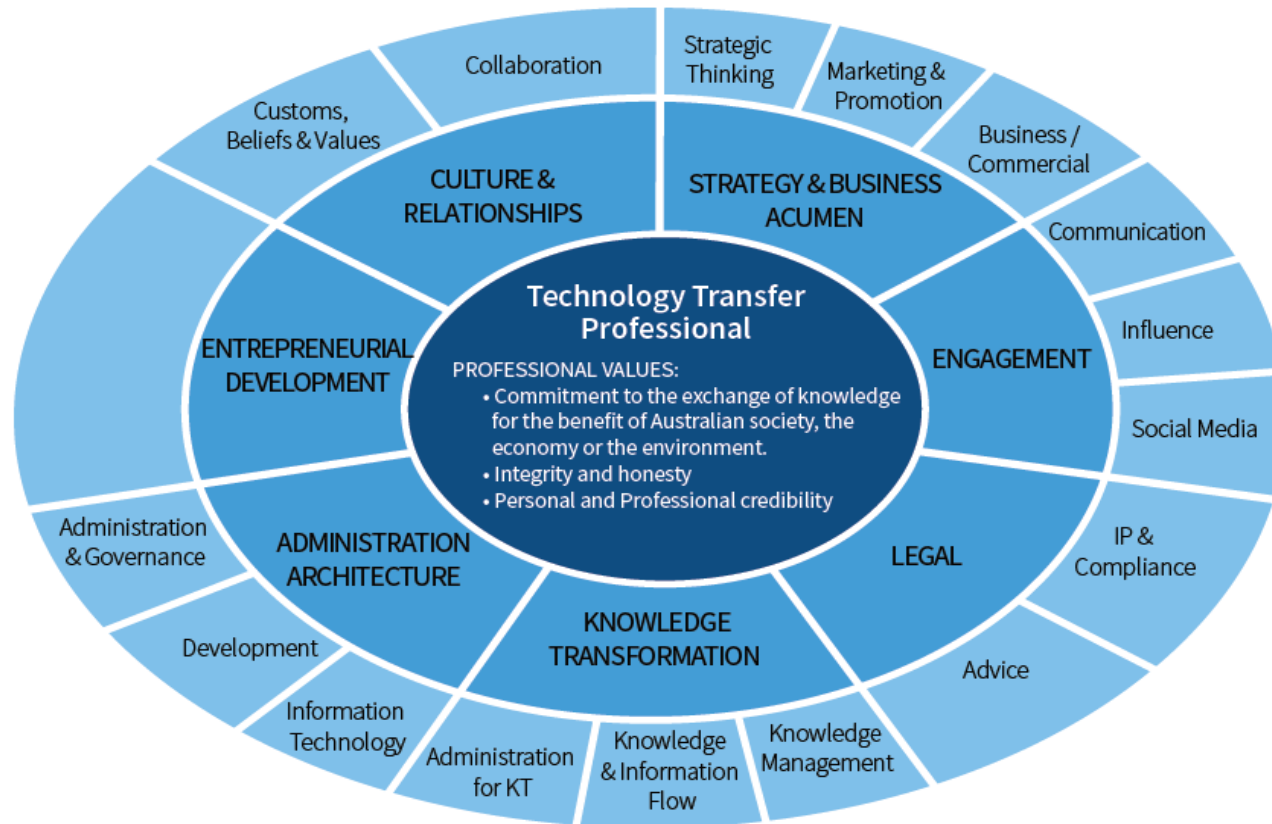
Germany

AESIS

Industry & Innovation

AESIS Impact of Science Conference Berlin June 5-7 2019

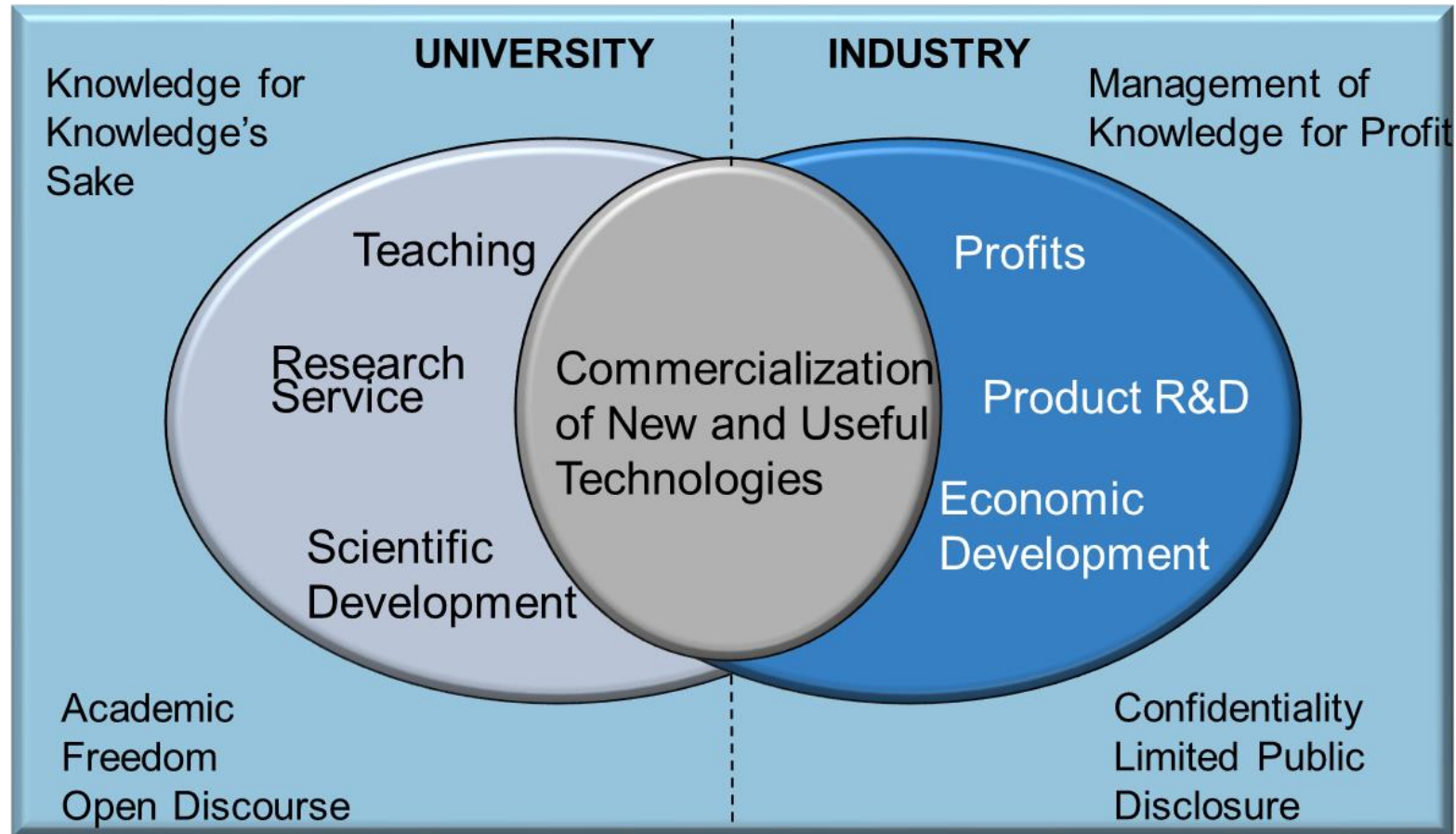Dr. Martin Raditsch, CEO Innovationlab, Frankfurt
President ASTP

ASTP
A World of
Knowledge
Transfer

EU Comissions KT-Indicators

from the Report from the European Commission's Expert Group on Knowledge Transfer Indicators
Håkon Finne, Adrian Day, Andrea Piccaluga, André Spithoven, Patricia Walter, Dorien Wellen
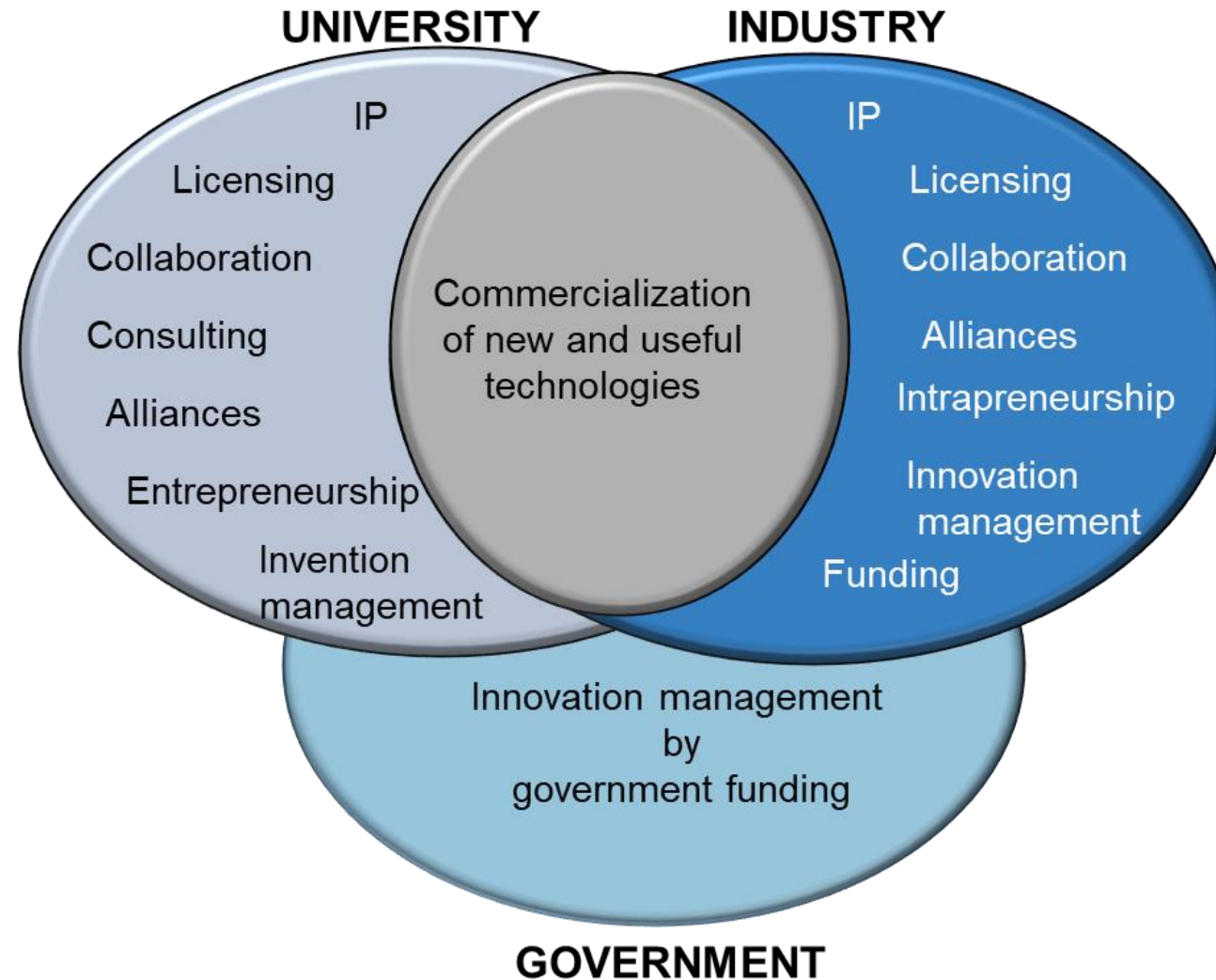2011-10-15

TTP Capability Framework

High level view of the TTP Capability Frame-work illustrating at its core the TTP values and surrounded by the capability clusters and sub-clusters.
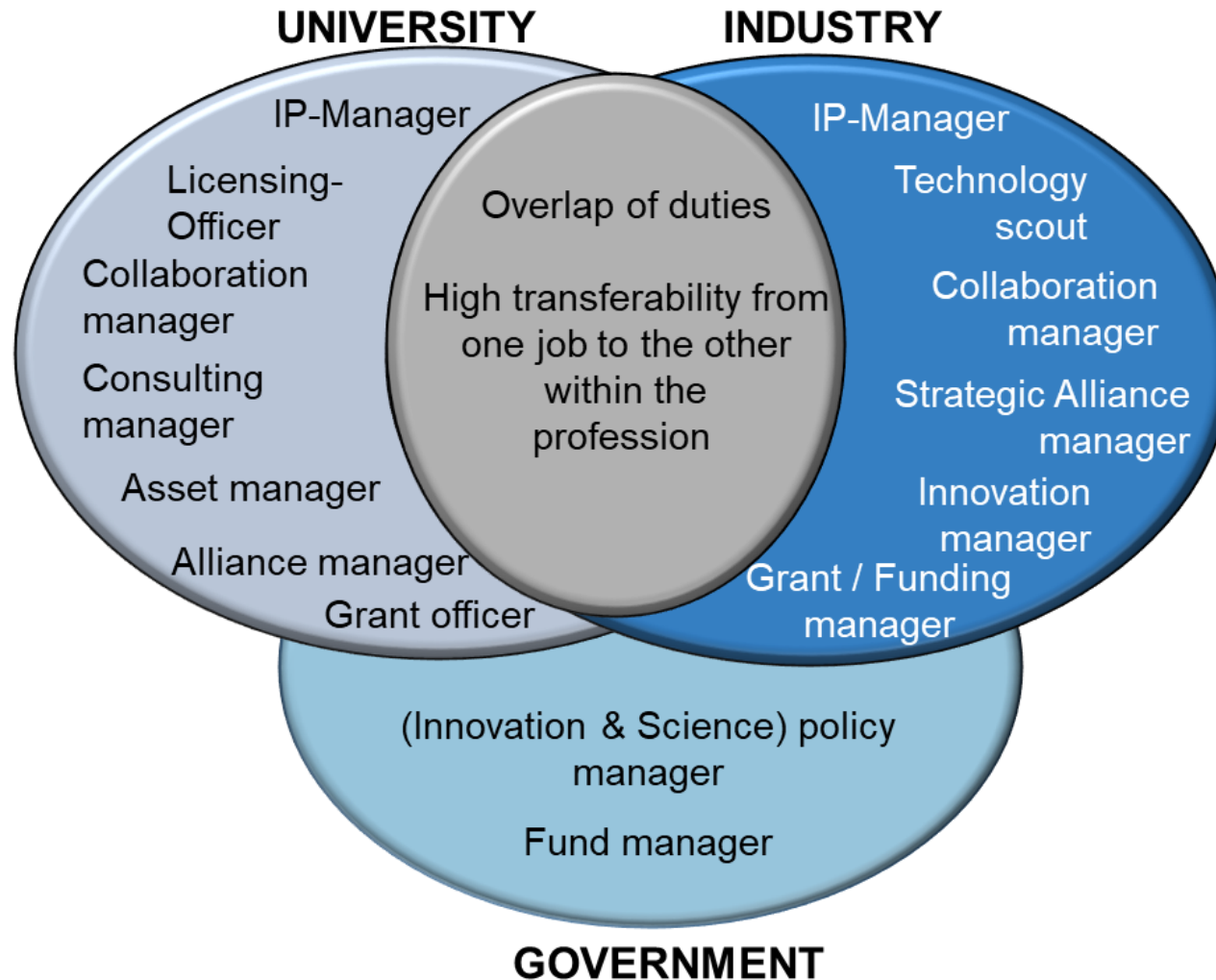
Ecosystem of the KT - profession

# Driving inventions into innovations

Different job titel same profession

UNIVERSITY | INDUSTRY

- IP-Manager
- Licensing-Officer
- Collaboration manager
- Consulting manager
- Asset manager
- Alliance manager
- Grant officer

Overlap of duties

High transferability from one job to the other within the profession

- IP-Manager
- Technology scout
- Collaboration manager
- Strategic Alliance manager
- Innovation manager
- Grant / Funding manager

GOVERNMENT

- (Innovation & Science) policy manager
- Fund manager

ASTP
A World of Knowledge Transfer

Job mobility between Organizations in KT

- a sign for a profession in utilization?

UNIVERSITY   INDUSTRY

GOVERNMENT
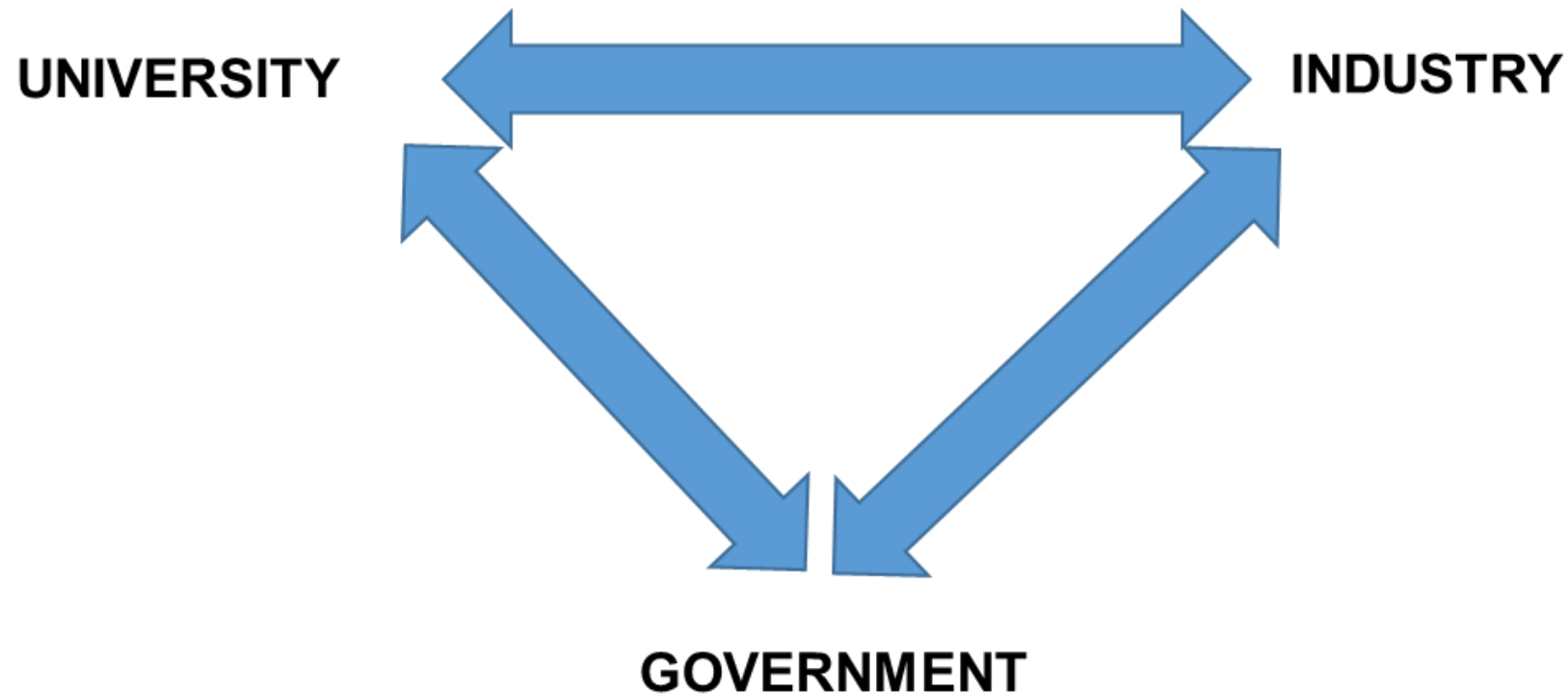
Thank you

ASTP
A World of
Knowledge
Transfer

Industry & innovation

Victoria Galán-Muros

Director of Policy Affairs,
University-Industry Innovation Network

AESIS

360° of university-business cooperation

1. **Educator** – Lecturer at U. of Adelaide (AU), MBS and MUAS (DE), *VU Amsterdam (NL), NMU (ZA)*

2. **Researcher** – *PhD (Management of UBC in Europe) at VU Amsterdam, Science-to-Business Marketing Research Centre*

3. **Senior consultant** – *Apprimo, Technopolis Group UK*

4. **Expert positions** – EC Projects, HEInnovate working group, Director UIIN

5. **Policy Analyst** - OECD Higher Education

Largest intl. study on university-business cooperation

1st - 2010-11

2nd - 2016-17

About *(me)*

www.ub-cooperation.eu

WHO ARE YOU??

HE / Scientific Institutions

Business

Intermediaries

Policy makers

Others

Where the
magic
happens!

… University-Business Cooperation (UBC)
(as a way of collaborative innovation)

www.uiin.org

www.ub-cooperation.eu

University-business cooperation *(UBC)* is essential to innovate…

… but university-business relationships don't *(naturally)* work.

As they have *(usually)* have different priorities and interests

UNIVERSITY-BUSINESS
COOPERATION IN EUROPE

Farming [1]
(land)

Industrial age[2]
(labour)

Knowledge economy[3]
(innovation)

Consisting of:
1. **Innovative business**
2. **3rd gen. university / science**
3. Govt. (support)
4. Society (4 Helix)

Towards a *(knowledge)* economy

"It is <u>not</u> the **strongest** of the species that survives, nor the **most intelligent,** but the one most responsive to **change**"

Charles Darwin 'The Origin of the Species'

University engagement with external organisations is both a cause and a response to *(the constant)* change

A better understanding of the bigger picture of university-business cooperation in Europe

ABOUT THE STUDY

Executed for the **European Commission (DG Education & Culture)** between 2016-2018, the project seeks to determine:

- the extent of University-Business Cooperation (UBC),
- the mechanisms supporting UBC
- the motivators, facilitators, barriers and other factors affecting UBC

from the perspective of both **university** and **business**.

The project is the **largest international study yet completed** on the topic of University-Business Cooperation and includes:

1. 52 good practice case studies
2. 24 expert interviews
3. Major survey (over 17,400 responses)
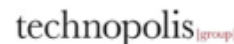4. Policy and indicators reviews
5. 22 national reports

www.ub-cooperation.eu

Core Partners

LEAD PARTNER

Science Marketing
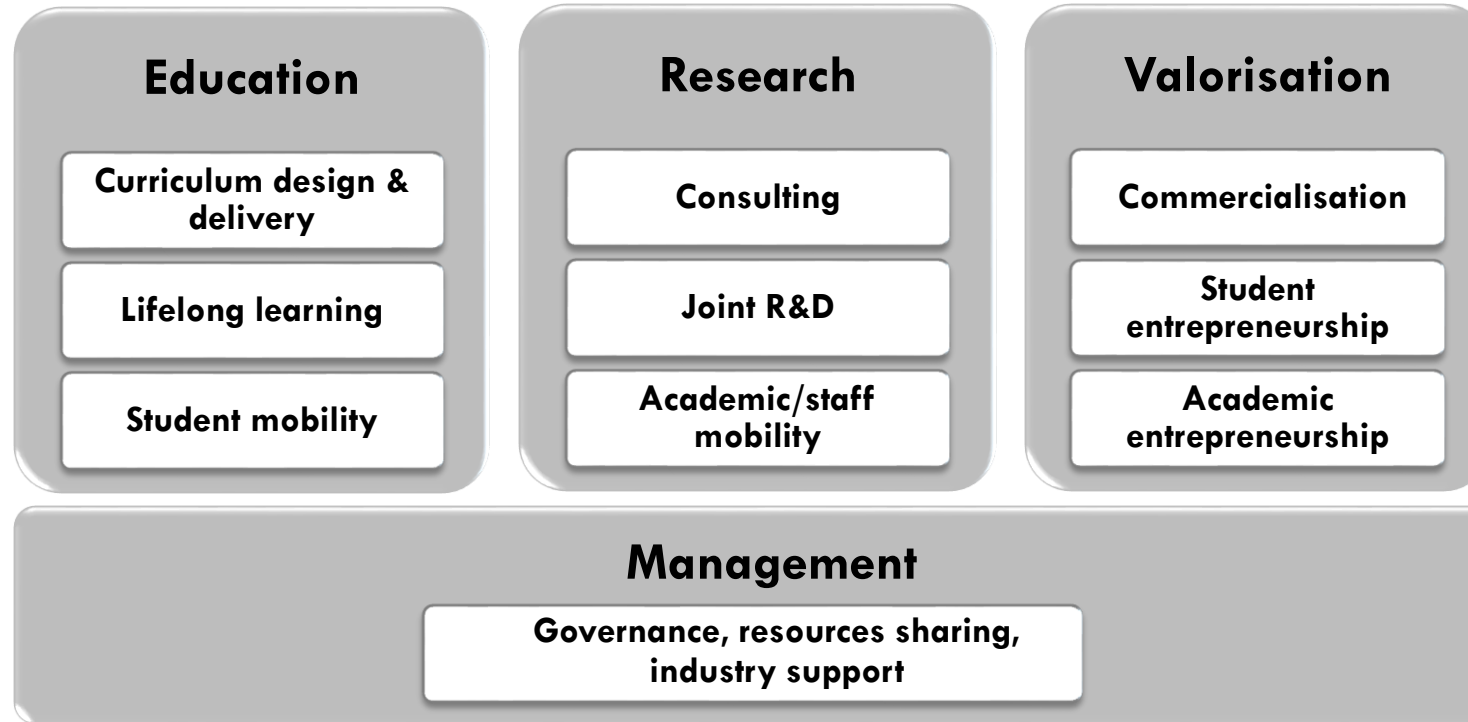Science-to-Business Marketing Research Centre

PARTNERS

ingenio CSIC-UPV

University of Ljubljana
Faculty of Social Sciences

Universiteit Leiden

UIIN University Industry Innovation Network

EUROCHAMBRES

EURASHE

Education

- Curriculum design & delivery
- Lifelong learning
- Student mobility

Research

- Consulting
- Joint R&D
- Academic/staff mobility

Valorisation

- Commercialisation
- Student entrepreneurship
- Academic entrepreneurship

Management

- Governance, resources sharing, industry support

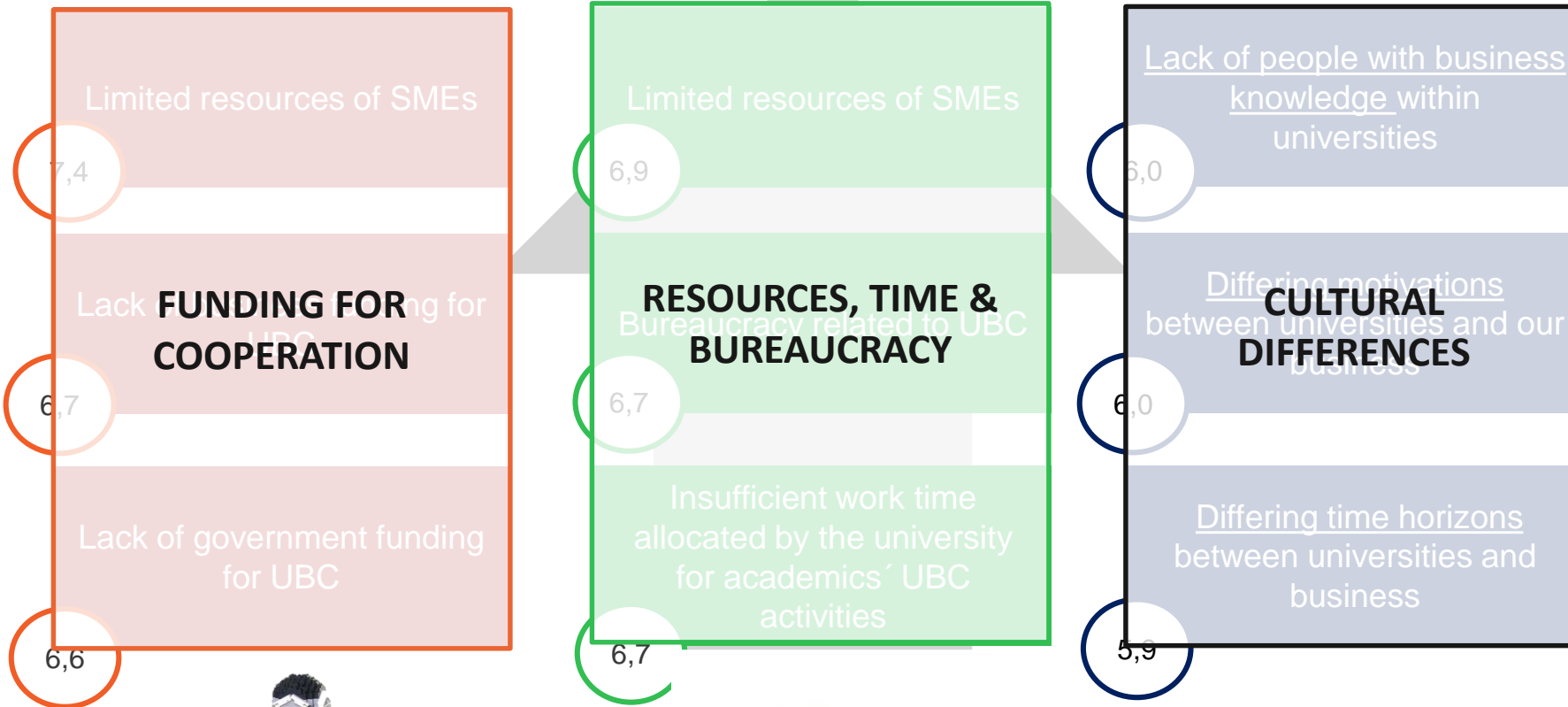**!** Engagement is not a separate activity… incorporate it into all HEI missions!

Synergies need to be created among activities !

Understanding what *UBC* is

BARRIERS

What is hindering UBC?

FUNDING FOR COOPERATION

- Limited resources of SMEs — 7,4
- Lack of funding for UBC — 6,7
- Lack of government funding for UBC — 6,6

RESOURCES, TIME & BUREAUCRACY

- Limited resources of SMEs — 6,9
- Bureaucracy related to UBC — 6,7
- Insufficient work time allocated by the university for academics´ UBC activities — 6,7

CULTURAL DIFFERENCES

- Lack of people with business knowledge within universities — 6,0
- Differing motivations between universities and our business — 6,0
- Differing time horizons between universities and business — 5,9

Reduce or *(ideally)* remove cooperation barriers

Scale: 1 = "Not at all relevant" to 10 = "Extremely relevant"

UNIVERSITY-BUSINESS
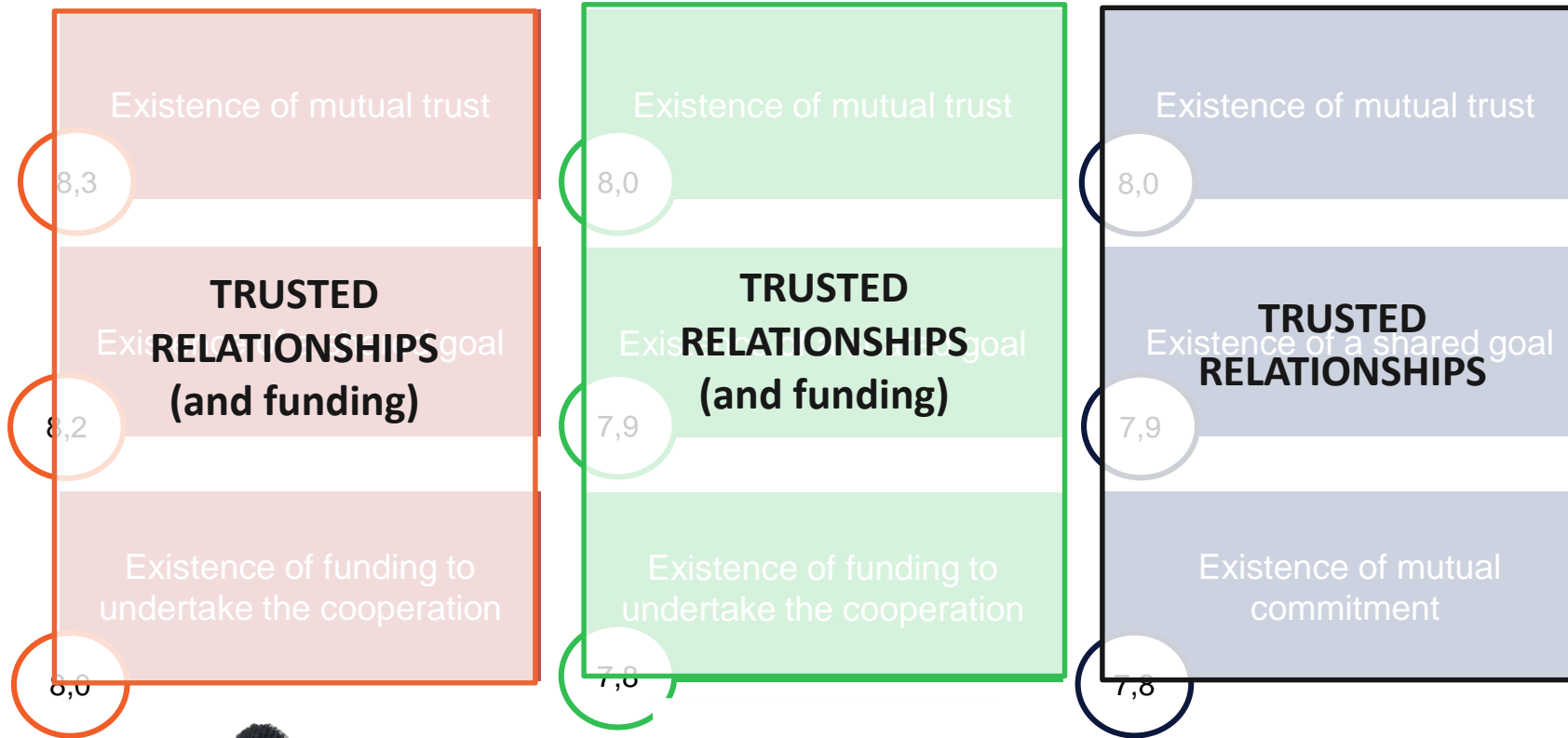COOPERATION IN EUROPE

DRIVERS
What is driving UBC?

Motivators

Facilitators

To obtain funding / financial resources	Gain new insights for research	Get access to new technologies and knowledge
8,1	7,8	7,6
FUNDING, GRADUATES & RESEARCH INTO PRACTICE	**RESEARCH INSIGHTS, RESEARCH INTO PRACTICE & SOCIETAL CHALLENGES**	**NEW DISCOVERIES AND INNOVATION**
8,1	7,7	7,6
To use the university´s research in practice	Address societal challenges and issues	Access new discoveries at an early stage
8,0	7,1	7,1

Recognise motivations & *(ideally)* ensure desired stakeholder outcomes

Scale: 1 = "Not at all relevant" to 10 = "Extremely relevant"

TRUSTED RELATIONSHIPS (and funding)	TRUSTED RELATIONSHIPS (and funding)	TRUSTED RELATIONSHIPS
Existence of mutual trust — 8,3	Existence of mutual trust — 8,0	Existence of mutual trust — 8,0
Existence of a shared goal — 8,2	Existence of a shared goal — 7,9	Existence of a shared goal — 7,9
Existence of funding to undertake the cooperation — 8,0	Existence of funding to undertake the cooperation — 7,8	Existence of mutual commitment — 7,8

Create and *(ideally)* develop facilitators

Scale: 1 = "Not at all relevant" to 10 = "Extremely relevant"

1. Academic

- Source of funding
- Informs their teaching
- Increases scientific productivity measured in quality / quantity of articles
- Provides access to equipment and resources

Everyone *(ideally)* benefits

1. Academic

- Source of funding
- Informs their teaching
- Increases scientific productivity measured in quality / quantity of articles
- Provides access to equipment and resources

2. Business

- Access new discoveries, problem-solving capabilities and talented students
- Provides future income through product and service development

Everyone *(ideally)* benefits

1. Academic

- Source of funding
- Informs their teaching
- Increases scientific productivity measured in quality / quantity of articles
- Provides access to equipment and resources

3. HEI

- Improve relevance of research conducted
- Transfer of knowledge and technology to society
- Income through third-party money

2. Business

- Access new discoveries, problem-solving capabilities and talented students
- Provides future income through product and service development

Everyone *(ideally)* benefits

1. Academic

- Source of funding
- Informs their teaching
- Increases scientific productivity measured in quality / quantity of articles
- Provides access to equipment and resources

3. HEI

- Improves relevance of research
- Transfer of knowledge and technology to society
- Income through third-party money

4. Students

Improves:

- relevance of study
- job competencies
- future job prospects and employability
- access to job market

2. Business

- Access new discoveries, problem-solving capabilities and talented students
- Provides future income through product and service development

Everyone *(ideally)* benefits

Society

- Enhances job creation
- Stimulates economic growth
- Increases living standards
- Increases productivity
- Increases social cohesion

Everyone *(ideally)* benefits

UNIVERSITY-BUSINESS
COOPERATION IN EUROPE

Cooperation vs publication

- Academics that cooperate more with business obtain more and higher quality publications

- Allow academics to publish collaborative research results

How long is too long?

- Research takes time and there are not radical shortcut

When is a technology ready?

- Absorption capacity and expectation management

Too big too soon?

- Starting small and gradually grow to larger projects once relationships have been developed

What are you talking about?

- Intermediaries and time together facilitates understanding and develop a common language

Why do you do that

- Temporary mobility to each others' organisations facilitates this

Factors that *(help)* balance stakes and priorities

- Well-designed **policies and strategies** (institutional / regional/ national/ international)
  - STI agenda, IP policies

- Effective **intermediaries**: TTOs, regional development agencies, project managers, EC
  - Expectations management, sensitization of differences, speak both languages, align time horizons, etc.

- **Activities** that help develop personal relationships based on trust and commitment
 - From networking events to temporary mobility

Factors that *(help)* balance stakes and priorities

UNIVERSITY-BUSINESS
COOPERATION IN EUROPE

Thank you!

Dr. Victoria Galán Muros
galanmuros@uiin.org

- What is the best policy / strategy / activity you've applied or heard of to balance the stakes and priorities between science and industry?
- F
- F
- Open science
- Get Marion's questions!
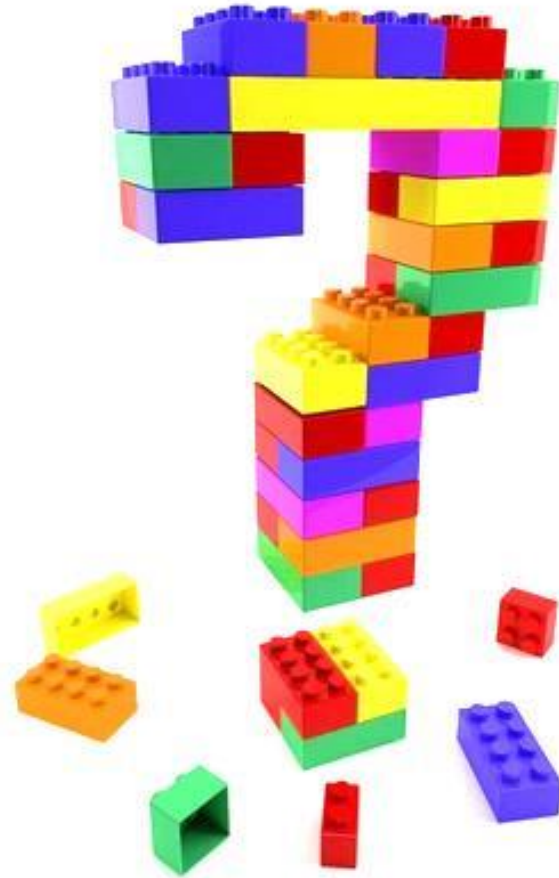
QUESTIONS FOR DISCUSSION
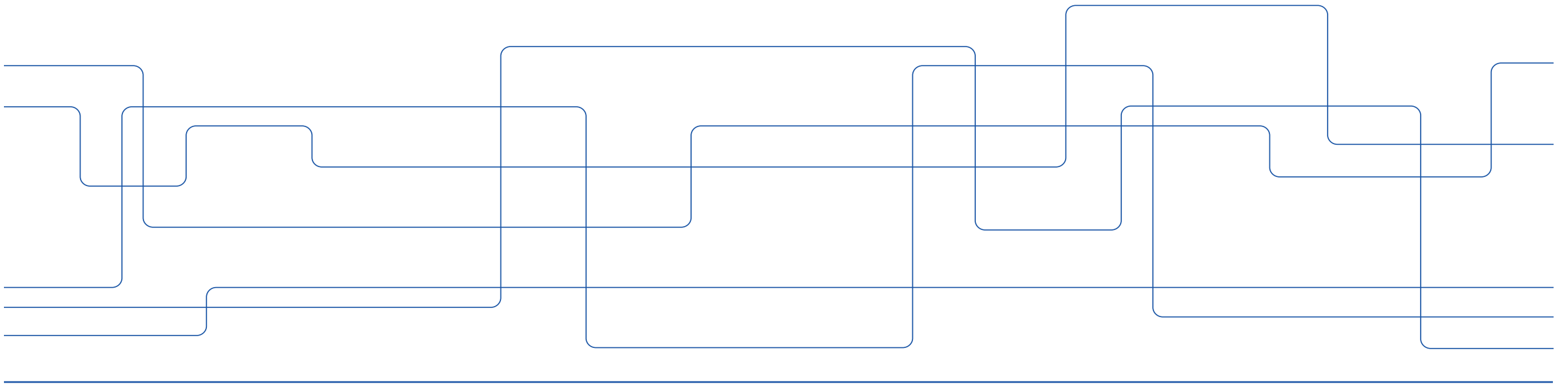
Industry & innovation

Mikael Östling

Deputy President, Royal Institute of Technology (KTH), Sweden

AESIS

Balance between academic and industrial stakes and priorities

190606 Mikael Östling, Deputy President KTH

Innovation Research Cycle

"Research and development is the transformation of money into knowledge, Innovation is the transformation of knowledge into money"

Dr. Geoff Nicholson, retired 3M President

KTH Strategic partnerships

Establishment of long-term collaboration for mutual development

Yearly management dialogue on future challenges

Committed targets for 1-2 years

Focused on personell mobility

High level meetings all partners

Instruments for collaboration
- EU/ National/ Regional initiatives
- Centra
- Mobility
- Joint Research projects
- Education- thesis, challenges in education, guest lectures
- Life long learning
- Research infrastructure

PARTNERSHIP CANVAS

| Created for: KTH | Created by: Johan Blaus | Date: | Version: 1.0 |

FOCUS AREAS — ②
What are the key focus areas of your partnerships, and how are they selected to ensure alignment with your goals?

- AI – Digitalization
- "Industry 4.0"
- Societal challenges
- Mobility of personell

PARTNERS — ③
Who are your primary partners, and by what criteria are they chosen?

SCANIA · ERICSSON · SANDVIK
ABB · VATTENFALL · SKANSKA
SAAB · BOMBARDIER · stordenso
Stockholms stad · Stockholms läns landsting

GOALS — ①
What goals drive your partnerships?

- **Business intelligence on management level**
- **Branding, attractive university**
- **Joint statements for policy**
- **Increased funding possibilities**
- **Resources (Adjunct professors and industrial PhD's)**
- **Strenghtening internationalization**
- **Engagement in education**
- **Stimulate collaboration broader in KTH**
- **Life long learning**
- **New initiatives**

FORMATS — ④
What collaboration formats match your focus areas and goals?

- **EU/ National/ Regional initiatives**
- **Centra**
- **Mobility**
- **Joint Research projects**
- **Thesis work and other projects in education, guest lectures**
- **Life long learning**
- **Research infrastructure**

PEOPLE, PROCESSES, AND ORGANIZATION — ⑤
What people, processes, and organizational structures support your partnerships?

- 1 x Partner owner (Deputy president)
- 1 x Programme Director
- 11x Partner directors (Academia)
- 9 x Partner managers (Adminstration + academia)

EVALUATION — ⑥
What key performance indicators are most useful for evaluating your partnerships?

- Engagement in centers
- Adjunct professors
- Industrial PhD's
- Outgoing mobility
- Guest lectures
- Joint applications
- Commissioned education
- Number of internships
- Thesis projects
- Joint publications

Designed and developed by Lars Frølund, Max Riedel, and Fiona Murray

Impact through collaboration

Driving forces

1. To strengthen KTH in the role to be first choice partner in research and education

2. To contribute to strengthening the attractiveness of KTH

3. To provide increased opportunities for external financing / external resources

4. To give increased ability to policy impact

5. To strengthen KTH's collaborative capacity and spread working methods to other types of collaboration

6. Global monitoring at management level in sectors important for KTH through trusting dialogue at management level between KTH and partners

Effects, examples

Integrated Transport Research Lab

Scania, Ericsson, KTH

Openlab

City of Stockholm, Stockholm county council,
County Administrative Board of Stockholm

Karolinska Institutet, KTH,Stockholm university,
Södertörn university,

Digital Demo Stockholm

City of Stockholm, Stockholm county council

KTH, Ericsson Skanska Vattenfall ABB Scania

Digital Demo Stockholm (DDS)

Unique collaboration between public sector, business and academia in Stockholm. Ambition to build long term structures for regional collaboration.

Strengthen competitiveness of Stockholm and support regional visions e.g. Stockholms stad Vision 2040

Show that digital technology can generate attractive solutions to support need for society and citizens.

Public actors define challenges and suggest priorities research areas for higher education and industrial partners.

Industry & innovation

Balzhan Orazbayeva

Academic Researcher, S2BMRC

AESIS

THE FUTURE OF UNIVERSITIES

Impact of Science
Berlin, 06.06.2019

Balzhan Orazbayeva
Academic researcher, S2BMRC

FUT_

F U
T _

The future is not only unknown,
it is unknowable

... but it can be shaped!

FUT_

university is

FUT_

university is

university is **not for me**
university is **hard**
university is **too hard**
university is **a waste of time**
university is **overrated**
university is **making me depressed**
university is **diversity**
university is **a waste of time reddit**
university is **pointless**
university is **a con**

Google Search   I'm Feeling Lucky

FU
T_

40 PERSPECTIVES ON HOW ENGAGED
AND ENTREPRENEURIAL UNIVERSITIES
WILL DRIVE GROWTH AND SHAPE OUR
KNOWLEDGE-DRIVEN FUTURE UNTIL 2040

THE FUTURE OF UNIVERSITIES
THOUGHTBOOK

TODD DAVEY, ARNO MEERMAN,
BALZHAN ORAZBAYEVA, MAX RIEDEL,
VICTORIA GALÁN-MUROS, CAROLIN PLEWA,
NATASCHA ECKERT

www.futureuniversities.com

FU T_ Australia

20 PERSPECTIVES ON HOW ENGAGED
AND ENTREPRENEURIAL UNIVERSITIES
WILL DRIVE GROWTH AND SHAPE OUR
KNOWLEDGE-DRIVEN FUTURE UNTIL 2040

THE FUTURE OF UNIVERSITIES
THOUGHTBOOK

AUSTRALIAN EDITION

BALZHAN ORAZBAYEVA, CAROLIN PLEWA, TODD DAVEY,
ARNO MEERMAN, IXCHEL BRENNAN, JOHN SZABO,
NATALIE FORDE, MARGIE ATKINSON, JACYL SHAW,
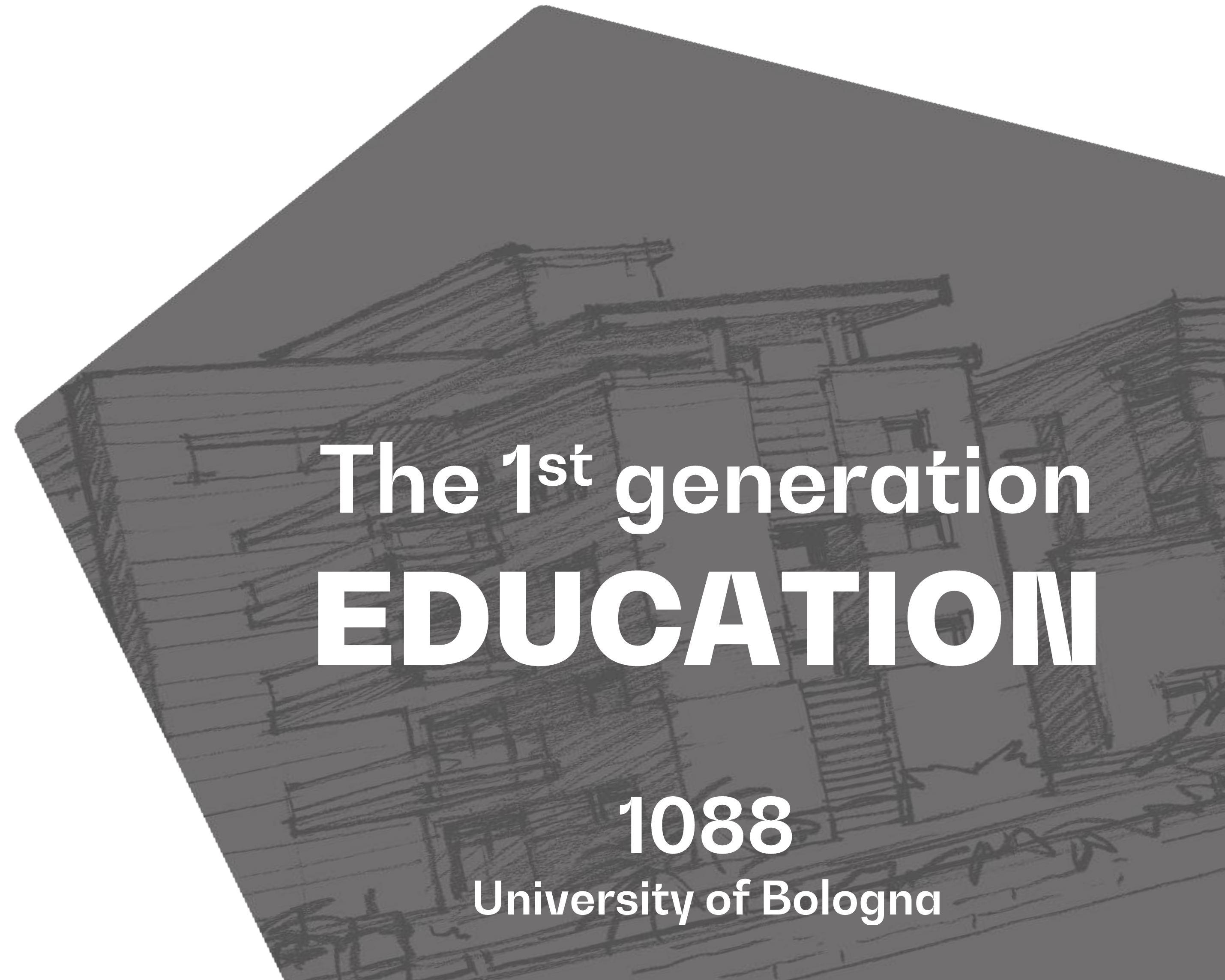KATHRYN ANDERSON

www.futureuniversities.com

FUT_

FLASHBACK AND SITUATING THE PRESENT

Three generations of university

Flashback

EDUCATION

The 1st generation
EDUCATION

1088
University of Bologna

Three generations of university

Flashback

EDUCATION

RESEARCH

The 2nd generation
+ RESEARCH

1810
Humboldt University of Berlin

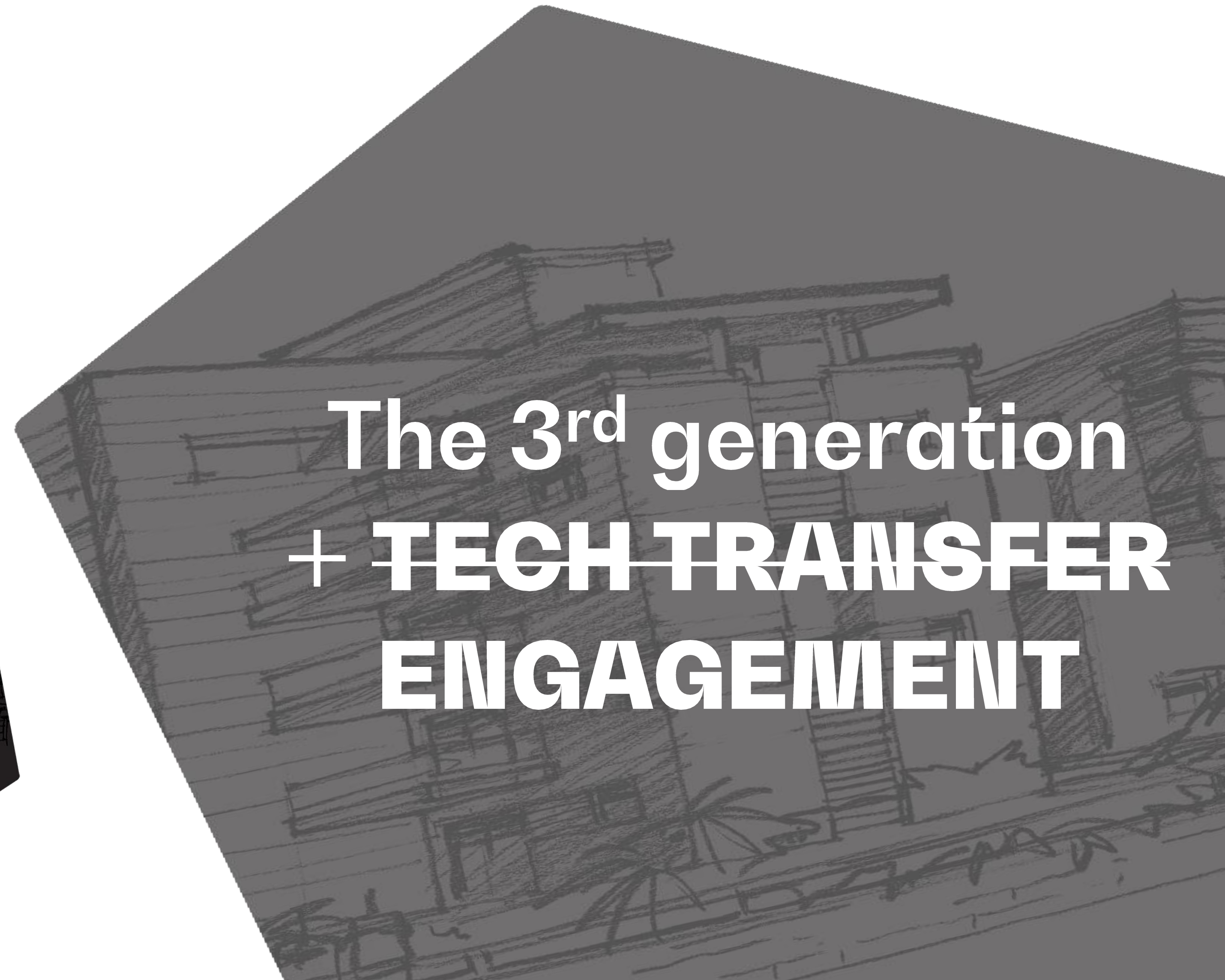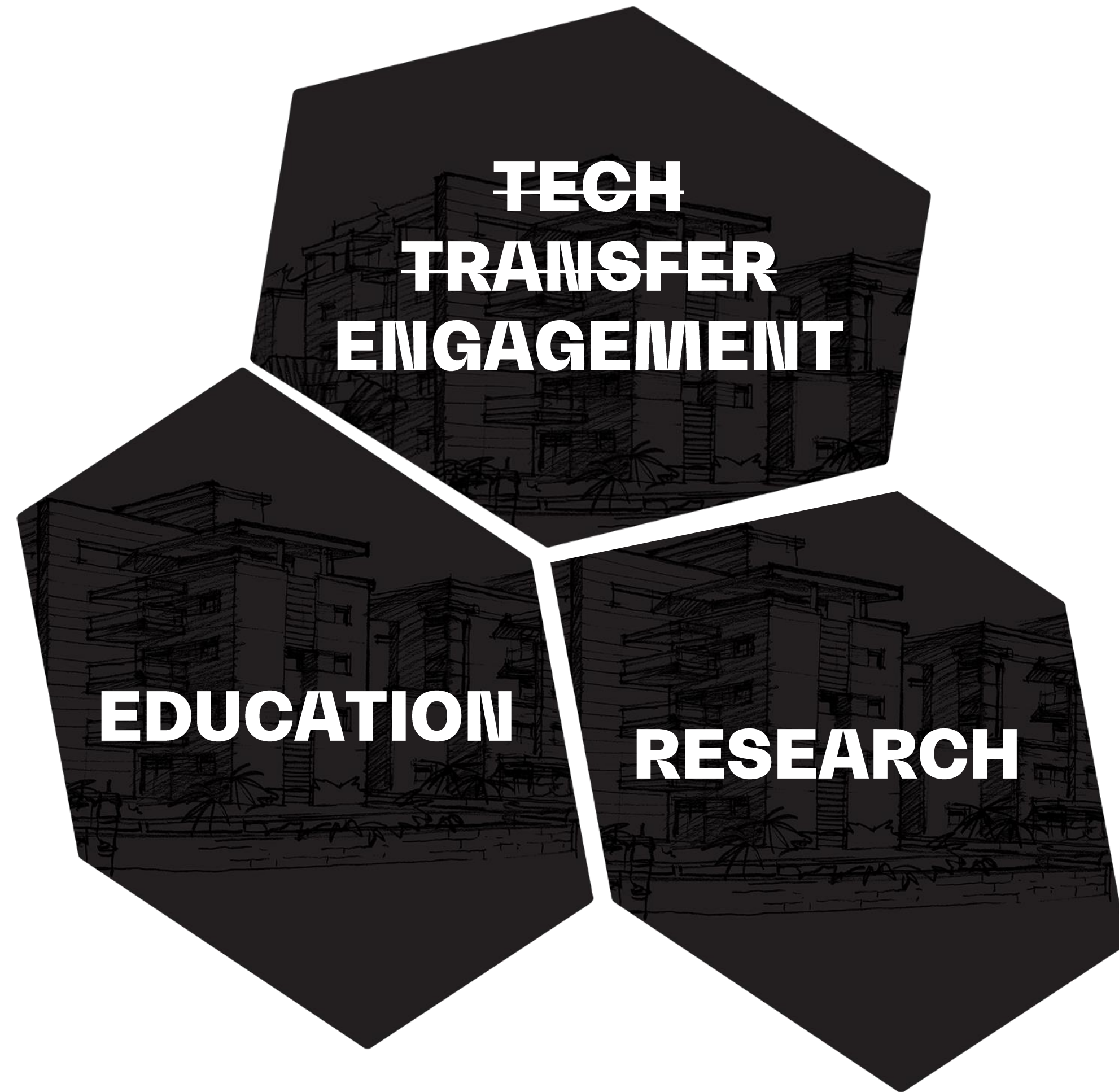# Three generations of university

Flashback

TECH TRANSFER

EDUCATION

RESEARCH
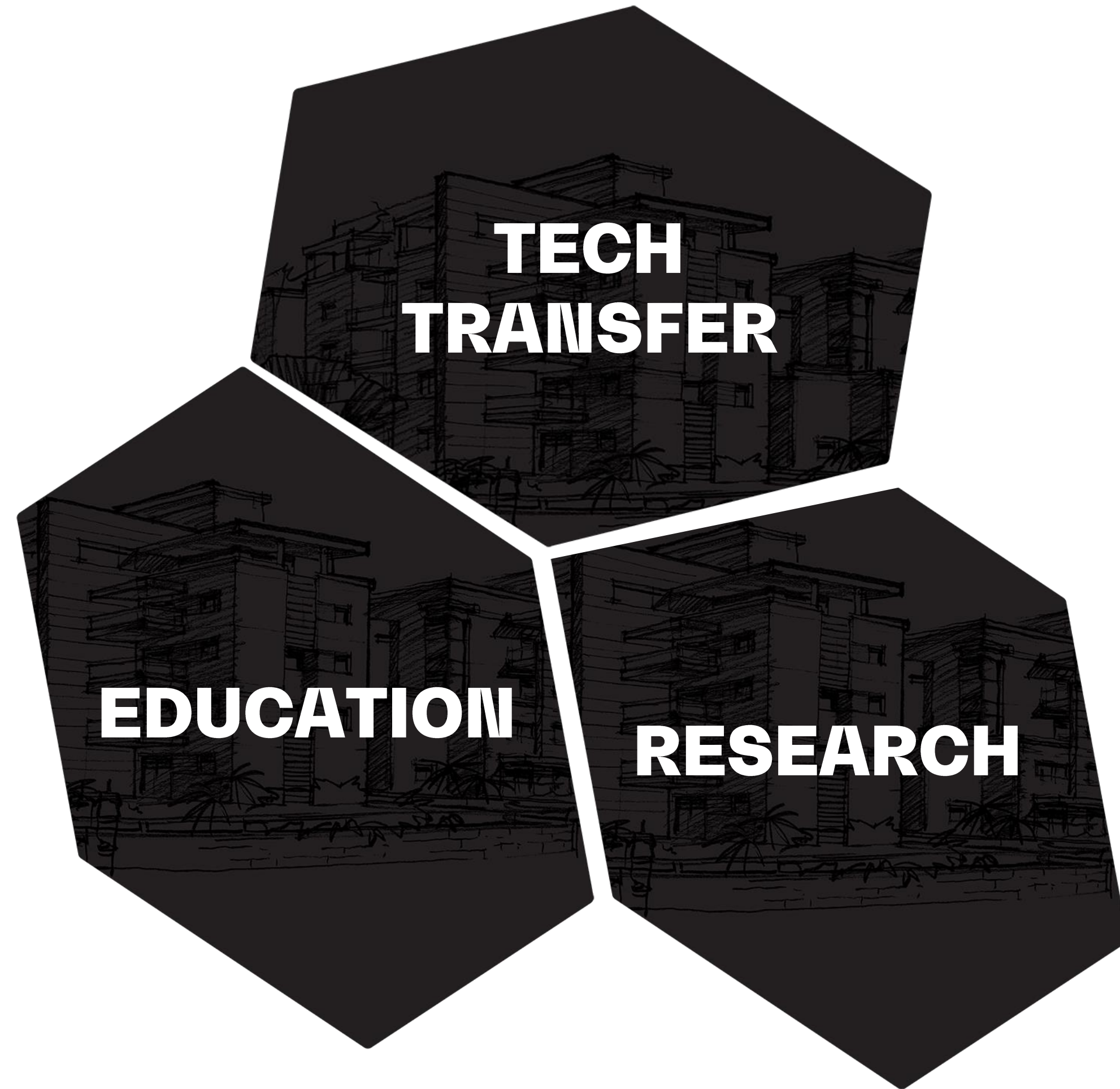
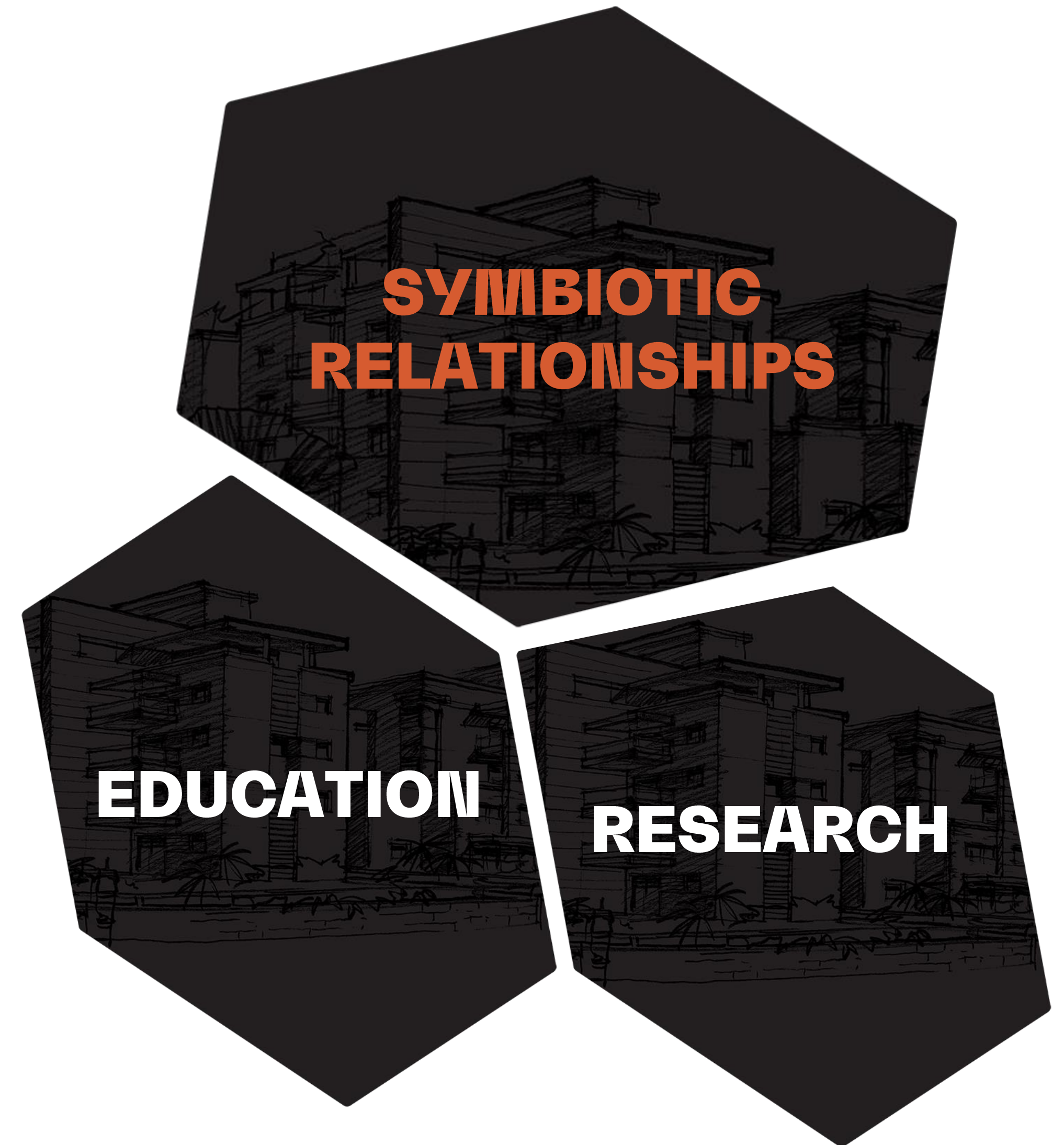The 3rd generation + TECH TRANSFER

1925
University of Wisconsin

The 4ᵗʰ generation

A way forward?

The 4th Generation University is a university in which <u>academics and students</u> work <u>in real time, place-based</u>

SYMBIOTIC RELATIONSHIPS

with <u>industry, government and societal stakeholders</u> as well as relationships between <u>humans and technology</u>

ROLES OF THE UNIVERSITY

ROLES OF UNIVERSITIES

Talent-engine
Developing and validating students' competences

Life partner
Adding or scaling the skills of professionals

Discovery
Cutting edge visionary and collaborative research

Home-base
Open co-working exchange space for the region

Launch-pad
Entrepreneurial base for students, academics, business

ROLES OF UNIVERSITIES

Discovery
Cutting edge visionary and collaborative research

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Launch-pad
Entrepreneurial base for students, academics, business

Talent-engine
Developing and validating students' competences

Role   To prepare students for employment
        (employer or self)

Involves changing curricula:
- aligning curricula with the needs of the market
- focus on soft-skill development
- project (problem) based learning
- use of technology, teams and outcomes
- teaching of entrepreneurship and growth mindset
- created together with employers
- executed together with employers and other suppliers

Talent-engine
Developing and validating students' competences

'EMPLOYMENT CENTRIC'

Life partner
Adding or scaling the skills of professionals

The notion of 'students' will become <u>increasingly DIVERSIFIED</u> to support the <u>personal and professional growth (and reinvention) of people</u>

'STUDENTS³' = <u>**new understanding of students**</u>:

1. <u>'BEFORE</u> work' - secondary school graduates

2. <u>'DURING</u> work'
   (a) professionals and executives e.g. MBA, PhD, DE, DBA
   (b) upskilling & career change e.g. Master modules, cross-discipline

3. <u>'AFTER</u> work' - 'silver surfers' e.g. social entrepreneurship programme

DEATH OF ALUMNI
... instead 'lifetime students' (students never leave the university)

Life partner
Adding or scaling the skills of professionals

'LEARNER CENTRIC'

ROLES OF UNIVERSITIES

Discovery
Cutting edge visionary and collaborative research

… (still) UNTAPPED potential for universities to contribute through discoveries

ROLE   Universities become more central:

- to creation, exchange and development of knowledge.

- but also… facilitation, coordination and management of knowledge, innovation and local /regional problem solving networks of students, professionals, businesses, government and other social actors.

RESEARCH
- 'VISIONARY' (excellent) blue sky remains
- 'CONNECTED' research emerges

ROLES OF UNIVERSITIES

Discovery
Cutting edge visionary and collaborative research

RESEARCH
- 'VISIONARY' (excellent) blue sky remains
- 'CONNECTED' problem-solving research emerges

INTERDISCIPLINARY INSTITUTES (PPP) / COLLABORATION CENTRES
including co-location of academics + industry + social stakeholders:
- Together identifying and solving problems
- shared LABS / WORKSPACE
- state of the art EQUIPMENT
- access to FUTURE TALENT through education programmes
- access to ENTREPRENEURS
- COMMERCIALISATION support
- POPULARISATION of scientific results (TED role)

EMPA Demonstrators – Switzerland

Home-base
Open co-working exchange space for the region

ROLE   As a 'Home-Base' for initiatives:

- a PLACE-BASED perspective, which provides a focal point for regional interaction and development

- the university is engaged with its REGIONAL stakeholders, taking a proactive role in facilitating networks, involving:
    - Students
    - Academics
    - Businesses
    - Professionals
    - Entrepreneurs
    - Government
    - Social groups
    - …

Home-base

Open co-working exchange space for the region

Linking <u>regional prosperity with the university</u>
can be enacted by being:

(1)   Central to <u>'SMART SPECIALISATION' efforts</u> (e.g. Karlstad University
        and The Paper Province in Sweden),

(2)   <u>'TELESCOPE' & INNOVATION PIPELINE</u> for large companies (technology
        and talent sources) as part of the innovation pipeline of large companies
        (e.g. technical universities and polytechnics),

(3)   <u>PROBLEM-SOLVERS to regional SMEs</u> (e.g. Universities of Applied
        Sciences),

(4)   Entrepreneurship <u>HUBS</u> (e.g. University Twente, Design Factory at Aalto
        University),

(5)   <u>SOLUTIONS for the community</u> by supporting university technologies

ROLES
OF UNIVERSITIES

Home-base
Open co-working space for students and all externals

'HUMAN CENTRIC'

HIGH TECH,
HUMAN TOUCH

UNIVERSITEIT TWENTE.

Launch-pad
Entrepreneurial base for students, academics, business

ROLE   (1) a major source of scalable new knowledge, research
             and technologies

        (2) as a 'LAUNCHING PAD' for new business creating
             opportunities for all to conceive, test, launch and scale
             their operations:
             · university spin-outs
             · promising student start-ups,
             · supporting regional scale-ups
             · local industry innovation capabilities

Highly connected to the 'Discovery' role, the role is to provide an...

IDEAL SUPPORTING ENVIRONMENT for new ventures to fight
off competitors before they reach maturity & support SMEs to
scale their operation

ROLES OF UNIVERSITIES

Launch-pad
Entrepreneurial base for students, academics, business

This function is supported by:

1.   university-based <u>innovation and entrepreneurship RESOURCES</u> e.g. ideation and innovation spaces, maker-spaces, incubators and accelerators

2.   driven by full time 'BOUNDARY SPANNERS' running a <u>series of programmes, competitions and mentoring programmes</u> that take participants through the various stages of <u>new concept development</u>

3.   backed by a NETWORK of <u>innovation-oriented businesses</u>, *investors* and other <u>interested stakeholders</u>.

ROLES OF UNIVERSITIES

Launch-pad
Entrepreneurial base for students, academics, business

'DEVELOPMENT CENTRIC'

UnternehmerTUM - Germany

ROLES OF UNIVERSITIES

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FUT_

www.futureuniversities.com

FUT_

One more edition...
Stay tuned

www.futureuniversities.com

THE FUTURE OF UNIVERSITIES
THOUGHTBOOK
NORTH AMERICAN EDITION