The 'U-B Tool' of EUA

Web-based tool for University-Business Research Cooperation (U-B Tool)

Project reports on research cooperation and knowledge transfer

Dr. Lidia Borrell-Damian
Dr. John H. Smith
Dr. Rita Morais
European University Association

Meeting of representatives of European Affairs CPU

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Outline

- Context of University-Business Research Collaborations
- Publications from FP7 EUIMA Collaborative Research
- FP7 EUIMA Collaborative Research:
  - Objectives, methodology, contributors, background and outcomes
- The Evolution of University-Based Knowledge Transfer Structures
- Main policy recommendations from EUIMA
- Assessment Tool for University-Business Collaborative Research Partnerships (U-B Tool)
  - Main characteristics and demonstration

Introduction to EUA

- **EUA** as the **voice of Europe's Universities**
- Members include **34 European Rectors' Conferences** and over **850** individual **universities** across **46 countries**.
- EUA provides a **forum for debate and mutual-learning** (e.g. conferences, workshops, projects, specific services for members).
- EUA brings **empirical evidence from universities**' experience and activities **to policy-making process** with a view to further the strategic development of universities.

Context University-Business Research Collaborations (Collaborative Research)

- Major role in supplying trained researchers
- Diverse missions in basic and collaborative research
- Embeddedness in cities and regions as components of social and economic development
- External funding sources accounting for ever higher proportions of university research budgets
- Emergence of complex research issues (reflecting global challenges) requiring new interdisciplinary approaches and skills
- Growing demand for highly trained graduates and researchers for non-academic labour markets
- Partnerships are at the core of research collaborations

Publications from FP7 EUIMA Collaborative Research

- **(1) A Web-based Assessment Tool for University-Business Collaborative Research Partnerships ('U-B Tool')**
  Lidia Borrell-Damian, Rita Morais & John H. Smith
- **(2) University-Business Collaborative Research: Goals, Outcomes and New Assessment Tools**
  Lidia Borrell-Damian, Rita Morais & John H. Smith
- **(3) The Evolution of University-Based Knowledge Transfer Structures**
  Stephen Trueman, Lidia Borrell-Damian & John H. Smith
- **(4) Reflections on Research Assessment of Collaborative Research between Universities and External Partners**
  David Livesey, Lidia Borrell-Damian & John H. Smith

Publications from FP7 EUIMA Collaborative Research

The web-based tool:

'U-B Tool measures the status of your research collaboration today, or at a certain stage, in relation to your initial objectives, strategic approach and expectations. The Tool is organised in four modules: strategic approaches, structural factors, facilitating aspects, and goals/outcomes/benefits. (1)

The three reports:

Provide the evidence that support the structure of the tool and the questions therein. In particular

- *An holistic analysis of the contexts and conditions for sustaining long-term collaborative research: regional strategies, university and business strategies, the dynamics of the collaboration and its outcomes. (2)*
- *A discussion on the structure of regional knowledge exchange 'eco-system' as an enabler of effective knowledge transfer. (3)*
- *A discussion on the value of Collaborative Research and its importance for our society. (4)*

How the FP7 EUIMA Collaborative Research was conceived

Objectives and Methodology

FP7-EUIMA Collaborative Research project

Objectives

'**E**uropean **U**niversities **I**mplementing the **M**odernisation **A**genda'

- Identifying ways of assessing the progress and success of collaborative research initiatives, and proposing measurement tools designed to monitor progress towards achieving aims and objectives (in *addition* to the traditional indicators already in use).

- Determining the specificity of measurement tools to the nature of the collaborative research in its particular context and the degree to which they are transferable to other contexts.

- Based on the experience of good practices collected on a "bottom-up" basis, to further develop a dialogue with all stakeholders in collaborative research.

EUIMA – Collaborative Research
Background

- The **Responsible Partnering** initiative and its definition of Collaborative Research; EIRMA, EUA, EARTO and ProTon, 2005 and 2009

- The **European Commission's expert group report** "Assessing Europe's University-based Research"; EC Expert Group Report 2010

- The outcomes of studies on collaborative doctoral education at European level by EUA: **DOC-CAREERS Report**, EUA 2009 and **DOC-CAREERS II** project.

FP7 EUIMA Collaborative Research
Methodology: questionnaire and dialogues

Figure 1: Articulation between EUIMA Collaborative Research Case Studies and Workshops

EUA Questionnaire and Guidelines: Collection of structured input

- Institutional context and framework
- Data – 3 types of initiatives: project/ programme/institutional
- Setting up, managing and sustaining research collaboration
- Human resources aspects
- Assessment of the collaborative research activity
- Impact and lessons learned

Workshops: Experts dialogue

- Addressing project objectives based on questions from questionnaire
- Foster sharing of good practices
- Discussions on ways of assessing collaborative research
- Policy implications

Source: EUIMA Collaborative Research project

FP7 EUIMA Collaborative Research

Methodology: Levels of U-B Cooperation

- **Project Level**

Specific short-term collaboration with an external partner with joint objectives limited to the timeframe of the collaboration;

- **Programme Level**

Specific longer-term collaborations inscribed within an agreed common framework of objectives and timeframe and often involving some degree of public funding support;

- **Institutional Level**

Programmes, projects and alliances as part of an overall university strategy concerning high-level collaborative research involving long-term jointly-developed partnership agreements (five years and beyond).

The contributors: People, Organisations

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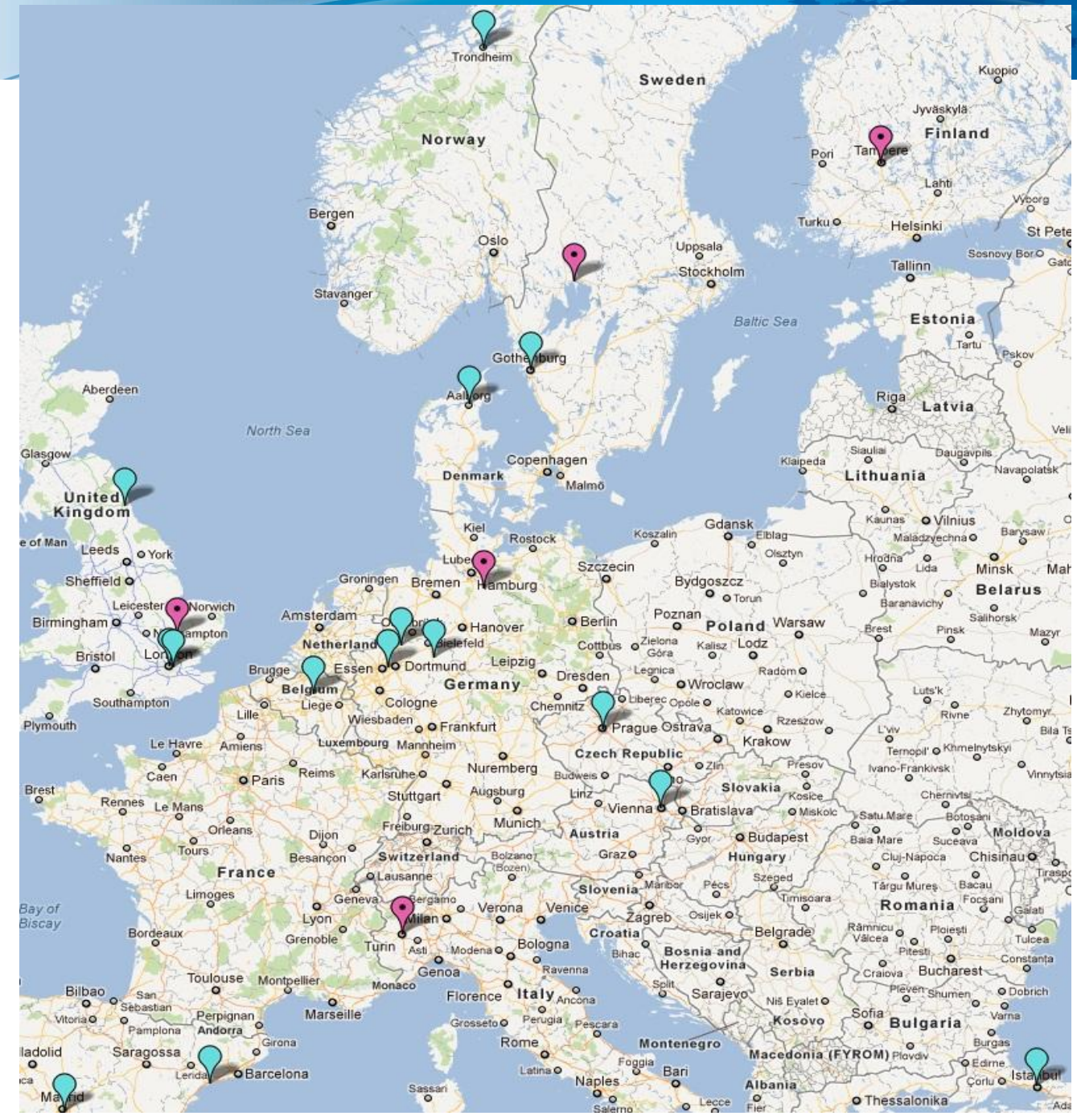
EUIMA – Collaborative Research Participant Organisations

24 Universities

39 External partners

12 countries



EUIMA-Collaborative Research Case Studies
Industrial Sectors

- Aerospace
- Automotive
- Nuclear energy
- Medicine
- New Materials
- CT
- Marine
- Electrochemistry
- Paper
- Steel
- Service sector
- Consulting sector
- Human resources/ Cultural aspects etc.

Overview of contributors

- **FP7 EUIMA Collaborative Research**
  24 universities, 18 companies and 21 other external partners;
  12 European countries
- **FP7 DOC-CAREERS II**
  32 universities, 34 companies and 23 other external partners;
  13 European countries
- **FP6 DOC-CAREERS**
  33 universities, 31 companies and 18 other external partners,
  20 European countries

- **Total of 89 universities, 145 companies and other external partners across three EUA projects**

FP7 EUIMA Collaborative Research

Steering Committee Members:

- **Prof. John Goddard** – Emeritus Professor of Regional Development Studies, Centre for Urban & Regional Development Studies, Newcastle University (United Kingdom)
- **Dr Leif Kjaergaard** – CEO Leif Food and Science (Denmark); former President of the European Industrial Research Management Association (EIRMA)
- **Prof. Paloma Sanchez** – Professor of Applied Economics, Autonomous University of Madrid (Spain)

Senior Advisers:

- **Dr David Livesey** – Life Fellow, Emmanuel College, Cambridge University (United Kingdom)
- **Mr Stephen Trueman** – Managing Director, La Sapienza Innovazione (Italy)

EUIMA - Participant Universities

- Vienna University of Technology, Austria
- Katholieke Universiteit Leuven (KU Leuven), Belgium
- Czech Technical University in Prague, Czech Republic
- Aalborg University, Denmark
- Tampere University of Technology, Finland
- University of Jyväskyla, Finland
- Leuphana University of Lüneburg, Germany
- Ludwig Maximilian University of Munich, Germany
- Münster University of Applied Sciences, Germany
- Ruhr University Bochum, Germany
- University of Paderborn, Germany
- TuTech Innovation, Germany
- Autonomous University of Madrid, Spain
- Rovira i Virgili University, Spain
- Chalmers University of Technology, Sweden
- Karlstad University, Sweden
- Istanbul Technical University, Turkey
- London South Bank University, United Kingdom
- Newcastle University, United Kingdom
- University of Cambridge, United Kingdom
- University College London, United Kingdom
- University of London, United Kingdom

EUIMA – External Partners

Companies

- METALogic, Belgium
- ePower Technology ApS, Denmark
- Nokia, Finland
- Bernd Münstermann GmbH & Co. KG, Germany
- HJP Consulting, Germany
- Siemens AG, Germany
- GM Powertrain Europe, Italy
- STMicroelectronics, Italy
- Telecom Italia, Italy
- Thales Alenia Space, Italy
- Det Norske Veritas (DNV), Norway
- Accenture, Spain
- REPSOL, Spain
- Omnisys Instruments, Sweden
- BP, United Kingdom
- Rolls-Royce, United Kingdom
- SHM Productions Ltd., United Kingdom
- Soil Machine Dynamics Ltd. (SMD), United Kingdom

Research institutes

- Academy of Sciences of the Czech Republic, Czech Republic
- Institute for Advanced Study Berlin, Germany

Clusters

- Torino Wireless Foundation, Italy
- Cluster of Steel and Engineering, Sweden
- COMPARE, Sweden
- Packaging Arena, Sweden
- The Paper Province, Sweden

Public authorities

- City of Tampere, Finland
- Council of Tampere Region, Finland
- Tekes, Finland
- Knowledge Foundation, Sweden
- Region Värmland, Sweden
- Swedish Ministry of Enterprise, Sweden
- VINNOVA, Sweden
- Higher Education Funding Council for England (HEFCE), United Kingdom

Research and Technology Offices (RTO) and innovation incubators

- TuTech Innovation GmbH, Germany
- Sapienza Innovazione, Italy
- Service Research Centre, Sweden
- FIMECC Ltd., Finland
- ideaSpace Enterprise Accelerator, United Kingdom
- St. John's Innovation Centre, United Kingdom

Highlights of EUIMA Collaborative Research Outcomes

EUIMA Collaborative Research Case Studies
Examples of Views from Universities

- **University A:**

"The core points of the cluster is a risk-sharing between industry, academia and the public sector. The collaboration is still working because of full time support looking out for all interests."

- **University B:**

"The partnership is based on a long-term relationship (...) both sides with an open mind (...) share values in business and life (..) great flexibility in difficult process (...)."

- **University C:**

"The sheer amount of projects run in cooperation without the university losing on academic track record is a clear indicator that the cooperation works well."

"We prefer Joint Ventures: Many years of experience have shown that this is the most efficient way of transferring results to companies".

EUIMA Collaborative Research Case Studies Examples of Views from Businesses

Company A:

"The benefits of collaboration with the university is the coverage of the entire value chain from basic research up to industrial deployment."

"Perfect networking with relevant domains, partners, and institutions"

Company B:

"Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation from strategic and sustainable collaborations to enhance and multiply our efforts.

Company C:

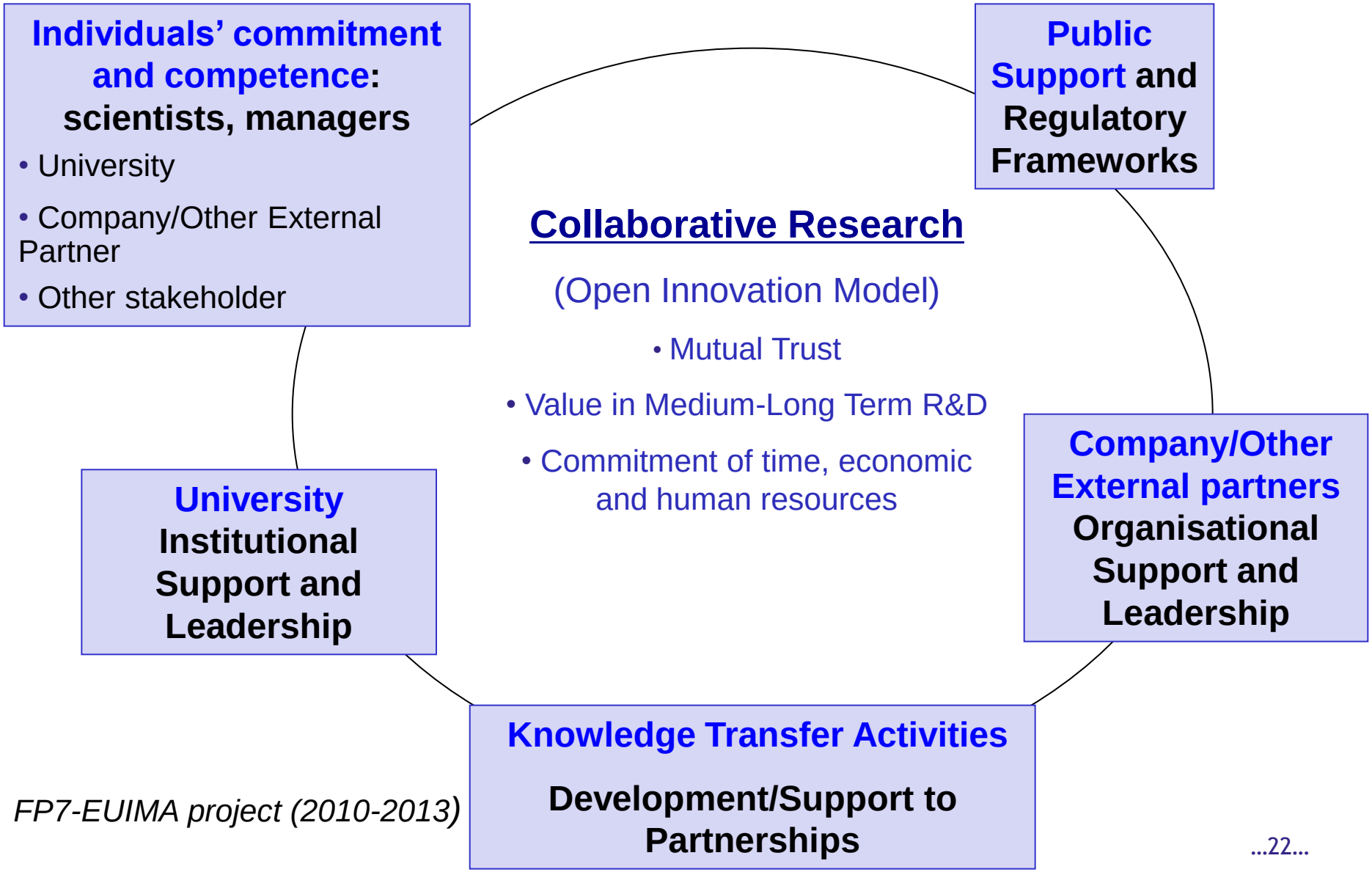
"Be in it for the long term; Individuals relationships are key; Consider different measures of success: Contracts, quality plans,etc; Learn from best practice; Share strategies&define programmes of work together; Open network to other partners."

Company D:

"Methodology, content and research access to professionals, visibility."

"There is a relation between long term collaboration and short term results."

A virtuous circle: European Universities and Businesses in Research Collaborations Leading to Innovation – Components



FP7-EUIMA project (2010-2013)

Individuals: The Researchers and Research Managers

- **Researchers and Academic Staff:** Input given by the academic and non-academic leaders involved in the collaborative research initiatives show that universities can make compatible their core missions (i.e. excellence in academic research) and successful long-term collaborative research activities, **provided that** institutional support is given.

  The case studies show that collaborative research activities are seen by all practitioners as an **essential asset for tailoring education to the evolving needs of the job market, maximising the employability of graduates**, creating and sustaining academic, technical and support staff positions.

- **Research Managers**: upgrade training provided on a continuous basis, to cope with the frequent changes in their teams, institutional leadership and market.

At the University

- **Institutional Leadership:** research collaborations seen as strategically important. Well articulated view of the part that collaborative R&D and knowledge transfer play in meeting the university's strategic objectives.
- **Research Support Services** contribute to identify potential partners' expectations and understand when it is and is not appropriate for the university to seek to deliver them.
- **Human Resources:** Staff recruitment and remuneration strategy encourages staff to aim for a high level of strategic engagement with appropriate external partners.
- **Institutional Strategy:** The institution has many and different collaborative research programmes with external partners that cover different disciplinary/interdisciplinary inputs and different types of partners.
- **Intellectual Environment:** There is active participation in (inter)national discussions about effective and useful interpretations of the impact of research.
- **Funding:** Effective use is made of the funding and support from those government agencies whose strategies were aligned with those of the university.

At the Company

- **Business Leadership**: The company's executive team treats research collaborations strategically and has a well articulated view of the part that collaborative R&D and knowledge transfer play in meeting the company's strategic objectives.
- **Identifying partners**: The company is able to identify the potential partner universities which best suit their corporate needs. The company understands what it is that a university is best placed to deliver.
- **Institutional Strategy:** The company has many and different collaborative research programmes with universities that cover different disciplinary/interdisciplinary inputs.

Knowledge Transfer Activities
Development/Support to Partnerships

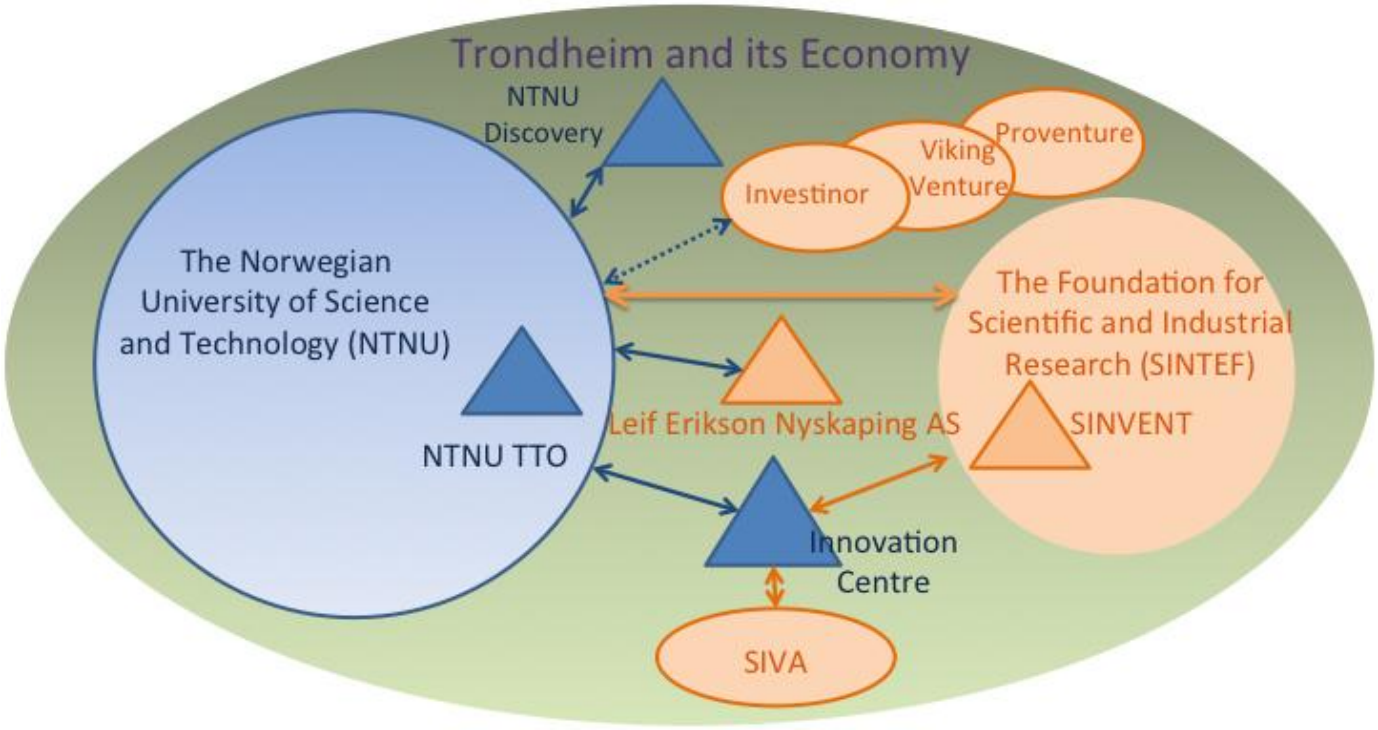
Key parameters in the development of knowledge transfer ecosystems

- **Scope** of the university
- **Size** of the university
- Presence of **other universities**
- **Size** and **population** of the **town/city**
- Presence of **strong and relevant industry**
- Presence of a **strong and relevant regional strategy**
- Presence of **research centres and/or science parks**

Examples of Innovation Ecosystems

Knowledge Transfer Activities

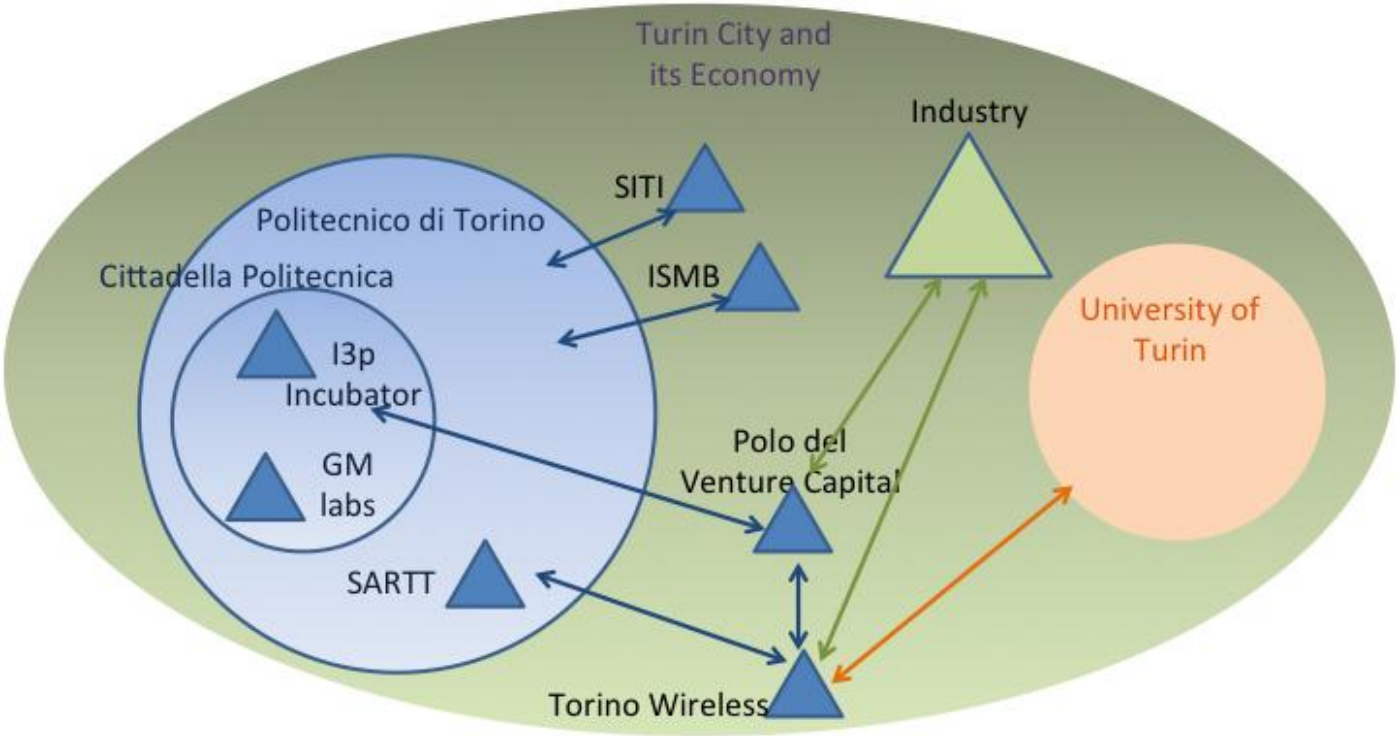
Trondheim (NTNU, Norway)



Examples of Innovation Ecosystems

Knowledge Transfer Activities

Turin (Politecnico di Torino, Italy)



Key messages for successful long-term collaborative research initiatives (I)

- Reconciling universities' **mission in accademic excellence and in collaborative research**
- **Support structures** enabling research outreach, from single companies through to industrial districts, reinforcing their innovation capacities
- The importance of **public funding** to sustain long-term collaborative research
- The **quality of human resources** is a crucial factor in developing and taking forward collaborative research activities
- The value of collaborative research in informing the **development of new syllabuses, courses and postgraduate degrees**
- The emergence of **new ways to assess the quality of collaborative research processes**

Key messages for successful long-term collaborative research initiatives (II)

- Collaborative Research cases showed that they rely on regional policies and regional funds for collaborations to sustain over time.
- Public funding and support is an enabler of collaborative research for both universities and businesses
- Both universities and businesses with successful collaborative research experience tend to evolve from a 'project-to-project' approach to a 'programme approach' and, eventually, to an 'institutional' approach.

The Essential Role of Public Support

Main Policy Recommendations from EUIMA

Need to provide structural elements which are beyond the capacity of the individual partners:

- **Innovation Strategy: local, regional, national, European**
- **Other supportive policy measures (not necessarily regulation): career opportunities for researchers, promotion of entrepreneurship, markets for high-level, knowledge-based products and services**
- **Promotion of university activity and generation of knowledge according to academic standards**
- **Infrastructure: areas for knowledge exchange (e.g. innovation hubs, parks), equipment (both physical and e-infrastructure)**
- **Direct financial support to research collaborations**

Assessment Tool for University-Business Collaborative Research Partnerships (U-B Tool)

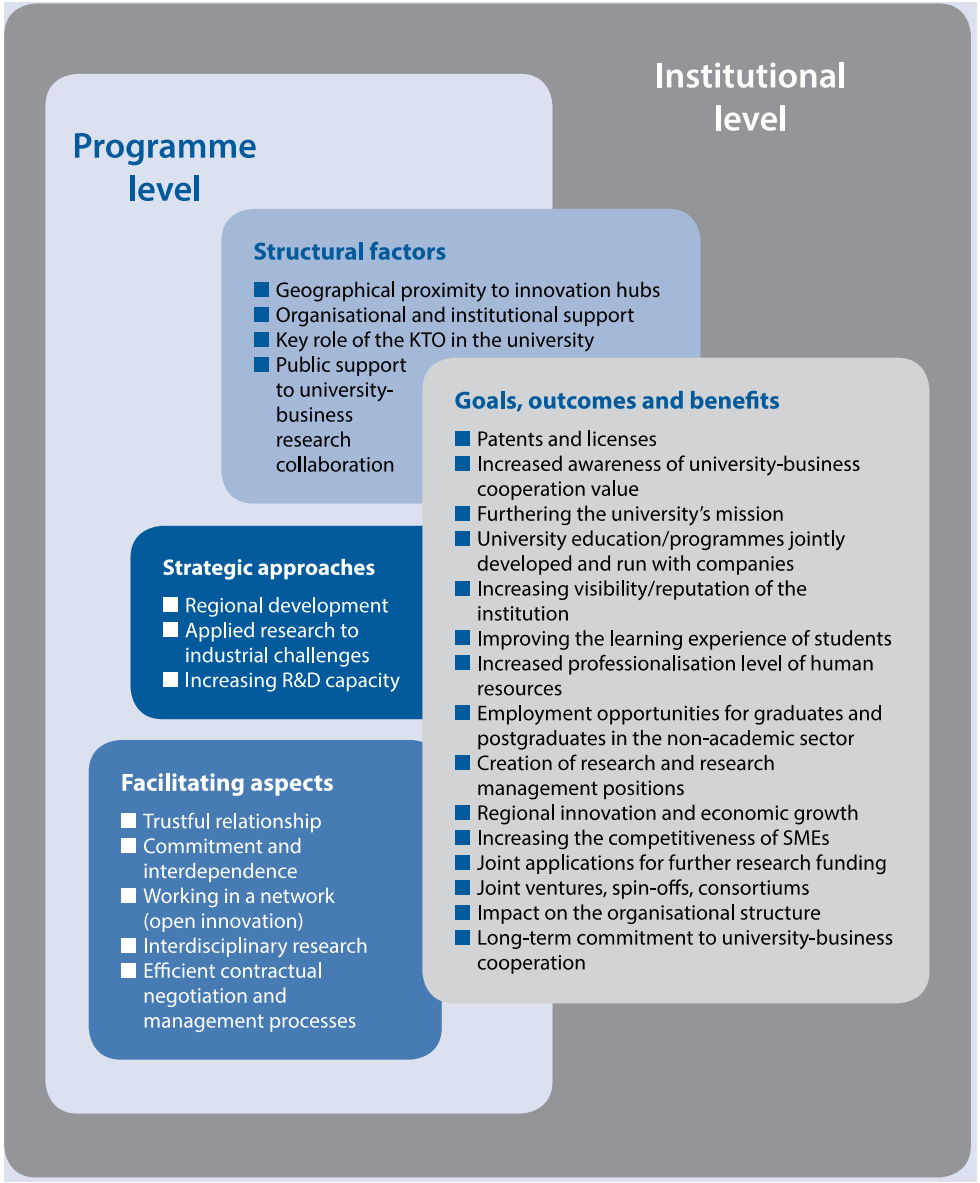
The ‘U-B Tool’

Main characteristics

- Self-assessment tool for universities and external partners
- Focuses on the nature and quality of the collaborative research *process*
- Provides support in assessing, reflecting upon and taking forward research partnerships
- Compares current situation outcomes against initial strategies, expectations and specific objectives
- Delivers individual results report
- Facilitates dialogue between partners
- Can be used in combination with bibliometric assessments

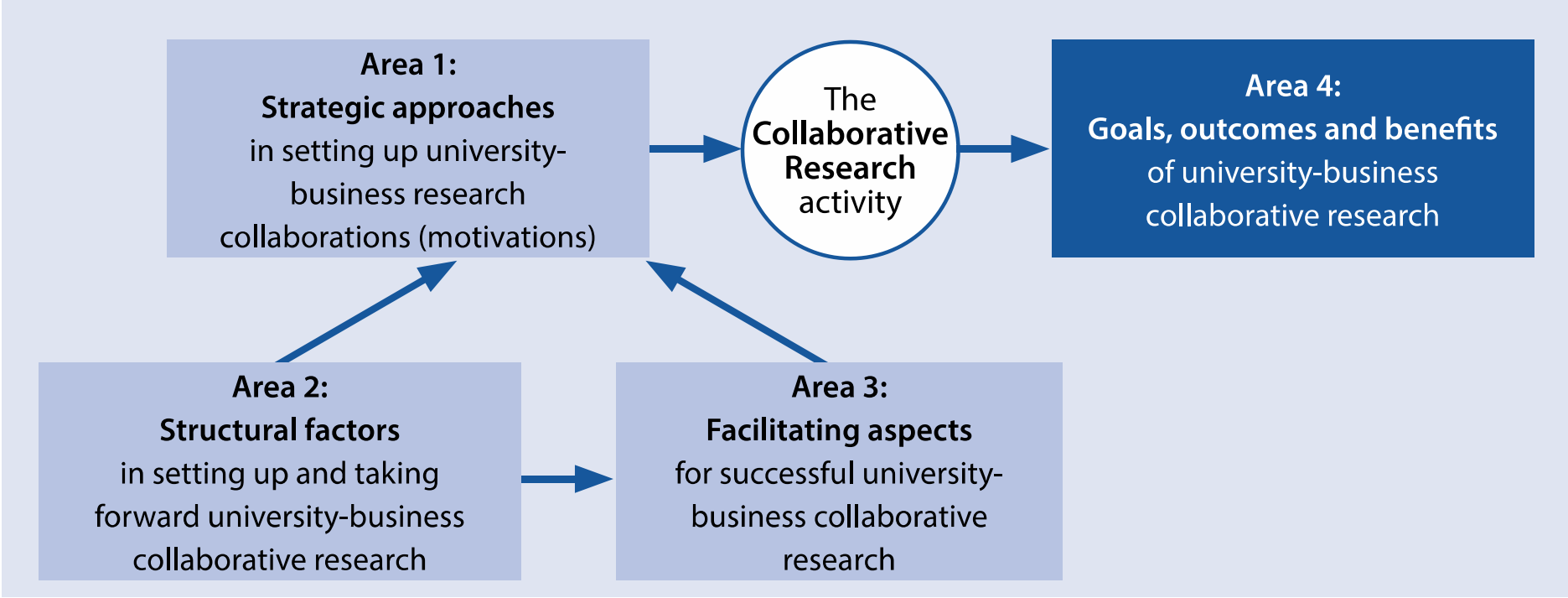
Available at: **http://ubtool.eua.be**

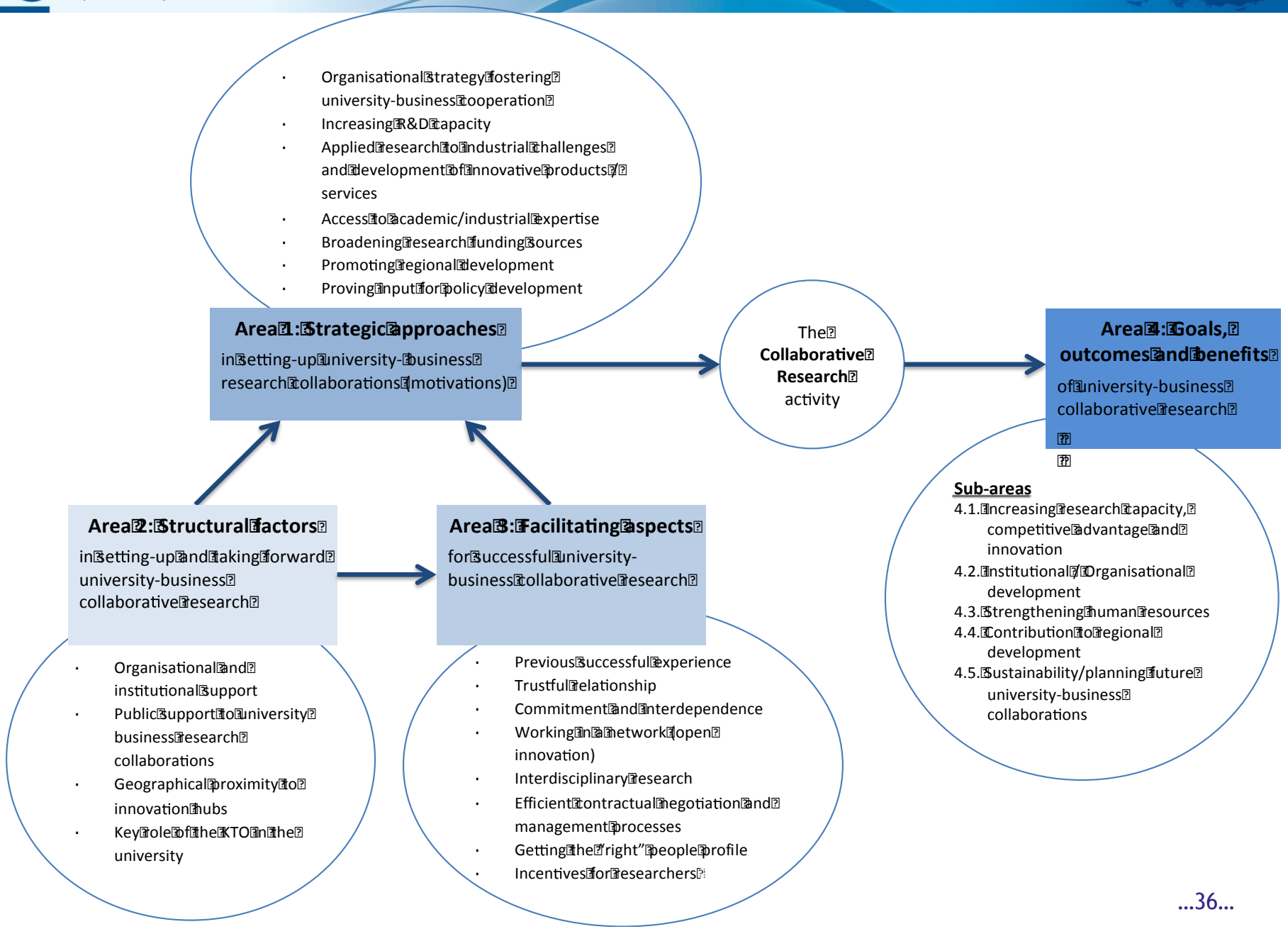
Relationship between assessment indicators and different forms of collaborative research



Source: University-Business Collaborative Research: Goals, Outcomes and New Assessment Tools
(*Borrell-Damian, Morais & Smith*)

Schematic presentation of the U-B Tool




Organisational strategy fostering university-business cooperation
Increasing R&D capacity
Applied research to industrial challenges and development of innovative products/services
Access to academic/industrial expertise
Broadening research funding sources
Promoting regional development
Proving input for policy development
Area 1: Strategic approaches in setting-up university-business research collaborations (motivations)
The Collaborative Research activity
Area 4: Goals, outcomes and benefits of university-business collaborative research
Sub-areas
4.1. Increasing research capacity, competitive advantage and innovation
4.2. Institutional/Organisational development
4.3. Strengthening human resources
4.4. Contribution to regional development
4.5. Sustainability/planning future university-business collaborations
Area 2: Structural factors in setting-up and taking forward university-business collaborative research
Organisational and institutional support
Public support to university-business research collaborations
Geographical proximity to innovation hubs
Key role of the KTO in the university
Area 3: Facilitating aspects for successful university-business collaborative research
Previous successful experience
Trustful relationship
Commitment and interdependence
Working in a network (open innovation)
Interdisciplinary research
Efficient contractual negotiation and management processes
Getting the "right" people profile
Incentives for researchers

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General information

Please indicate whether you are using the U-B Tool as a university/higher education institution or a non-academic partner (e.g. business, non-university research organisation, public agency, NGO).

- (•) **University / Higher Education institution**
- ( ) **Non-academic partner**

Please indicate the type of organisation

- (•) **Industry / Business / Company**
- ( ) **Non-university research organisation**
- ( ) **Public agency**
- ( ) **NGO**
- ( ) **Other (please specify)**

The collaborative research

Important note:
When filling in the tool, please focus on one specific collaborative research initiative. If you wish to assess several collaborative research initiatives, you should fill in the tool for each initiative separately.

Please indicate the knowledge area(s) of focus in the collaborative research you are assessing (you may choose multiple options).

- ☐ Science, Engineering and Technology (SET)
- ☐ Biotechnology, Medical and Life Sciences (BML)
- ☐ Economic, Social Sciences and Humanities (ESSH)

Please indicate the type of partnership(s) involved in the collaborative research you are assessing (you may choose multiple options).

- ☐ University – Non-Governmental Organisations/Non-profit
- ☐ University – Research and Technology Office (RTO)
- ☐ University – Small and Medium Enterprises (SME)
- ☐ University – Large Corporation
- ☐ University – Regional/Local/National Government (beyond funding)
- ☐ University – Spin-Off
- ☐ University – Other (please specify)

Please indicate which level best characterises the collaborative research you are assessing.

- (•) Project level

The collaborative research initiative addresses a specific short-term collaboration with an external partner with joint objectives limited to the timeframe of the collaboration, where the collaboration has been developed usually through individual initiatives and contacts between academic and business partners.

- ( ) Programme level

The collaborative research initiative addresses specific longer-term collaborations inscribed within an agreed common framework of objectives and timeframe and often involving some degree of public funding support through government-led, regional, national or European initiatives. These collaborations can be run by a laboratory, department, innovation hub or other type of university-based organisation.

- ( ) Institutional level

Programmes, projects and alliances as part of an overall university strategy concerning high-level collaborative research involving long-term jointly-developed partnership agreements (five years and beyond). This level includes initiatives such as research clusters, joint ventures or new postgraduate degree course at Masters level, and/or collaborative doctoral programmes. As an important distinction from the "programme" level, this level of strategic partnership often involves new forms of joint "governance" in the steering and management of the collaboration.

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1: Strategic approaches | 2: Structural factors | 3: Facilitating aspects | 4: Goals, outcomes, benefits

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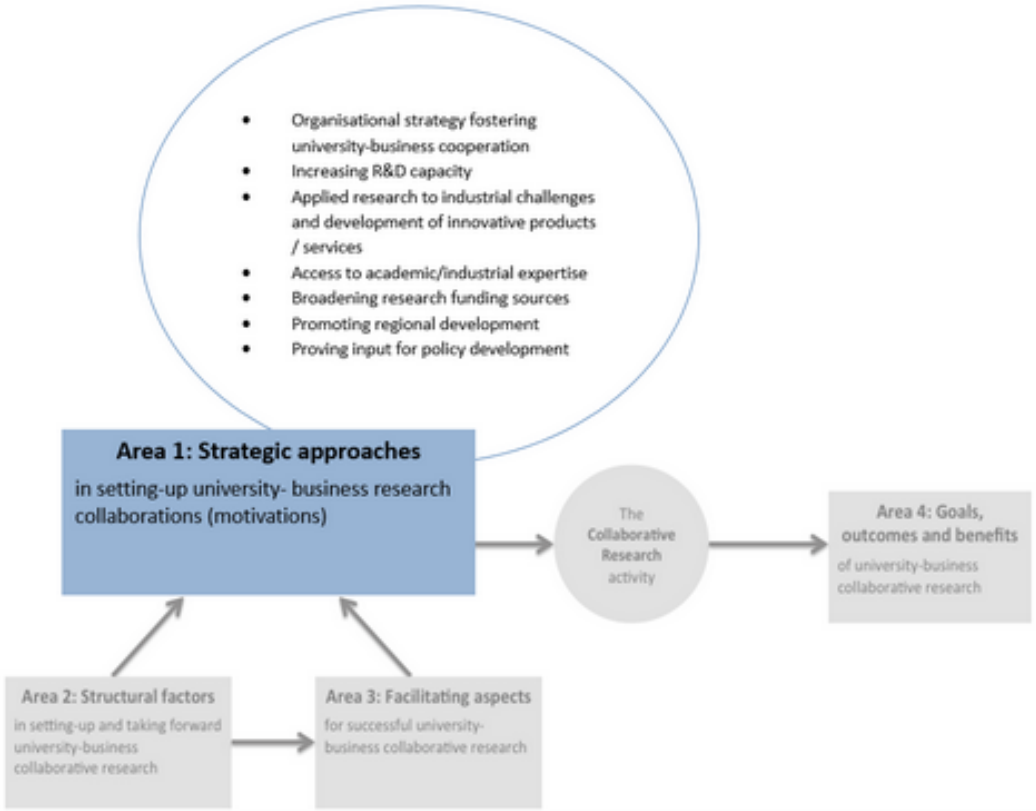
Area 1: Strategic approaches in setting-up university-business research collaborations

This area deals with the strategic approaches and motivations underlying universities' and companies' engagement in research collaborations. It is composed of seven indicators, as shown in the figure below.



How important is each of the following indicators for your collaborative research?

1.1. Organisational strategy fostering university-business cooperation

This indicator refers to the existence of an institutional/organisational strategy to develop university-business collaborations. For the university, university-business cooperation may be defined in the institution's mission, strategy and policies. For companies, a corporate strategy may be in place to develop collaborations with one or more universities and/or to invest in R&D activities developed in academic environments.

	Not applicable	1 *Not at all important*	2	3	4	5 *Neither important nor unimportant*	6	7	8	9	10 *Extremely important*
At the outset of the collaboration	○	○	○	○	○	○	●	○	○	○	○
Currently	○	○	○	○	○	○	○	●	○	○	○

1.2. Increasing R&D capacity

This indicator refers to the need for universities and companies to strengthen their R&D capacity, in order to increase their competitive advantage in core activity areas.
For universities, increasing R&D capacity in core research areas is also related to the aim of pursuing scientific excellence. For companies, R&D development may be linked to efforts to improve global competitiveness by using scientific input (research) into the development of cutting-edge processes, products and / or services.

	Not applicable	1 *Not at all important*	2	3	4	5 *Neither important nor unimportant*	6	7	8	9	10 *Extremely important*
At the outset of the collaboration	○	○	○	○	○	○	●	○	○	○	○
Currently	○	○	○	○	○	○	●	○	○	○	○

1.3. Applied research to industrial challenges and for the development of innovative products / services

This indicator refers to the use of the scientific approach and results to solve industrial challenges and to further technological development. This aspect also includes the development of research-based innovative products or services.

	Not applicable	1 *Not at all important*	2	3	4	5 *Neither important nor unimportant*	6	7	8	9	10 *Extremely important*
At the outset of the collaboration	○	○	○	○	○	○	●	○	○	○	○
Currently	●	○	○	○	○	○	○	○	○	○	○

1.4. Access to academic / industrial expertise

This indicator refers to the opportunity to access specialised scientific or industrial knowledge and benefit from personal and organisational networks available at the university/company. For companies, this aspect may include access to academic research relevant for the company, both in terms of (scientific) methodology and results; working with high profile institutions with strong research capacity and with academic experts in specific fields relevant for the company.

	Not applicable	1 *Not at all important*	2	3	4	5 *Neither important nor unimportant*	6	7	8	9	10 *Extremely important*
At the outset of the collaboration	●	○	○	○	○	○	○	○	○	○	○
Currently	●	○	○	○	○	○	○	○	○	○	○

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1: Strategic approaches | 2: Structural factors | 3: Facilitating aspects | **4: Goals, outcomes, benefits**

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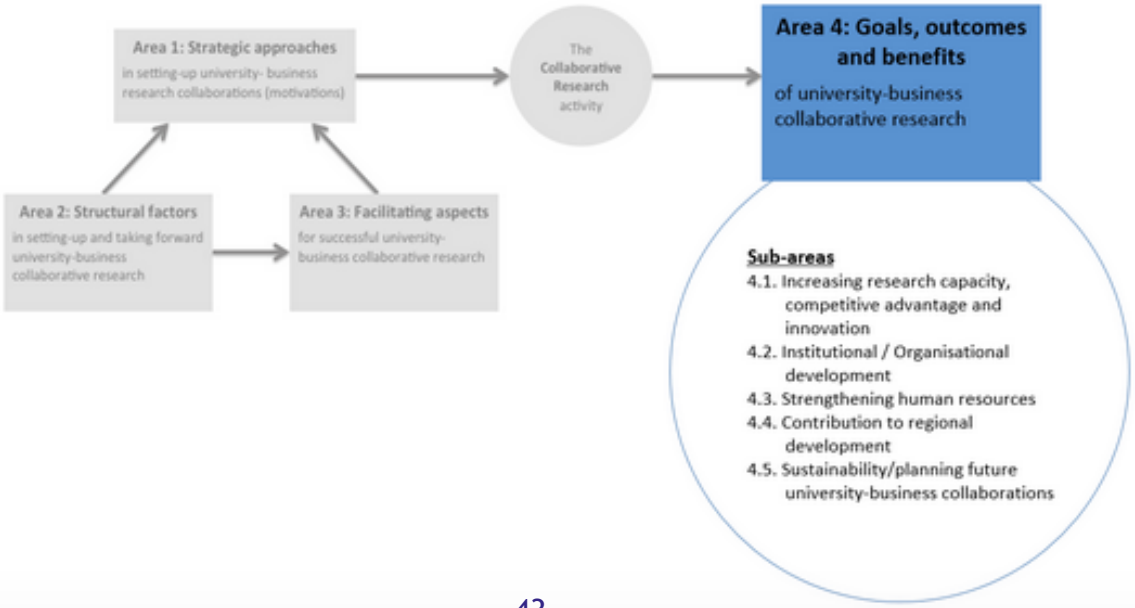
Area 4: Goals, outcomes and benefits of university-business research collaborations

Sub-area 4.3: Strengthening human resources

This sub-area deals with the quantity (number of positions) and quality (professionalization level) of human resources involved in collaborative research. It also deals with employment prospects of graduates and postgraduates in the non-academic sector. This sub-area is composed of three indicators.



How important is each of the following indicators for your collaborative research?

4.3.1. Enhanced professionalization level of human resources

This indicator refers to the investment to improve the degree of professionalism of the staff involved in collaborative research. This includes providing training for staff on specific areas, improving procedures, etc. This aspect applies to both researchers and research management staff.

	Not applicable	1 *Not at all important*	2	3	4	5 *Neither important nor unimportant*	6	7	8	9	10 *Extremely important*
At the outset of the collaboration	○	○	○	○	○	○	●	○	○	○	○
Currently	○	○	○	○	○	○	○	●	○	○	○

4.3.2. Employment of graduates / postgraduates in the non-academic sector

This indicator refers to the number of employment opportunities in the non-academic sector for graduates and postgraduates, namely for those involved in collaborative research activities.

Number of positions expected at the outset of the collaborative research	7
Number of positions currently achieved	5

4.3.3. Research and research management positions

This indicator refers to the new positions for researchers and research managers, as a result of university-business cooperation.

Number of positions expected at the outset of the collaborative research	5
Number of positions currently achieved	6

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1: Strategic approaches | 2: Structural factors | 3: Facilitating aspects | 4: Goals, outcomes, benefits

Previous | View results

Feedback on the U-B Tool

Thank you for taking part in the Assessment Tool for University-Business Collaborative Research Partnerships (U-B Tool).

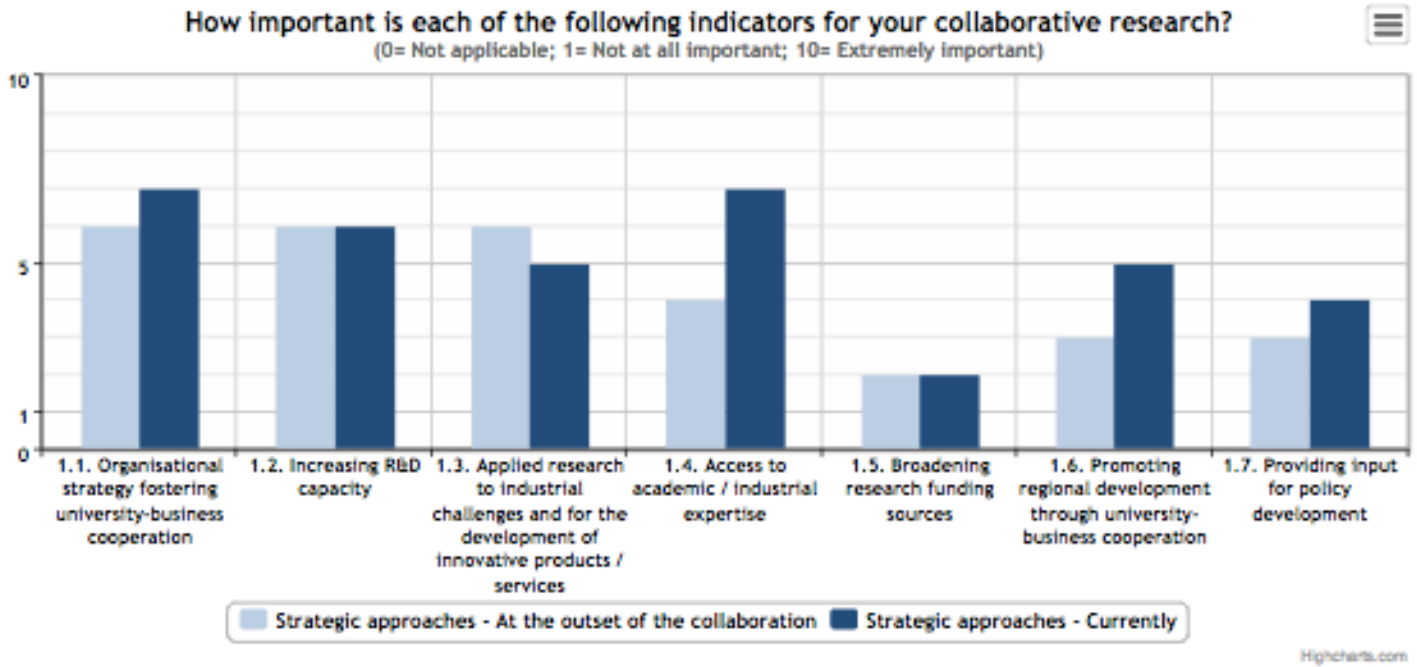
We would greatly appreciate it if you could let us know your opinion on this tool. For this, you may use the text box below.

We would particularly welcome your feedback on aspects such as:

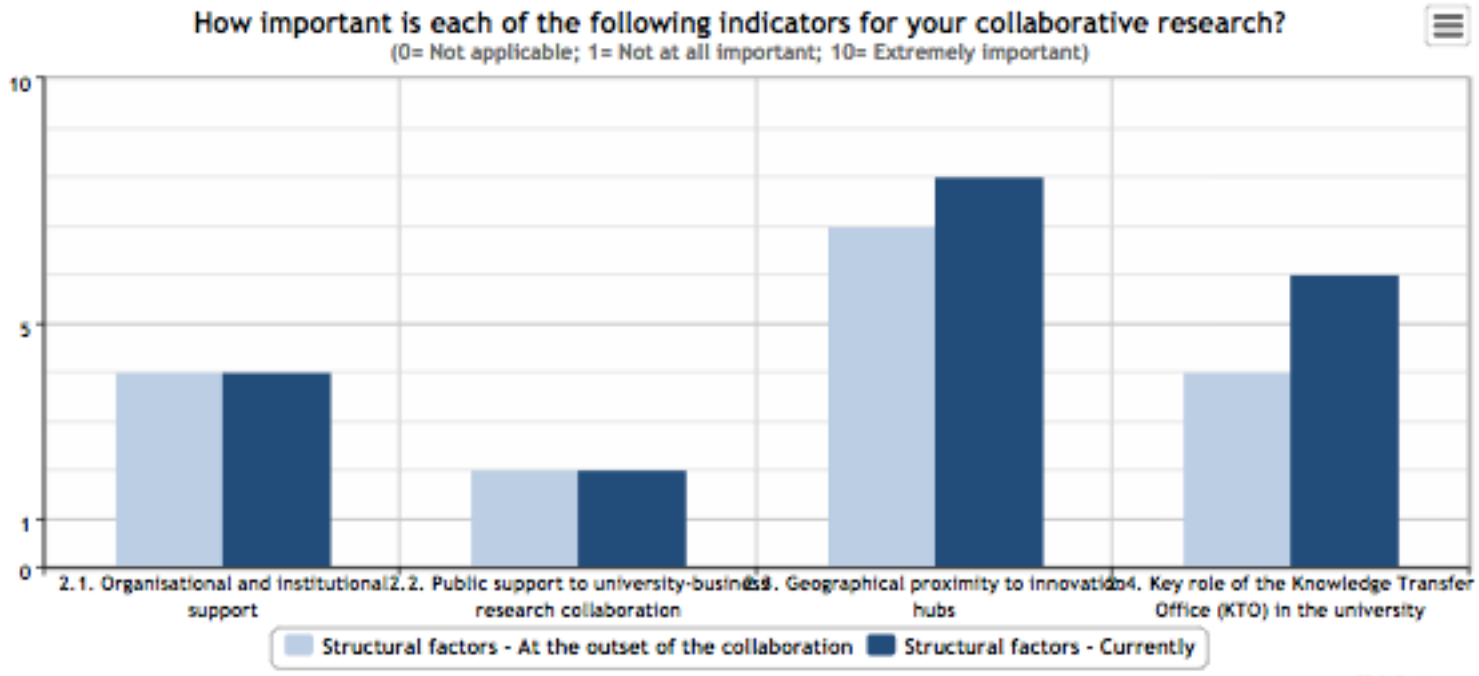
- ***relevance and clarity of the indicators and their explanation*** *(e.g. Do you consider these indicators relevant to assess the outcomes of collaborative research projects? Are there any other indicators which should be included in this tool?)*
- ***usefulness of this tool for your institution/organisation*** *(e.g. Do you think this tool would be useful for your institution/organisation to plan, reflect on and assess university-business collaborative research projects or activities? If not, why?)*
- ***ease of use of the tool*** *(e.g. How easy or difficult was it to use this tool? Were the instructions and questions clear?)*

Comments

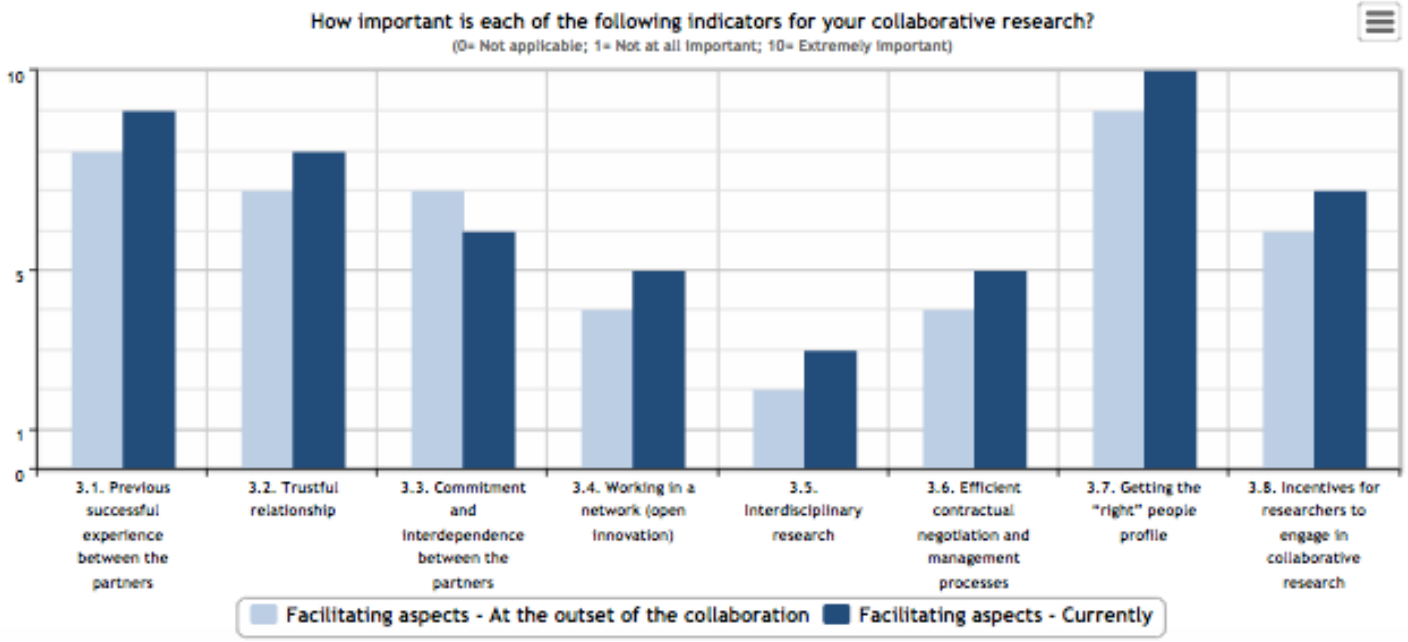
Area 1: Strategic approaches in setting-up university-business research collaborations



Area 2: Structural factors in setting-up and taking forward university-business research collaborations

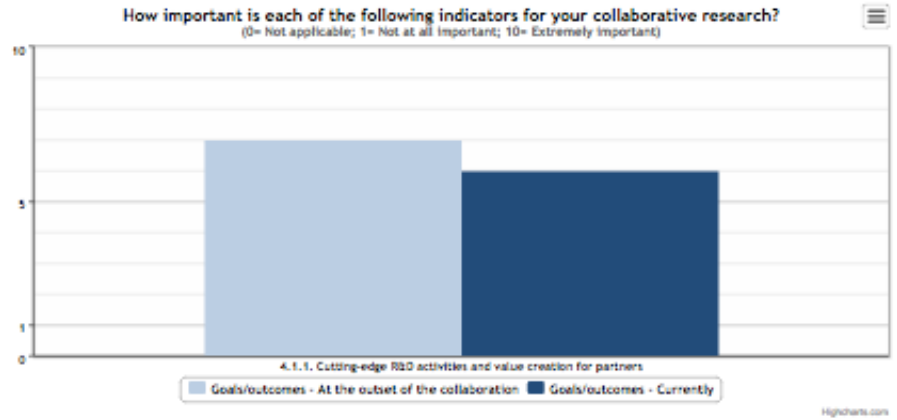


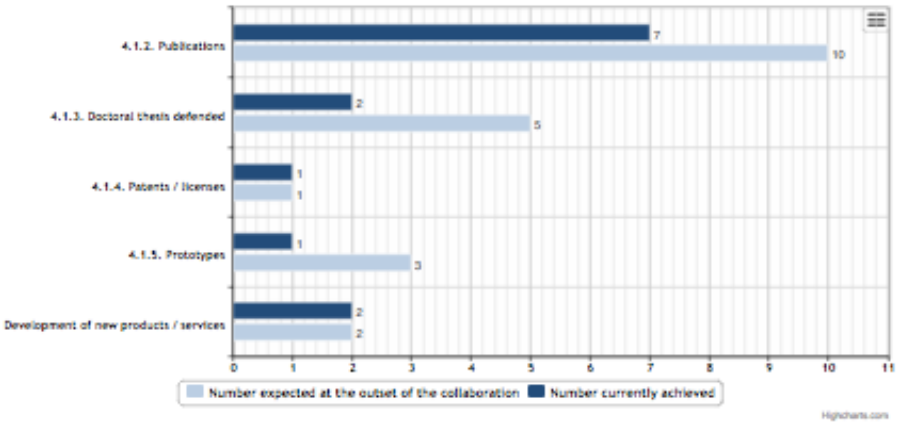
Area 3: Facilitating aspects for successful university-business research collaborations



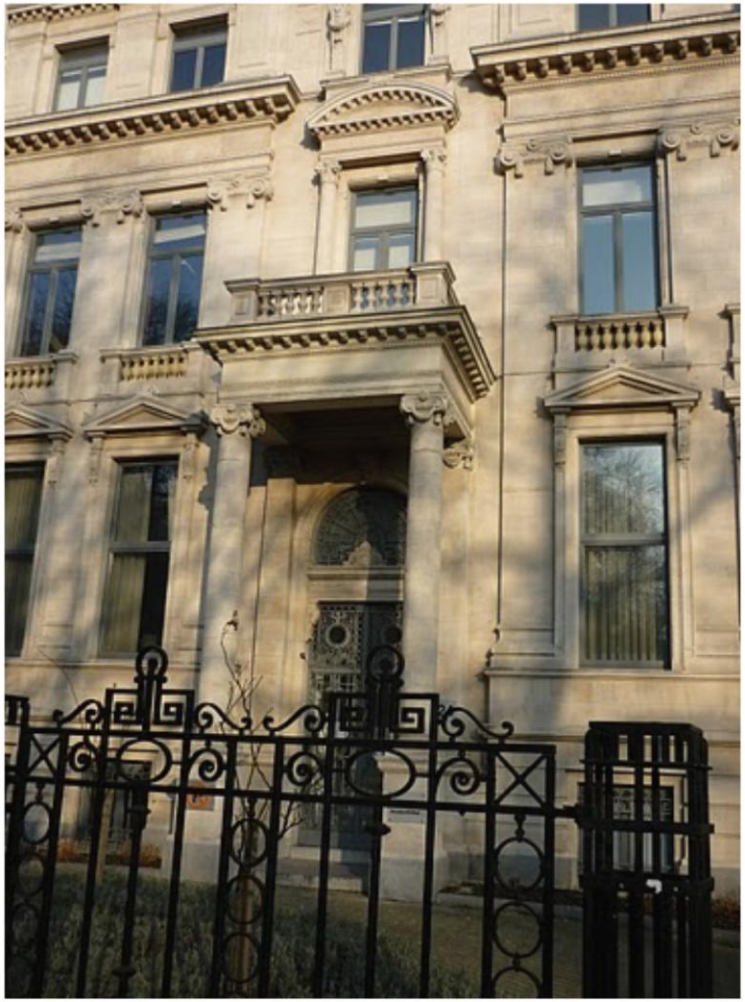
Area 4: Goals, outcomes and benefits of university-business research collaborations

Sub-area 4.1: Increasing research capacity, competitive advantage and innovation





Return on investment expected at the outset of the collaborative research	Return on investment currently achieved
10000€	20%



Thank you for your attention !

The 'U-B Tool' is available at:

http://ubtool.eua.be

Contact:

Lidia.borrell-damian@eua.be