NTNU and UiB Network Conference in Brussels
Strengthening Cooperation Between Business and Academia in Europe

“Learning from: University-industry cooperation”

Lidia Borrell-Damian
Director, Research and Innovation
European University Association

Hotel Renaissance
Brussels, 03 October 2016
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.
Selected outcomes of the EUIMA Project

The ‘U-B Tool’

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

European University Association

Presented at the Mission of Norway to the European Union
04 November 2014, Brussels
A virtuous circle: European Universities and Businesses in Research Collaborations Leading to Innovation - Components

**Collaborative Research**
(Open Innovation Model)
- Mutual Trust
- Value in Medium-Long Term R&D
- Commitment of time, economic and human resources

**Public Support and Regulatory Frameworks**

**Company/Other External partners**
Organisational Support and Leadership

**Knowledge Transfer Activities**
Development/Support to Partnerships

**University**
Institutional Support and Leadership

**Public Support and Regulatory Frameworks**

**Knowledge Transfer Activities**
Development/Support to Partnerships

**FP7-EUIMA project (2010-2013)**

**Individuals’ commitment and competence:**
scientists, managers
- University
- Company/Other External Partner
- Other stakeholder
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.
EUIMA – Collaborative Research Participant Organisations

24 Universities
39 External partners
12 countries
Examples of Innovation Ecosystems

Knowledge Transfer Activities

Trondheim (NTNU, Norway)
Examples of Innovation Ecosystems
Knowledge Transfer Activities

Turin (Politecnico di Torino, Italy)
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
Schematic presentation of the U-B Tool

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

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

The Collaborative Research activity

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

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

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

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
### 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.

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### 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.

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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.”
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

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

Research institutes

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

Reports available at [www.eua.be](http://www.eua.be)
Selected Outcomes of DOC-CAREERS II project on collaborative doctoral education
Conditions for Collaborative Doctoral Projects

- **Pre-conditions**
  - Share:
    - Value on research
    - Trust
    - Long-term approach

- **Conditions**
  - Funding: Public/Private
  - Partners Commitment – Joint Supervision
  - Efficient Management
  - Good performance – Thesis examination

- **Doctorate Holder with Collaborative Experience**

Source: EUA DOC-CAREERS Project
Motivations to engage in a collaborative scheme
The perspective of doctoral candidates

"I was already employed. This scheme helps me to build up a network in university and gain more insight in the problems we are facing at my company." (Doctoral candidate)

"[I] believed that this doctoral programme would significantly improve my future employability options because the nature of the programme is to collaborate with industry." (Doctoral candidate)
Benefits of collaborative doctoral education
The perspective of universities, companies and doctoral candidates

• The capacity to **bridge and integrate** both the **university** and the **business sector** mindset: being “**bilingual**” in both sectors, i.e., to understand and efficiently manage the requirements of the university and the business partner.
• Enhanced **employment opportunities** in the non-academic sector
• The possibility to work in **interdisciplinary** areas
• Developing **transferable skills** (e.g. organisational and management skills, entrepreneurship, leadership and business skills, and communication skills)

“This doctoral scheme allows [doctoral candidates] to work with colleagues and engineers, resulting in more interdisciplinary [knowledge].”  (University)

“It is easier to come to work in the industrial field later. They get company experiences, practical experiences and they get to know industrial solutions.”  (Company)

“I have also learned to handle both academic and industrial issues and people.”  (Doctoral candidate)
DOC-CAREERS II Contributing Organisations

Higher Education Institutions

Dublin Institute of Technology, Ireland (HOST 1)
École Polytechnique Fédérale de Lausanne, Switzerland (HOST 2)
Kaunas University of Technology, Lithuania (HOST 3)
Norwegian University of Science and Technology Trondheim, Norway (HOST 4)
Università di Camerino, Italy (HOST 5)

- Ghent University, Belgium
- Hanken School of Economics, Finland
- University Pierre and Marie Curie, France
- Ingolstadt University of Applied Research, Germany
- University of Paderborn, Germany
- National University of Ireland, Galway, Ireland
- University College Cork, Ireland
- University College Dublin, Ireland
- Polytechnic University of Marche, Italy
- Polytechnic University of Milan, Italy
- University of Camerino, Italy
- University of Chieti-Pescara, Italy
- University of Ferrara, Italy
- University of Perugia, Italy
- Klaipeda University, Lithuania
- Lithuanian University of Agriculture, Lithuania
- Lithuanian University of Health Sciences, Lithuania
- Mikolas Romeris University, Lithuania
- Siauliai University, Lithuania
- Vilnius Gediminas Technical University, Lithuania
- Pompeu Fabra University, Spain
- University Rovira i Virgili, Spain
- Umeå University, Sweden
- Swiss Federal Institute of Technology Zurich (ETH), Switzerland
- Bangor University, United Kingdom
- Newcastle University, United Kingdom
- University College London, United Kingdom
- University of Ulster, United Kingdom

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DOC-CAREERS II Contributing Organisations

Companies
- Alcatel Lucent, Belgium
- Applied Maths. Belgium
- Solvay S.A. Research and Technology, Belgium
- GlaxoSmithKline Biologicals, Belgium
- Jansen Pharmaceutica, Belgium
- OCAS, Belgium
- Umicore, Belgium
- Genes Diffusion, France
- Schlumberger, France
- Biotalentum, Hungary
- Biotalentum, Hungary
- Intel, Ireland
- Advanced Technologie Biomagnetic s.r.l., Italy
- Aptuit, Italy
- Finmeccanica, Italy
- Finmeccanica, Italy
- Goldenplast s.p.a., Italy
- iGuzzini Illuminazione s.p.a., Italy
- SINERGO s.r.l., Italy
- Comfort Heat UAB, Lithuania
- Lithuanian Energy Institute, Lithuania
- UAB “Naujasis Nevezis”, Lithuania
- DNV, Norway
- Farsund Aluminium Casting, Norway
- NTE, Norway
- Ortivio, Norway
- Scandinavian Business Seating, Norway
- SINTEF, Norway
- Skretting, Norway
- Statoil, Norway
- Domsjö Fabriker AB, Sweden
- Oryx Simulations AB, Sweden
- Debiotech SA, Switzerland

Other organisations
- EURODOC, Belgium
- European Commission, DG Education and Culture, Marie Curie Actions Unit, Belgium
- European Commission, DG Research, Belgium
- European Industrial Research Management Association, Belgium
- European University Association, Belgium
- Dublin City Council, Ireland
- Health Service Executive, Ireland
- Higher Education Authority, Ireland
- Irish Universities Association, Ireland
- Confindustria Young Entrepreneurs, Italy
- Council for Industrial Development, Marche region, Italy
- Italian Ministry of Education University and Research, Italy
- Ministry of Education and Science, Lithuania
- Association of Doctoral Organisations in Norway, Norway
- NIFU STEP – Studies in Innovation, Research and Education, Norway
- Nordic Institute for Studies in Innovation, Education and Research, Norway
- Research Council of Norway, Norway
- The Association of Norwegian Research Institutes, Norway
- The Norwegian Association of Higher Education Institutions, Norway
- Fundación Universidad-Empresa, Spain

...23...
Publications from DOC-CAREERS and DOC-CAREERS II projects

Reports available at www.eua.be
Selected Outcomes of
The UNI-SET Universities and Companies Survey
Findings from Phase I and II

September 2016
2015 UNI-SET Universities Survey (Phase II*)

✓ 202 universities
✓ 864 research topics
✓ 451 Doctoral schemes
✓ 579 Master programmes
✓ Active in energy research
  ✓ Research staff 9,833.3 (FTE)
  ✓ Doctoral candidates 6,286.6 (FTE)
  ✓ 36,903 Master-level students

2010 EUA-EPUE Survey
• 171 universities
• 1551 research topics
• 20678 Research staff (including PhD students) in persons
• 607 Doctoral programmes
• 904 Master programmes

*End of Phase II: 15 December 2015
**Views and recommendations for Universities from the employers in Smart Grids**

| University Education & fundamental knowledge in Energy  
| MSc  
| PhD | + Specialization is as important as multidisciplinarity.  
+ Different work positions would require different educational level and background.  
- Over qualification is as deterring as under qualification. |

| Extracurricular activities  
| Mobility  
| Industry Involvement | + Work experience carries often more weight than academic grades in hiring process.  
- It is essential to maintain the focus on technical specialization. |

| Languages & Soft Skills | + The graduates should be flexible to switch to other fields.  
- This helps integrate to working environment and provide positive outcome to the work.  
- Very case specific. |
SET-Plan Areas* - Masters and Research topics

- **Active Consumers**
- **Demand Focus - Increasing Energy Efficiency**

System optimisation

- **Secure, Cost-Effective, Clean and Competitive Supply**
  - Renewable electricity & heating/cooling technologies
  - CCS, CO2 utilisation & storage, fossil fuels

Cross-cutting aspects

- **Secure, Cost-Effective, Clean and Competitive Supply**
  - Renewable electricity & heating/cooling technologies
  - CCS, CO2 utilisation & storage, fossil fuels

Research topics

Master programmes

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n (Research topics) = 646, 
n (Master programmes) = 427, 
max 5 SET-Plan Areas per topic

*aggregated according to SET-Plan Integrated Roadmap (https://setis.ec.europa.eu/system/files/Towards%20an%20Integrated%20Roadmap_0.pdf)
Cooperation with external partners - research topics

Question: Are any of the aforementioned research activities carried out in collaboration with external partners? If so, please indicate the number of partners belonging to each category of partners per research topic and the form of cooperation with these external partners (☑ = yes).

Please, consider to indicate only sustained (i.e. not ad hoc) research cooperation between your institution and another institution or organisation. For the purpose of this study, consider only collaborations that have lasted at least 2 years. We aim to identify particularly collaborations which may have been concluded through formal agreements between the partners.

1 Partner categories:
- **Academic partners**: Universities, universities of applied sciences etc.
- **Industry partners**: Companies, company research laboratories, consultancies, etc
- **Research and Technology Organisations**: Public or private research and technology organisations
- **Other partners**: Government bodies or agencies (e.g. ministries, agencies on the municipal, regional, national or European level), other partners (e.g. NGOs), etc

2 Form of cooperation
- **Research**: The project/topic involves partners that conduct research as a part of a project/topic.
- **Access to research infrastructure**: Offering access to research facilities/infrastructure for research staff of your institution and/or your institution offering access to research infrastructure for partners.
- **Hosting doctoral candidates**: Partner is offering (temporary or permanent) positions for Doctorate candidates to conduct research or write a dissertation in their institution.
Cooperation with external partners - master programmes

Question: Please specify the types of external partners and the form of partnerships in relation to the Master programmes.

Mark boxes (☑) to indicate whether your institution maintains a partnership with a specific purpose within the framework of a given Master programme. For joint/double degree programmes, please select 'Education: Double/joint degree'.

By partnerships, we refer to formal (i.e. not ad hoc) cooperation between your institution and a third party. The third party can, for example, give official lectures to students or host students as part of their training. Ideally, the cooperation is clearly defined and integrated in the programme structure.

1 Partner categories:
- Academic partners: Universities, universities of applied sciences etc.
- Industry partners: Companies, company research laboratories, consultancies, etc
- Research and Technology Organisations: Public or private research and technology organisations
- Other partners: Government bodies or agencies (e.g. ministries, agencies on the municipal, regional, national or European level), other partners (e.g. NGOs), etc.

2 Form of cooperation (academic partners)
- Education - double or joint degree: Please tick this box if the programme is a double or a joint degree offered in cooperation with other academic institutions.
- Education - other: Offering regular education activities to students of the programme, e.g. lectures or other courses, offering lab facilities and/or dedicating time to students, site visits or other activities.

3 Form of cooperation (all other partners)
- Education: Offering regular education activities to students of the programme, e.g. lectures or other courses, offering lab spaces and/or time for students, site visits or other activities.
- Placements (internship / thesis): Please tick this box if an industry partner is regularly offering internships for students or to write a thesis in a partner company/organisation.
Final Remarks on Universities in University – Industry Cooperation

- Major role in supplying highly educated people and researchers
- Diverse missions in basic and collaborative research, linking education and research
- Universities in cities and regions as main components of social and economic development
- External funding sources accounting for ever higher proportions of university research budgets
- The complexity of social issues (reflecting global challenges) require new interdisciplinary approaches and skills
- The ‘open’ policies provide new opportunities for more and better collaboration
- Partnerships are at the core of collaborations
Thank you for your attention!

Contact:

www.eua.be