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# Collaborative doctoral education in Europe: Partnerships for research, innovation, and career development of doctoral candidates

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# Partnership between Academia and Industry

- **Universities** have interest for
  - development of new curricula
  - enhanced  employability and entrepreneurial attitudes of their graduates
  - inter-sectoral exchange of staff and ‘knowledge exchange’

- **Industry** look for interdisciplinarity as an essential component of innovation and Universities provide unique environments where academic studies are developed and advancements are achieved across a wide range of disciplines

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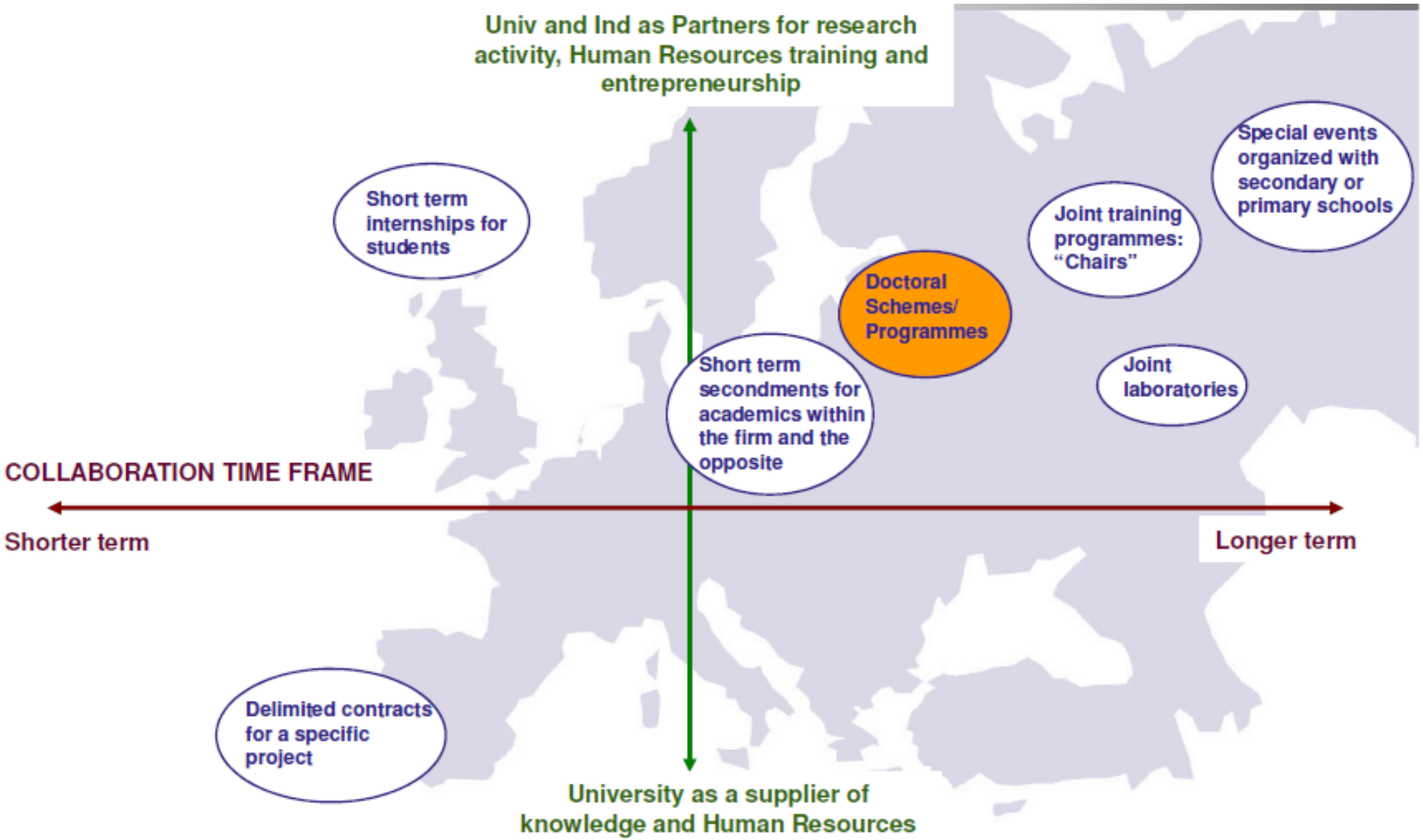
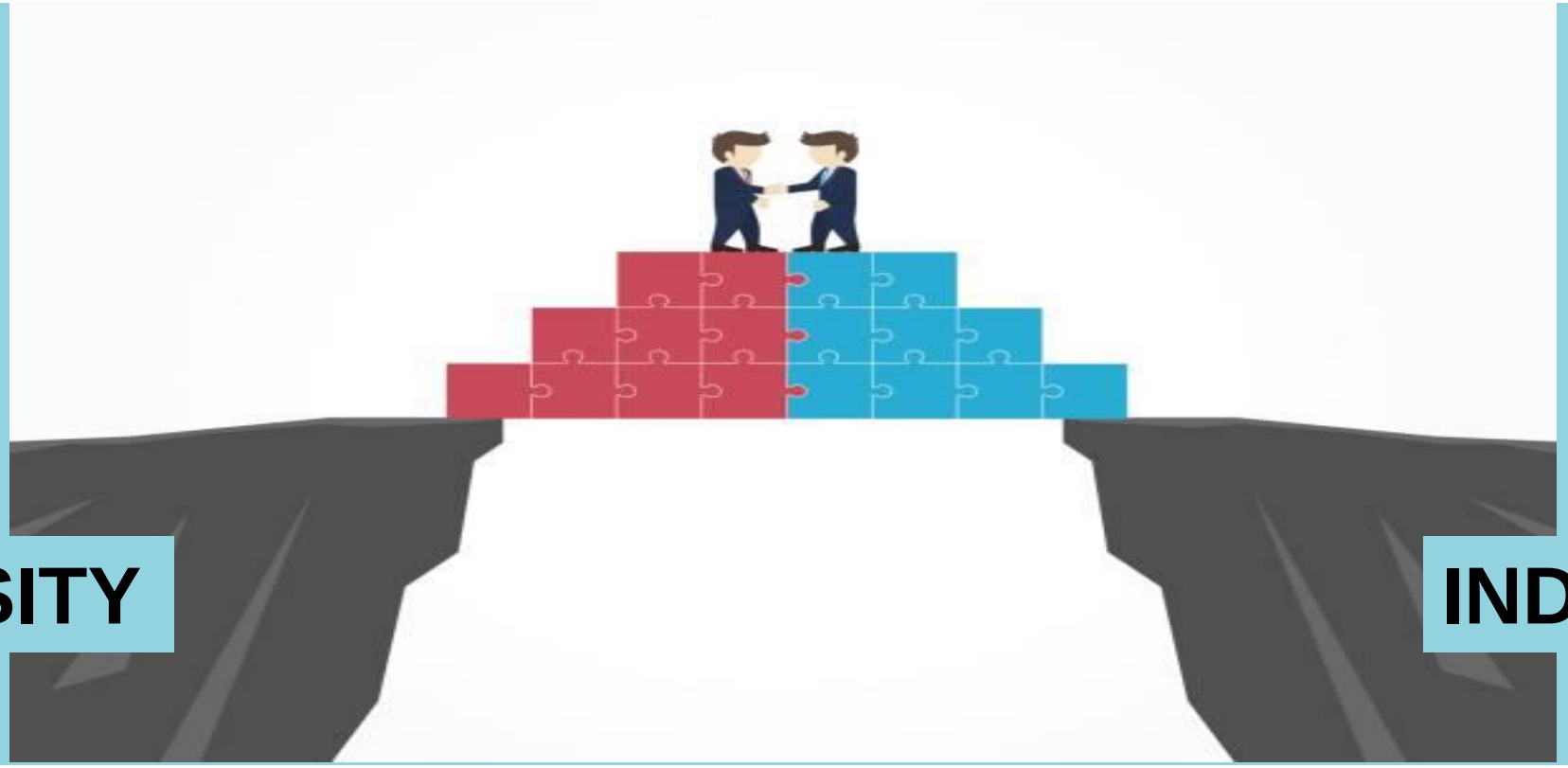



- *Source: EUA DOC-CAREERS Project*

# University-Industry Collaborations

# Doctoral candidates are a link between University and Industry



**UNIVERSITY**

**INDUSTRY**

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# Motivations

| Universities | Industries | Doctoral candidates |
|---|---|---|
| • Exposure to wider research environments<br>• Improving the quality of doctoral education and institutional reputation<br>• Enhancing employability perspectives of doctoral holders and their social status<br>• Responding to the growing industrial demand for access to generated new knowledge<br>• Attracting more and more diversified funding from external organisations for research<br>• Stimulating university-industry dialogue | • Access to cutting-edge research<br>• Recruitment: access to highly qualified working force<br>• Staff career development | • Gaining insight of the non-academic sector<br>• Facing “real life” research problems<br>• Enhancing employability opportunities, especially outside academia<br>• Building up a network of contacts outside academia<br>• Ready made (“jump in work”) projects |

# Benefits

| Universities | Industries | Doctoral candidates |
|---|---|---|
| • Promoting innovation, entrepreneurship and social responsibility<br>• Incorporating industry input within university research<br>• Gaining awareness of technical challenges facing companies<br>• Providing highly qualified workers to the labour market<br>• Contributing to sustainable funding for research and research infrastructure<br>• Enhancing quality of research management | • Bringing highly qualified work force and scientific know-how<br>• Bringing cutting-edge research, enabling exploitation of results<br>• Developing innovative concepts at early stages<br>• Performing work and addressing technical problems difficult to do in-house<br>• Exploring new areas of research for exploitation in the future<br>• Access to sophisticated instruments and large scale facilities | • Gaining insight of the non-academic sector<br>• Facing “real life” research problems<br>• Enhancing employability opportunities, especially outside academia<br>• Networking in wider environments |

# Challenges in establishing the partnership

| Universities | Industries | Doctoral candidates |
|---|---|---|
| • Identifying partners who value university R&D<br>• Finding research projects which match industry needs and academic standards<br>• Reaching agreements (financial, confidentiality, IP Rights)<br>• Timely decision making processes, internal management and bureaucracy<br>• Raising awareness of the potential of university R&D to industry | • Identifying partners who value industry R&D<br>• Finding research projects which match industry needs and academic standards<br>• Reaching agreements (financial, confidentiality, IP Rights)<br>• Timely decision making processes, internal management and bureaucracy | • Challenges generally include those pointed out by universities and enterprises. |

# Challenges in taking forward collaborative project/programme

| Universities | Industries | Doctoral candidates |
|---|---|---|
| • Attracting and retaining qualified candidates able to work simultaneously in industry and university environments<br>• Continuously delivering new knowledge perceived as valuable to the corporate world<br>• Facing peer pressure - “selling (cheaply) the university research”<br>• Facing possible threats to university career development<br>• Implementing timely decision making processes and management | • Attracting and retaining qualified candidates able to work simultaneously in industry and university environments<br>• Balancing targeted industry research and openness to breakthrough knowledge<br>• Implementing timely decision making processes and management | • Satisfying simultaneously the needs and expectations of university and industry, as well as the candidate’s<br>• Dealing with different, sometimes conflicting dynamics and pressures<br>• Dealing with different levels of interest of partners<br>• Having to “duplicate” research outcomes reports |

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# Partnership between Academia and Industry

- Committing resources:
  - material - access to necessary Lab, equipment, facilities;
  - human - supervisors, doctoral candidate, others if necessary
- Realistic expectations from all sides: project fitting into both academic and business research fields and strategies, awareness of the nature of the doctoral process, timeframes, needs, expected outcomes, work load, etc.
- Formalisation of an agreement and flexibility to accommodate to unforeseen situations




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# Career options for doctorate holders

PhD Graduate

Research positions

Non-Research positions

Sectors

Business enterprise and Industry

Government

Private non-profit

Higher Education & Research (postdocs, professors, research fellows, etc.)

Other education sector

Service Sector

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# *Take home message

1) Identify knowledge/technological needs and challenges which **need R&D input**

2) **Exchange views** on knowledge/technological challenges with university/industry

3) **Plan** medium-long term **R&D strategy** (e.g. within five years)

4) Develop **high quality research proposals**

5) **Know the costs of your research** and identify funding sources

6) Raise your awareness of the respective **research environments in which to collaborate** in your field (university, industry)

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# *Take home message

*cont'd*

7) Participate in fora for soft ways of **interaction between students, researchers and industry experts** with good research content (conferences, fairs,etc.)

8) Organise small-size highly-specialised workshops/meetings **pooling experts from different research fields and sectors**

9) Seek the **right expertise** to assist you (IPR issues, contractual issues, etc.)

10) Formalise doctoral collaborations in **solid and fair agreements** combining structure and flexibility

11) Consider physical proximity as an asset to develop mutual trust - **promote face-to-face dialogue**

12) Commit to **excellence** in doctoral education, research and management

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Based on *EUA PUBLICATIONS 2015 COLLABORATIVE DOCTORAL EDUCATION IN EUROPE: RESEARCH PARTNERSHIPS AND EMPLOYABILITY FOR RESEARCHERS. REPORT ON DOC-CAREERS II PROJECT* by Lidia Borrell-Damian, Maria Rita Catrunfo Morais, John H. Smith

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