

University- Business Cooperation Guidelines for doctoral studies

European PhD Hub

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Executive Summary

The university-business cooperation guidelines provide the basis for the cooperation in the European PhD Hub. The guidelines tackle challenges found in university-business cooperation, in particular, when it comes to the implementation of collaborative doctoral programmes. The document analyses the conditions, and strategies to achieve fruitful cooperation between companies, universities and PhD students. It contains examples on how to assess universities' innovative potential, establish a business contract and property rights, select PhD students and industrial supervisors and find funding opportunities.

1. Introduction

University-business cooperation (UBC) is not a new concept. UBC is gaining increasing attention since the 1980's and many European national and regional public authorities are turning their attention to UBC to increase their competitiveness. The synergies produced through UBC bring about mutual benefits for each stakeholder, namely universities, businesses and students (Davey, Baaken, Galan Muros, & Meerman, 2011). More specifically, the implementation of collaborative learning projects allow universities and companies to enrich their internal processes from different fronts. On one hand, universities can implement innovative methodologies for teaching and learning, which have the potential to encourage entrepreneurship and social responsibility. They can also benefit from sustainable funding by carrying out research with companies, and hence supporting highly qualified graduates who can adapt more easily to labor market needs. On the other hand, the performance of companies is increased (Davey et al., 2011) since companies have first access to talent from universities (Davey et al., 2017). These benefits

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are extended to society, who benefits from an increase of living standards, productivity and social cohesion (European Commission, 2012).

The European Commission has developed programmes and instruments to encourage UBC. The *Erasmus + Key Action 2 - Knowledge Alliances* focuses on transnational, result-oriented projects between higher education institutions and enterprises¹. The *University-business forum* provides an opportunity for higher education institutions, companies, business associations, intermediaries, public authorities and policy makers to exchange ideas and good practices². *HEInnovate* is a self-assessment tool to provide higher education institutions with advice, ideas and inspiration to identify areas for change and innovation³. The Commission has also issued reports that provide stepping stones to engage in effective UBC, notably the report on [measuring the impact of UBC](#) and the [state of European university-business cooperation](#) issued in [2011](#) and [2017](#) along with individual reports of the state of UBC [per country](#).

Despite the increasing number of projects and initiatives, UBC in Europe focuses extensively on cooperation at Master level⁴. Conversely, cooperation at the PhD level seems to be under-represented. This gap in UBC encourages the implementation of projects to strengthen the knowledge triangle: education, research and innovation. The Knowledge Alliance project [European PhD Hub](#) is an initiative from universities and companies from Spain, Poland, Greece and the United Kingdom. The project aims to guarantee that research outcomes obtained by PhD students have a real impact in broader socio-economic environments and are responding to needs and challenges faced by companies. In order to achieve this, the *European PhD Hub* will develop an online platform to facilitate the matchmaking process between universities, companies and prospective PhD researchers at European level - therefore increasing the chances

¹ For more information on the Erasmus + action 2 Knowledge Alliance projects, click [here](#)

² The forum report of the year 2017 can be accessed [here](#)

³ <https://heinnovate.eu/en>

⁴ This is perceived by analysing the case studies presented by the European Commission in its UBC publications.



of matching research interests in fields which are more and more specialised and interdisciplinary. In addition, the project presents two guiding documents to integrate PhD education in UBC. Whereas the *guidelines on international cooperation* can already be downloaded in the [website](#) of the project, the present document lays ground for effective doctoral UBC.

2. UBC in the context of a doctoral programme

There are three different degrees to which universities and companies approach doctoral UBC: Non-existing collaboration, limited involvement and fully collaborative partnerships. Europe is still in its early days regarding doctoral UBC and only a handful of initiatives are starting to have an impact in their local contexts. The most outstanding collaborative European doctoral UBC projects up to date include the doctoral agreement between the [Technical University of Munich and BMW](#), or the fully cooperative doctoral project between [the University of Strathclyde in Scotland \(UK\) and Glaxo Smith Kline](#). Other projects whose objective is to integrate researchers in UBC include [Euraxess](#) that delivers information and support services, and [DOC-CAREERS](#), which promotes doctoral education for enhanced career opportunities. The initiatives above mentioned rise awareness on what doctoral UBC entails. The commercial exploitation of ideas, the acquisition of specialized skills, the additional possibilities to get funding, or the opportunity of new career perspectives are some of the most important drivers that encourage each stakeholder to take the plunge on doctoral UBC.

The scarce literature on doctoral UBC suggests that certain good practices be considered for the correct rolling out of collaborative doctoral partnerships. The open innovation model (Borrell-Damian, Morais, & Smith, 2015) presents the most important initial steps to participate in doctoral UBC.

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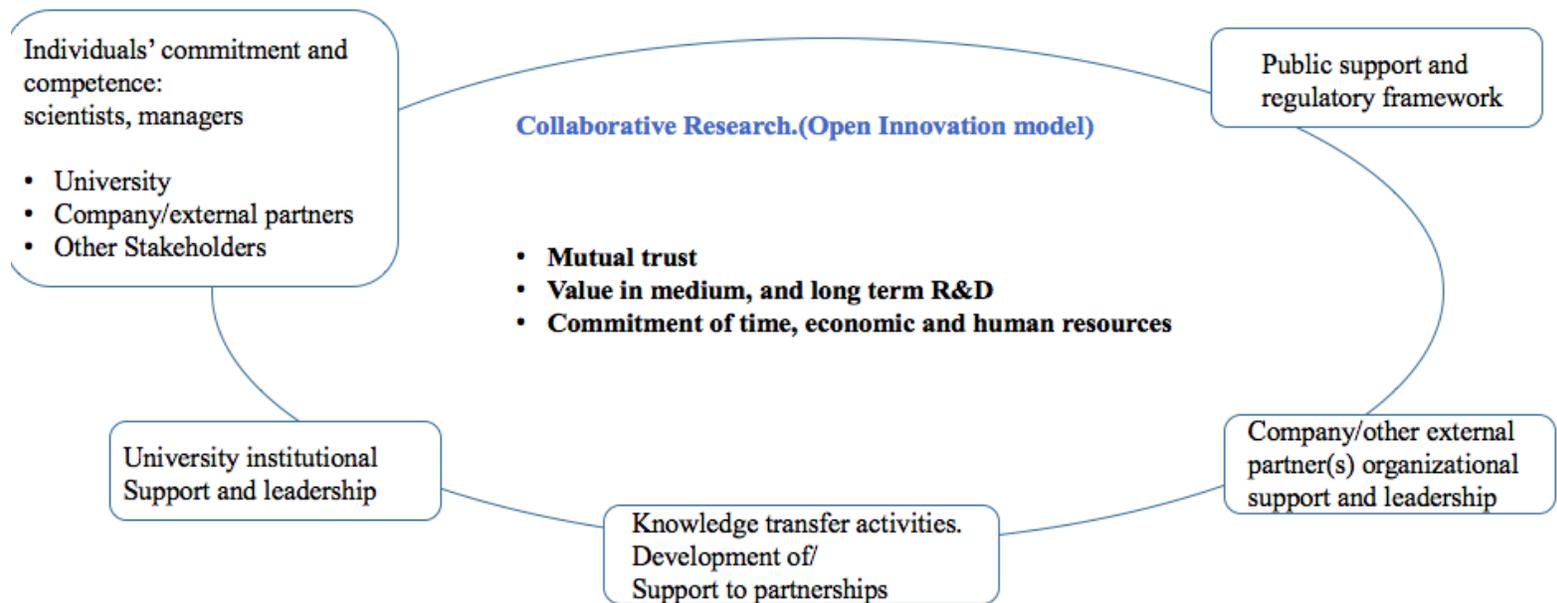


Figure 1. Components of collaborative doctoral education (Borrell-Damian, Morais, & Smith, 2015).

The open innovation model in Figure 1 shows that there are core components of collaborative doctoral UBC. *Mutual trust* should be built on good interpersonal relationships and continuous face-to-face interactions. *Medium and long-term R&D* should be encouraged so that legitimate interests of all parties are considered. Likewise, clear rules of cooperation for all parties should be established to ensure *commitment* regarding *time*, and *resources* (economic and human). These core components are triggered by a set of conditions that include *support (public and institutional)* as well as *leadership and competence* which can guarantee the quality of the research being developed and the ease of management between the academic and industry contexts. These practices can be established, supported and developed through *knowledge transfer activities* which give the opportunity to stakeholders to gather and develop synergies. Since the *European PhD Hub* is being put in place to enable efficient doctoral UBC by

connecting stakeholders across the continent, the consortium will carry out knowledge transfer activities⁵ to put the open innovation model of collaborative research into action.

Assignment 1.

Appendix A provides initial questions to trigger a collaborative doctoral scheme. Which other common outcomes can emerge based on the Open Innovation Model?



[Appendix A](#)

3. Benefits of collaborative doctoral projects

In the report of the DOC-CAREERS project by Borrell-Damian, Morais, & Smith (2015:17) collaborative projects are defined as:

...doctoral theses carried out with interaction between a university, a company and a doctoral candidate. A distinctive characteristic is that industry experts take part in the supervisory committee, officially or informally. Industry can play several roles, but being in the supervisory committee is what effectively reflects the specific nature of the collaborative doctoral project.”

⁵ The activities comprise the development of local strategies to ease doctoral UBC and seminars that will strengthen the ties among local clusters (universities and industry).



University-business collaborative doctoral projects are an ideal mechanism to enhance knowledge transfer, inter-sectoral mobility and mutual understanding. In the *European PhD Hub*, the benefits for each stakeholder are depicted in Figure 2:

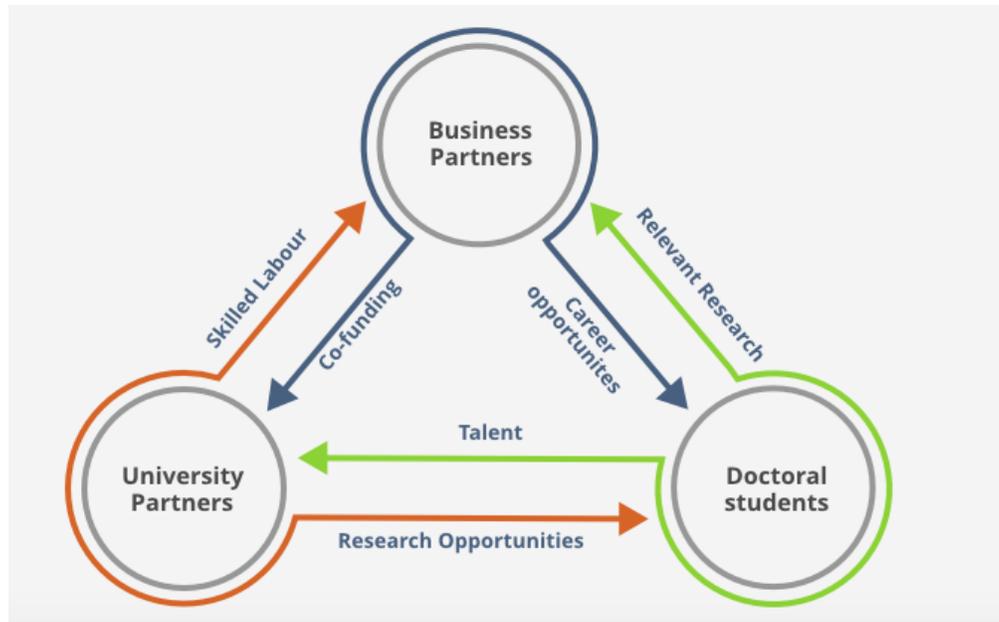


Figure 2. Benefits of collaborative doctoral projects in the *European PhD Hub*.

Figure 2 shows that each stakeholder can benefit from the synergies that emerge thanks to collaborative doctoral projects. In the *European PhD Hub*, university partners can take advantage of the talent of potential doctoral students registered in the PhD Hub platform. Universities can have access to the co-funding possibilities offered by the business partners in the network. Furthermore, universities engaging in this kind of collaborative doctoral project benefit from other collateral benefits which include⁶:

⁶ Adapted from Borrell-Damian, Morais, & Smith (2015)

- Exposure to wider research environments
- Improving the quality of doctoral education and institutional reputation
- Stimulating university-industry dialogue
- Enhancing employment prospects of doctoral holders and their social status

Companies in the *European PhD Hub* have access to talents from universities who carry out research activities in the company's field of interest. In this vein, cooperative doctoral projects are expected to increase companies' competitiveness and improve their position in the market. Companies can also benefit from other aspects of cooperative doctoral projects, namely⁷:

- Broadening research funding sources by combining public and private funding sources and partnering up with PhD candidates and other stakeholders already carrying out related/relevant research activities
- Accessing cutting-edge research and technological developments
- Viewing university-business collaboration as part of the company's strategic plans
- Enhancing the quality of the recruitment pool.
- Enhancing the skill profiles of the employees

Finally, doctoral students enrolled in the *European PhD Hub* will benefit from research and career opportunities. Likewise, participation in collaborative doctoral projects gives doctoral researchers the possibility to:⁸

- Enhance employability, especially outside academia
- Build a network of contacts outside academia
- Gain insights into the non-academic sector
- Face “real life” research problems

⁷ Adapted from Borrell-Damian, Morais, & Smith (2015)

⁸ Adapted from Borrell-Damian, Morais, & Smith (2015)



Other benefits include the opportunity to develop applied research, innovation projects, as well as the possibility of accessing mobility grants to other international research centers and attend academic events.

4. Obstacles to cooperation and mitigation strategies

Previous research on UBC, namely the reports on the [state of European university-business cooperation](#) issued in [2011](#) and [2017](#) outline the most important barriers that hinder cooperation. In both reports, [funding](#) is listed by both academics and higher education institutions as the highest barrier to UBC along with internal bureaucracy procedures. Lack of work time and cultural differences in respect to time management are also factors the need to be tackled to reach an effective cooperation. Additional obstacles to cooperation and possible strategies to mitigate those are displayed in Table 1.

Table 1. Obstacles and mitigation strategies to UBC adapted from Davey, et al., (2011); Davey, et al., (2017).

Type of barrier	Description	Mitigation strategy
(Lack of) awareness	-Business lack awareness of university research activities offerings -Universities lack awareness of opportunities arising from UBC -Difficulty finding the appropriate collaboration partners	Organise “peer-to-peer” events inviting academics and businesses in order to build relationships and plan collaboration.
	No appropriate initial contact person within either the university	Delegate a person from university/businesses who will

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	or business"	become the initial contact for UBC
Funding	Limited (or no)resources	Ensure that funds are available not just to encourage but also simply to maintain UBC. Appendix H shows funding possibilities
Internal barriers	Bureaucracy	Reducing and simplifying the bureaucratic procedures of UBC
	Lack of time	Allocate time to the development of UBC activities
	Finding a collaboration partner	Facilitating and supporting UBC processes and interactions via dissemination events
	Reluctance on the part of academics and companies to engage in a collaborative doctoral schemes	Minimise the perception of barriers by academics and HEIs Create policies that simultaneously consider the reduction of barriers and the increase of drivers
	Need to be flexible in the types/modes of collaboration	Implement a flexible curriculum/
	focus on practical results by business	
	The need for business to have confidentiality of research results	Reach intellectual property rights agreements with business
Cultural/relational	Differing time horizons between HEI and business	Use of ICT tools to reach partners synchronous and asynchronously
	Differing motivation / values between HEI and business	Negotiate the conditions that ensure that both parties get benefits from cooperation
	Differing mode of communication and language between HEI and business	The initial contact person should have experience in university and academia and he/she understands the

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		needs of each context
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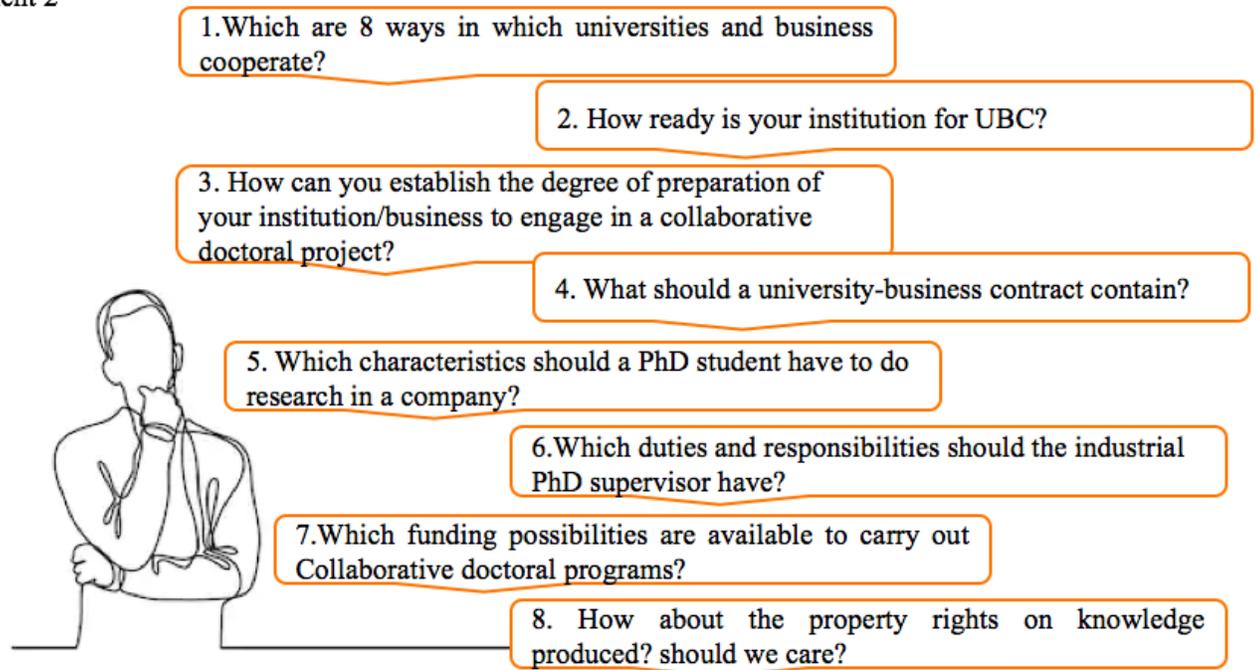
Regardless the fact that mitigating barriers allows greater levels of UBC, *mutual trust, commitment and a shared goal* should also be encouraged, since they are the most important drivers towards effective UBC (Davey, et al., 2011; Davey, et al., 2017). By 2011, the *European PhD Hub* country partners were ranked with high (Greece and Spain) and average (Poland, UK) obstacles towards cooperation compared to the rest of European countries (Davey, et al., 2011).

5. Setting up a collaborative doctoral project (CDP)

A substantial number of European universities present a non-existing or limited involvement in collaborative doctoral projects (See example in [Appendix B](#)). To overcome this, the support of **top management**, both in universities and in companies is crucial (Borrell-Damian, Morais, & Smith, 2015). In the hope to advance towards a more concrete and solid collaborative doctoral programme, this section presents instruments developed in and out of the *European PhD hub* initiative. Therefore, universities and businesses intending to engage in collaborative doctoral projects might want to make use of the indicative tools presented herein to start setting the bases of their cooperation. But first, take a moment to reflect upon the following questions:



Assignment 2

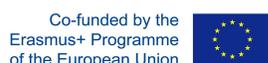


5.1 Eight ways in which university and businesses cooperate

Previous research on European UBC refer to eight ways in which universities and businesses cooperate. The study by Davey, Baaken, Galan Muros, & Meerman (2011:43) outlines them as follows:

1. *Collaboration in R&D*: Refers to joint R&D activities, contract research, R&D consulting, cooperation in innovation, joint publications with firm scientists/researchers, joint supervision of theses with firm scientists/researchers in cooperation with business and student projects in cooperation with business.
2. *Mobility of academics and*
3. *Mobility of students*: Refers to the temporary or permanent movement of professors or researchers from higher education institutions to business, and employees, managers and researchers from business to higher education institutions.

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4. *Commercialisation of R&D results*: Through spinoffs, disclosures of inventions, patenting and licenses.
5. *Curriculum development & delivery*: The process of collaboratively creating a learning environment with members of the business community including creation of a fixed programme of courses or planned experiences.
6. *Lifelong learning*: Refers to all learning activity undertaken throughout life through a higher education institution, whether formal or informal.
7. *Entrepreneurship*: Actions within or involving higher education institutions towards the creation of new ventures or developing and innovative culture within the institution in cooperation with business.
8. *Governance*: Cooperation between HEI and business at a management level of the HEI or firm.

These cooperation types are related to one another and are dependant by a large number of factors such as perceived benefits and barriers, and the clarity of conditions for cooperation. The instruments provided on pages 118-124 of the report by [Davey et al. \(2011\)](#) can help determine the factors that can impact UBC in your local context.

5.2 Readiness to engage in collaborative doctoral projects

Readiness for a long-term university-business cooperation motivates both sides to invest more and higher quality resources (Dpa, 2016). The degree of preparation to engage in a collaborative doctoral project depends, among others, on universities/businesses organizational scheme, level of involvement and financial resources. There are also structural elements of the doctoral collaboration that define low or high levels of synergies. Table 2 shows the structural components of collaborative doctoral projects.

Table 2. Structural components of collaborative doctoral projects.



Doctoral cooperation program indicator	Low level of cooperation	High level of cooperation
Commitment from the university	Professor/Researcher	Institutional + Professor/Researcher
Commitment from the industry	Middle management/Research Team	Top management + Middle management/Research Team
Role of industry (one or more)	Supervision/ Data Supplier/ Networking	Funding/ Placements/ Supervision/ Data Supplier/ Networking
Public support	Possible	Normally yes (but some large R&D companies set their own programmes without it)
Research project agreed by all parties	Informal	Formal
Contract specifying rights and duties of each party, including IP rights	Possible	Formal
Legal status for the doctoral Candidate	Possible	Yes (contract, scholarship)
Supervisory team involving professionals from different sectors	Possible	Yes
Additional entry requirements (company interviews, HR selection processes)	Possible	Yes

Source: *European PhD Hub*

As a way to gain insight into the current degree of readiness towards cooperation, universities and businesses can implement self-assessment tools to diagnose strengths and weaknesses and hence refine their cooperation strategy. The assessment of indicators outlined by Davey et al., (2017:148) tackles areas such as education (joint curriculum, lifelong learning, student mobility),

research (professional mobility and joint R&D), valorisation (R&D commercialization) and governance. It provides a quantitative overview of the areas that would need to be further developed to enhance cooperation. The instrument is available in [Appendix C](#).

Readiness for cooperation can also be assessed taking into account the innovation potential of the institution. Innovation is one of the important pillars for UBC and a driver to strengthen collaborative doctoral education (Borrell-Damian, Morais, & Smith, 2015; Davey et al., 2011). The efforts to determine the innovation potential of institutions result in the *HEInnovate* project, which is an initiative from the the European Commission and the OECD. This self-assessment tool provides input to measure the institutions' innovative nature. The eight key areas assessed include: leadership and governance, organizational capacity, entrepreneurial teaching and learning, support for entrepreneurs, digital transformation, knowledge exchange, internationalization, and impact. Figure 3 shows the interface of the platform, which can be accessed at <https://heinnovate.eu>. The dimensions assessed via *HEInnovate* give institutions an overview on their cooperation capabilities. They also help build and sustain relationships with businesses.

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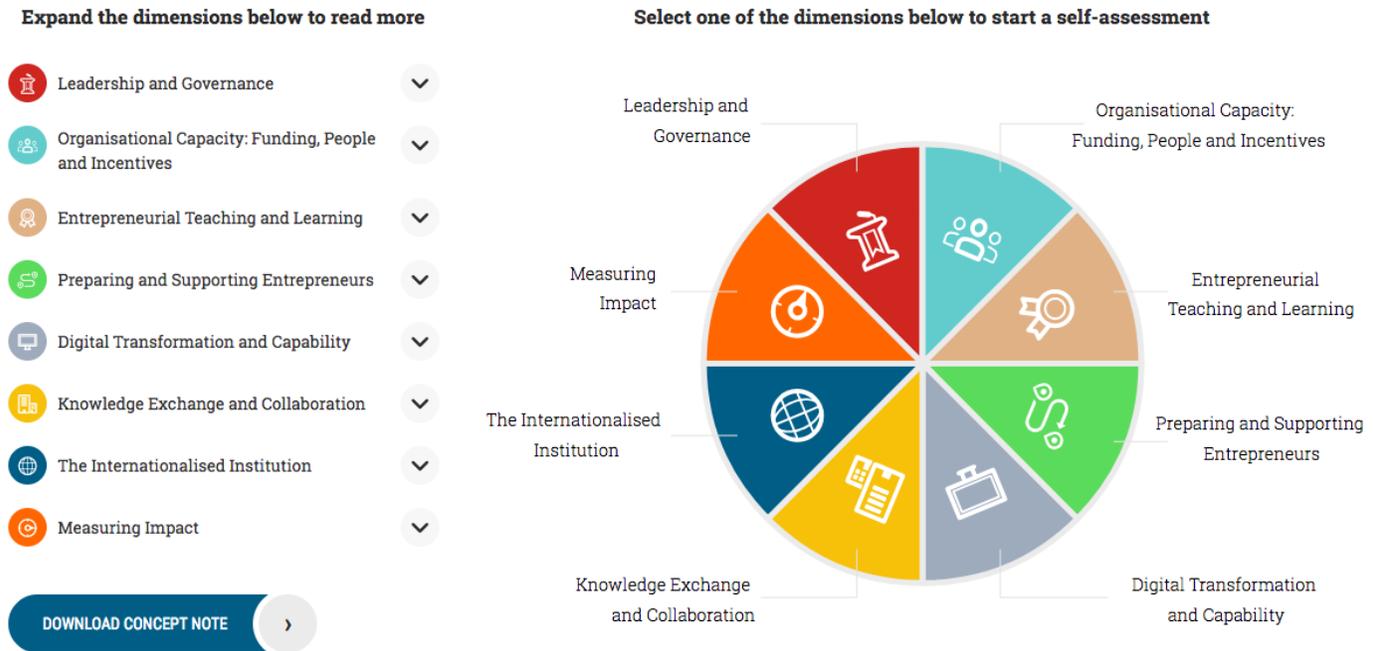


Figure 3. HEInnovate interface

5.3 Involvement of business in collaborative doctoral projects

The regional context in which universities and companies are embedded, the policy frameworks in place (national legislation) and the specific characteristics of the local and regional environment, are all factors that can facilitate the development and consolidation of university-business partnerships (Borrell-Damian, Morais, & Smith, 2015). Because of this, Figure 4 presents a general approach towards the implementation of collaborative doctoral projects which can be more academic or business oriented. The approach chosen defines the funding, project supervision, data used for research and use of facilities (Borrell-Damian, Morais, & Smith, 2015). The general pathway in Figure 4 presents a four-step process for collaboration, which includes a formal agreement, selection of the research topic, role of supervisor and funding.

Sections 5.3.1 - 5.3.4 give details about each component of the approach to establish a collaborative doctoral project.

UBC in doctoral education

Formal agreements

- **Business and academic approach**

- Description of the research project
- Duration of joint research
- Decision making procedures
- Rights and duties of each party
- Financial provisions and allocation of resources
- Confidentiality issues
- Intellectual property ownership and rights over research outcomes with/without potential commercial use.

Selection of doctoral research topic

- **Business approach**

- Determined by business partner

- **Academic approach**

- Chosen by tutor and doctoral students

Choosing of supervisor

- **Business approach**

- The PhD student has three supervisors: First and second academic supervisor, and industrial supervisor.
- If the PhD student is a company employee, he has a contract with the industrial supervisor and he meets the academic supervisor periodically.

- **Academic approach**

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- The student has a fixed supervisor from the university and the industry supervisor is not necessary.

PhD research financing

- **Business approach**
 - Scholarships
 - Financial resources provided by the business
- **Academic approach**
 - The program offers full funding
 - Financial resources via scholarships

Figure 4 Approach to establish a collaborative doctoral project⁹.

5.3.1 Formal agreements: The university-business contract and property rights

In addition to a verbal consent, the process of collaboration begins with the signing of an agreement document (letter of intent, partnership agreement, patent and know-how license, non-disclosure agreement etc.) The formal agreement refers to any understanding between universities and enterprises regarding specific plans, responsibilities and rights. It tackles questions such as:

- What problem do stakeholders want to solve?
- Who are the main beneficiaries and why?
- Who can be the project leaders and why?
- What are the proposed solutions to the indicated problems?
- Who will ensure the success of the cooperation?
- How long will the cooperation take?

⁹ Inspired from Borrell-Damian, Morais, and Smith (2015)

- How can the stakeholder demonstrate it has an appropriate team for cooperation?
- What is the financial plan?

In other words, the elements aimed at that framing cooperation includes aspects such as: A description of the project, duration of the research, decision making procedures, rights and duties of each party, financial provisions, are some of the aspects that need to be clarified prior cooperation. [Appendix D](#) shows an example of a university-business contract.

Intellectual Property Rights (IPR) should also be negotiated at the outset of the collaborative doctoral education. As a matter of fact, IPR and confidentiality/disclosure arrangements are considered as one of the most important areas to cover (Borrell-Damian, Morais, & Smith, 2015). The ownership of the IPR in university and business projects depends on various factors. Those include the European legislation over results of academic research, national laws, university and businesses IPR internal protection policies, the relationship between IPR and the funding source, and contractual arrangements (Tantiyaswasdikul, 2013). In some situations, namely when research does not have the prospect of immediate commercial application, business partners can more easily agree to disclose research results. In all cases, since doctoral students are required to publish outcomes of their research, stakeholders' interest should be balanced. The publication and commercial exploitation of research products must hence be made clear in the cooperation agreement. [Appendix E](#) shows an example of an agreement regarding IPR.



5.3.2 Research topic and selecting the right PhD student

The selection of the research topic is undertaken by negotiation considering the different needs and interests of the university, the business partner and the doctoral candidate. Whereas academic supervisors and PhD students broaden the field of knowledge, businesses tend to be more interested in generating patentable and market-oriented products suitable for industrial applications (Sterzi, 2013). Because of this, companies may reserve the right to refuse acceptance of the doctoral candidate. By using the checklist in [Appendix F](#) for the recruitment of PhD students, companies can determine the least and most important characteristics needed for a determined collaborative project.

5.3.3 The role of the industrial PhD supervisor

When a business approach is implemented, the role of the industrial supervisor is crucial. This person should be involved in the supervision and follow-up of the doctoral research to further business (Borrell-Damian, 2009; Borrell-Damian, Morais, & Smith, 2015). Despite his importance, the formalities and responsibilities of the industrial PhD supervisor are in a gray area in available literature, and only the doctorate programme of Computer Science of the University of Saint Andrews (UK) provides a thorough set of requirements for the industrial supervisor. In this institution, the following conditions are required for industrial supervisors:

Formal procedures:

- CV of the applicant ([see example](#))
- Proof of employment in the company

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- Supporting statement from an authorised person from the industry ([see example](#))
- Experience in mentoring staff
- Established track record (publication, patents or other tangible outcomes)
- PhD holder in an area similar to the PhD student.

Duties and responsibilities of the industrial supervisor (IS)

- The IS should be the point of contact of the PhD student in the business context. This implies an appropriate mentoring and guidance.
- The IS should supervise the design, execution and analysis of research activities in collaboration with the academic supervisor.
- The IS should undertake administrative activities for the reporting and monitoring of the student.
- IS should be available to interact on a regular basis with the PhD student using digital technologies or face-to-face meetings.
- The IS should advice on courses suitable for the PhD student to follow at university.
- The IS should have the time to engage in teleconferences or meetings with the academic supervisor.

Additional duties found in different institutions include:

- The IS should facilitate or promote the implementation of the findings of the dissertation.
- The IS should liaise with the academic supervisor to ensure the project is adequately directed with respect to its industrial relevance.
- The IS should attend a one-day workshop on effective supervision.
- The IS should have a prominent position of authority and responsibility in the work environment.



In addition to the formalities and duties, it is important that the PhD industrial supervisor self-reflects on practicalities to facilitate his work with the PhD student. [Appendix G](#) provides guiding questions to this end.

Assignment 3.



Are there additional formalities and duties for the industrial PhD supervisor?
Are there other elements a industrial PhD supervisor should consider to mentor the PhD student?

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5.3.4 Funding

Regarding funding, it is crucial to determine the funding mechanism available for the doctoral research project, or the extent to which each stakeholder will have to economically contribute. Lack of funding is one of the most important barriers in UBC and it exists at different levels, mainly:

- Lack of external funding for UBC
- Lack of financial resources of the business
- Lack of HEI funding for UBC

(Davey et al, 2011; Davey et al., 2017)

In order to overcome this issue, there are a set of strategies universities and business can implement. Figure 5 presents the funding possibilities available to carry out a doctoral research project.

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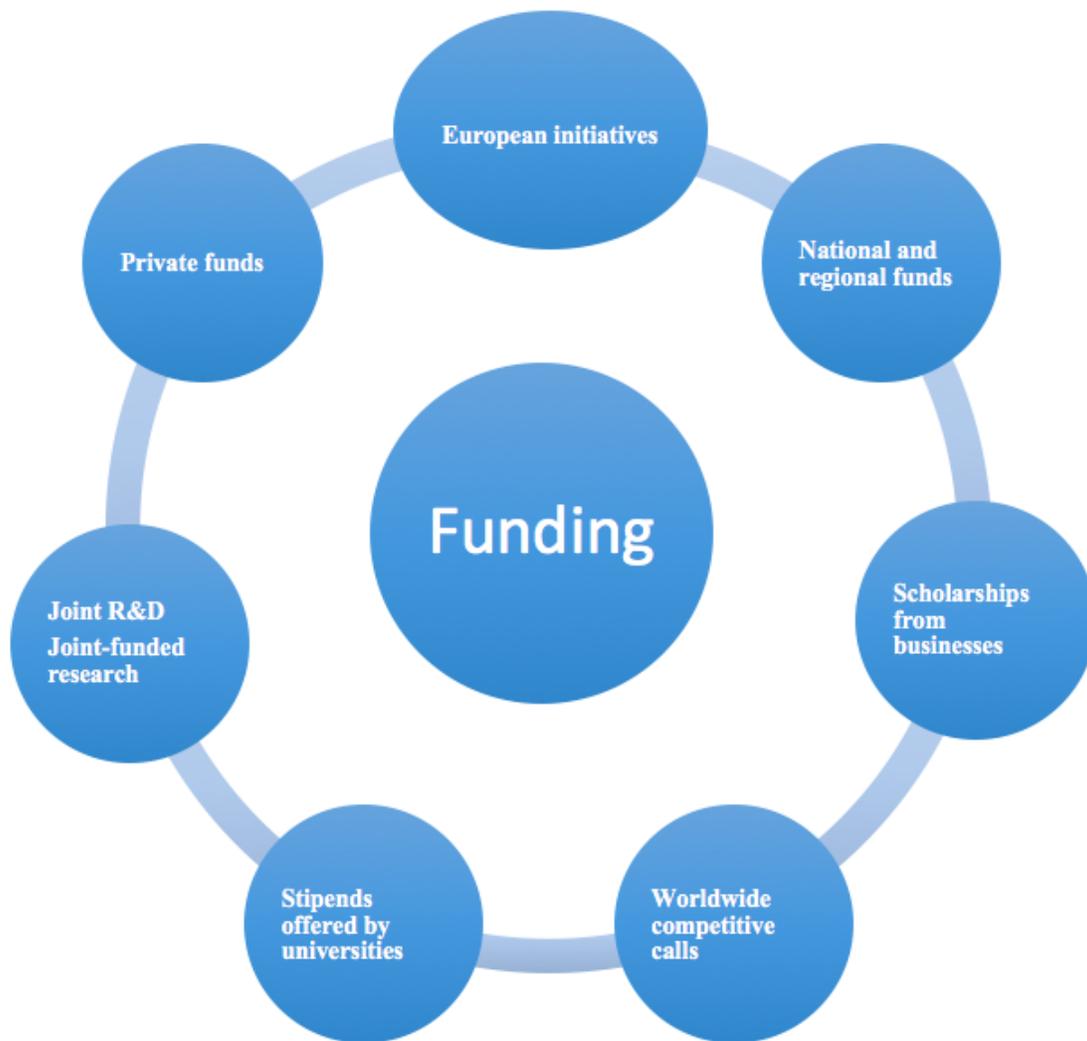


Figure 5. Funding opportunities for collaborative doctoral projects.

The financing strategies in Figure 5 show that funding can be reached through financial efforts by one of the parties (e.g stipends from universities or scholarships from businesses) or by financial agreements between stakeholders (joint-funded R&D). Other possibilities include the access to private funds or the participation of calls for UBC at a world wide, European or regional level. As a matter of fact, the largest part of the third-party-budget derives from public

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funding of the EU or national programmes. (Davey et al., 2011). [Appendix H](#) provides a repository of the most relevant funding programmes available for UBC at European and local level.¹⁰

Davey et al., (2017) provide further recommendations to tackle the lack of funding which include:

- Provide funding for the creation of lifelong learning or dual study programmes that connect employers with students and the future needs of employers with the higher education sector.
- Building on the 'Industrial' PhD structure, create and fund the 'Entrepreneurial PhD', which has a combined focus on research excellence as well as commercialising research results.
- Promote short-term academic mobility funding opportunities (e.g. Erasmus scholarships) that include sabbaticals in business. Make available mobility funding for business people to take a 'sabbatical' within the HEI, whilst companies can provide 'sabbatical' leave opportunities to work within a HEI.
- To reward HEIs for undertaking UBC, tie part of the funding of HEIs to UBC outcomes as a policy approach for encouraging UBC.
- Fund collaborative regional and/or supply chain consortiums, which include both large companies and SMEs. This will better allow SMEs to exchange knowledge, skills and technology with both large companies who can support knowledge translation and HEIs.

¹⁰ The funding opportunities at local level are centered on the countries participating in the European PhD Hub: United Kingdom, Spain, Poland and Greece.



6. The European PHD Hub and its contribution to collaborative doctoral education

The *European PhD Hub* project is conceived to encourage the implementation of collaborative doctoral projects. This is achieved through the development of three main activities:

- 1) Establishing a quality framework for university-business cooperation.
- 2) Building an online infrastructure to increase research opportunities and their transferability.
- 3) Applying and mainstreaming the European PhD Hub.

To guarantee that the project has a local and European impact, the development of the activities is carried out through local clusters for each participating region. Each local cluster is connected to the others via the online platform. Figure 6 shows the local cluster composition.

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European PhD Hub

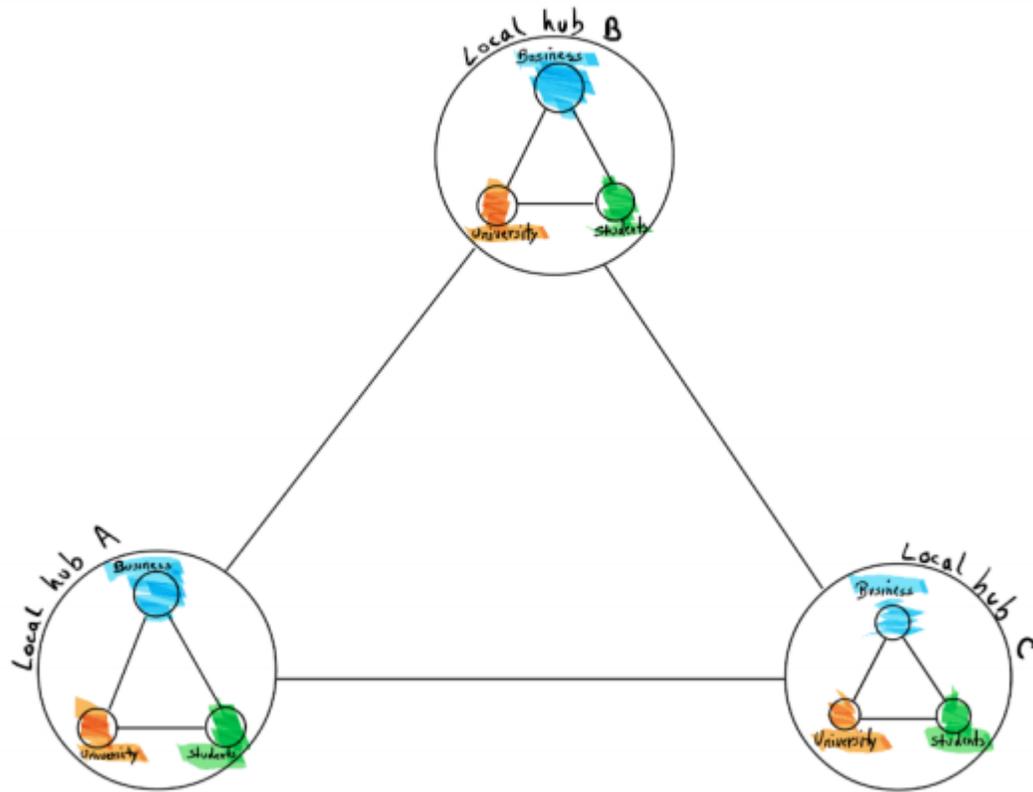
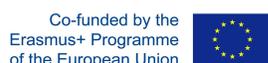


Figure 6. Local cluster composition

In this way, the *European PhD Hub* platform is set to provide PhD students, Researchers and Universities with funding opportunities from both the public and private sector, both in direct research funding and commissioned research from enterprises. Likewise, it guarantees that research outcomes obtained by PhD students have a real impact in broader socioeconomic environments. *The European PhD Hub* aims to be the single online resource for business-driven research, it will have a short and long term impact in collaborative doctoral projects.

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In the short term, the *European PhD Hub* contributes to :

- The increase of cooperation opportunities in the field of doctoral education
- Funding by matching public and private research interests
- The Matching of PhD position openings
- The increase of international cooperation in the field of doctoral education

In the long term, the *European PhD Hub* has the potential to

- Increase relevance of doctoral education
- Provide opportunities for matching PhD holders with career opportunities
- Increase attractiveness of European research
- Enable higher competitiveness of businesses on global markets

Use case:

Spain-based company **Advantic Sistemas y Servicios** requires research on Real-Time Data Analytics applied to the Internet of Things for the optimization of energy in buildings. The company will use the **PhD Hub** to find a potential PhD student with a background in Data Science, Computer Science, Electrical Engineering and experience in Internet of things and Data Analysis. While Advantic launches a call for cooperation, **the PhD Hub platform** matches this need with potential partner universities and PhD students within the network. This will enable Advantic Sistemas y servicios to conduct joint research activities and pool funding and expertise with a university. At the same time, the PhD Hub platform will provide PhD students the opportunity to conduct research activities leading to real applications and therefore improving their career perspectives.

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7. Conclusions/ key points

This document compiles instruments developed in previous literature and in the context of the *European PhD Hub*. In this way, UBC advocates can make use of the guidelines herein provided to carry out effective cooperation at doctoral level.

The main points emerging from this document can be summarized as follows:

- UBC is gaining increasing attention since the 1980's and now there are different European programs that support the synergies between universities and businesses.
- The commercial exploitation of ideas, the acquisition of specialized skills, the additional possibilities to get funding, or the opportunity of new career perspectives are some of the most important drivers that encourage stakeholders to take the plunge on doctoral UBC. In this vein, universities not only gain institutional reputation, they can improve the quality of doctoral education and find alternative funding possibilities. Companies can take advantage of research carried out in their field of interests to improve their performance and PhD students can find alternative employment perspectives, among others.
- Despite the increasing attention in UBC, cooperation at doctoral level remains under-represented.
- There are eight different ways in which higher education institutions and business cooperate: collaboration in research and development (R&D) mobility of academics, mobility of students, commercialisation of R&D results, curriculum development and delivery, lifelong learning, entrepreneurship, governance.
- In the Open Innovation Model (Borrell-Damian, Morais, & Smith, 2015) *Mutual trust*, *Medium and long-term R&D*, *commitment regarding time*, and *resources* (economic and human) are the core aspects for for collaborative doctoral education. These are triggered by conditions including public and institutional support, leadership, competence and knowledge transfer activities.

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- The support of **top management**, both in universities and in companies is crucial for collaborative doctoral projects (Borrell-Damian, Morais, & Smith, 2015)
- To set up a collaborative doctoral project, different aspects should be considered:
 - Which of the 8 cooperation types will be encouraged?
 - How ready is your institution to engage in collaborative doctoral projects?
 - Which duties and responsibilities should each stakeholder have?
 - Which are funding possibilities available?
 - What will be included in the contract and how are intellectual property rights issues addressed?

- A general approach to implement UBC at doctoral level includes a formal agreement, selection of the research topic, role of supervisor and funding. However, the regional context, policy frameworks and specific characteristics of the local environment are factors that influence the implementation of university-business projects.

- The main role of the industrial supervisor is to follow-up of the doctoral research to further business (Borrell-Damian, 2009; Borrell-Damian, Morais, & Smith, 2015).

- The [*European PhD Hub*](#) is conceived to guarantee that research outcomes obtained by PhD students have a real impact in broader socio-economic environments. It aims to be the the single online resource for business-driven research.

Figure 8 summarizes the generic path towards a successful UBC at doctoral level.



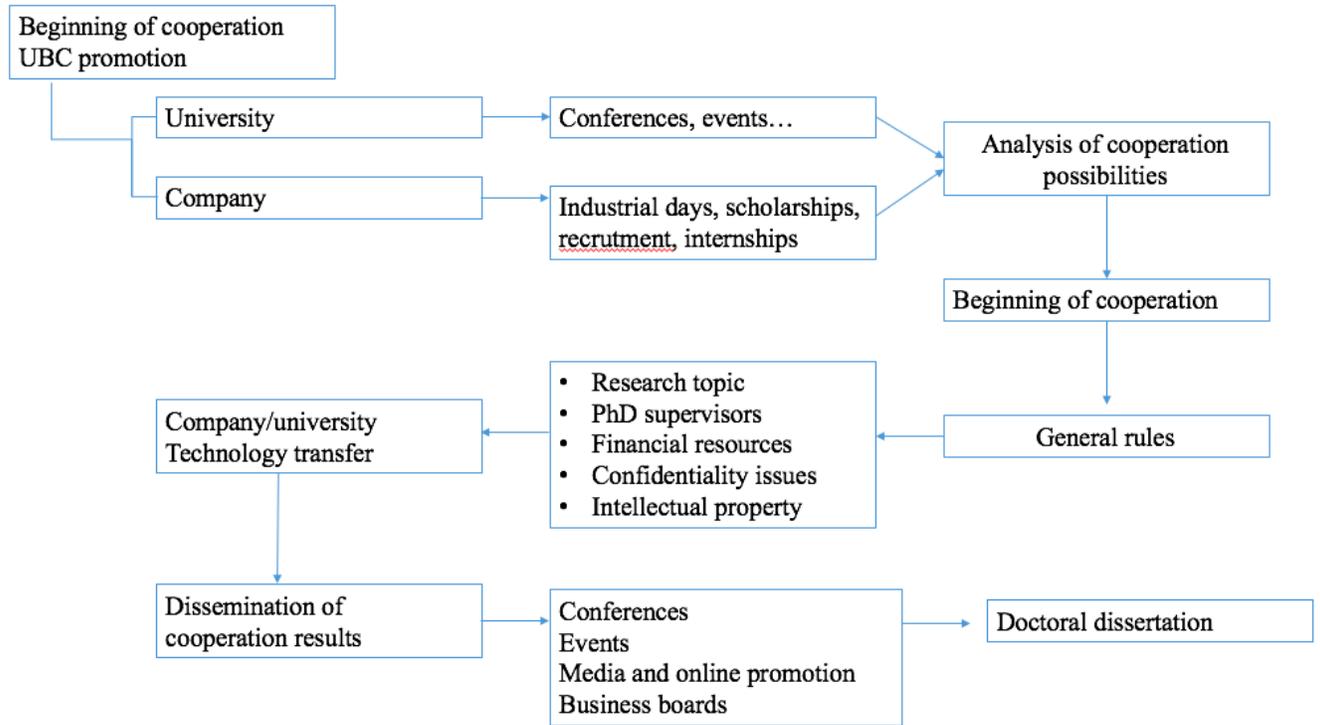


Figure 8. Generic process of UBC at doctoral level.

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Appendixes

Appendix A

First steps towards a collaborative doctoral scheme
Inspired from Borrell-Damian, Morais, and Smith (2015)

To start building up a strong collaborative scheme, universities and businesses should have common ground on aspects such as the ones outlined below.

	University perspective	Business perspective	Common outcome
A. Building trust.			
	What is your vision of the collaborative doctoral project to undertake?		
	Who will choose the research topic for the project?		
	What are your <i>realistic</i> expectations from this collaborative doctoral project?		
	What are the objectives from this collaborative doctoral project?		
	Which are the milestones to be achieved?		
	What are the constraints that might be encountered to undertake the project? How do you plan it to overcome?		
B. Initial components for cooperation			
	What funding opportunities are available to carry out the collaborative doctoral project?		
	How is the PhD student going to be financially supported?		
	Through a working contract from the university/business?		
	Through a grant?		
	What kind of supervision of the project will stakeholders provide?		
	What kind of supervision of the project will stakeholders provide?		
	To what extent will the company supply data for the development of the project?		
	Up to what extent can the PhD researcher use the company's facilities?		

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Appendix B

How is a PhD structured - The case of university of Lodz (PL)¹¹

The law regulations for the organization of doctoral studies at the University of Lodz in Poland

Legal regulations of PhD studies are laid down in such legal documents as:

- The Act of 27 July 2005 Law on Higher Education (Official Journal of Laws of 2017, item 2183),

Within the scope of doctoral studies this Act regulates: international cooperation of the university concerning education and scientific research, organization of doctoral studies, rights and duties of doctoral students, of self-governing students' union and organizations that the doctoral student can belong to, the issue of disciplinary liability of doctoral students, and payments of financial support and scholarships.

- Regulation of the Minister of Science and Higher Education of August 9, 2017 as regards the doctoral studies and doctoral scholarships (Official Journal of Laws of 2017, item 1696),

¹¹ The university of Lodz is one of the partner members of the *European PhD Hub*



This regulation lays out conditions and procedures for organizing and conducting doctoral programmes by organizational units at universities and in scientific institutions, including provisions for doctoral studies prolongation, conditions that must be met by the head of a doctoral programme, specification of the authorizations required from the body providing the doctoral studies, boards of the organizational unit and the head of the doctoral studies, as well as requirements for providing scientific supervision and didactic services by the employees with current scientific achievements or experience in research and development; for participation in doctoral programmes held by organizational units of universities and in scientific institutions; for granting doctoral scholarships, including their duration. Moreover, the Regulation defines the minimum increment of doctoral scholarship; a specimen of the doctoral student's identity card and the fees charged for issuing of the doctoral student's ID.

- Regulation of the Minister of Science and Higher Education on education in doctoral studies in higher education institutions and research institutions (Journal of Laws of 2017, item 256)

This Regulation specifies: rules of education process of the doctoral studies; optional courses for enhancement of didactic of vocational skills, minimum load of courses, and amount of ECTS points (European Credit Transfer System); number of hours for vocational training (including those performed as didactic duties during doctoral studies conducted at the university); as well as requirements for particular types of doctoral programmes.



- Regulation of the Minister of Science and Higher Education of September 26, 2016 on detailed mode and conditions of execution of activities under procedures for conferment of the academic degree of doctor, habilitated doctor, and academic title of professor (Journal of Laws 2016, item 1586)

This regulation specifies detailed mode and conditions of performing activities in procedures for conferment of the academic degree of PhD.

- The Rules for Doctoral Studies at the University of Lodz,

The Rules regulate in particular: organizational units of the University of Lodz entitled to provide PhD / doctoral studies, organization of the doctoral studies (including, among others, their mode, duration and possibility of prolongation, tasks of the board of the basic organizational unit in the scope of organization of the doctoral studies, the program of doctoral studies, the right to individual degree programme, documentation of the course of the studies, assessment of exams and obtaining credits, the reference period), tasks of the doctoral studies manager, recruitment process, rights and obligations of the doctoral student, disciplinary liability of doctoral students, scientific supervision provided by the organizing unit, terms and conditions of graduating.

- Guidelines for preparing plans and programmes for doctoral studies at the University of Lodz.

Those guidelines define the rules and regulation for preparing plans and programmes for the doctoral studies at the University of Lodz.



According to the Rules for Doctoral Studies at the University of Lodz: The doctoral programme lasts no shorter than two years and no longer than four years. In practice the doctoral studies last 8 terms, while extramural studies last 6 terms.

National legal order

Ministers' Acts define obligations and rights of a PhD student, possibilities of participation of PhD students in organizational units of the university, doctoral students' organizations, education during studies and scholarships. National legal order is defined by:

- The Act of 27 July 2005 Law on Higher Education (Official Journal of Laws of 2017, item 2183),

Within the scope of doctoral studies this Act regulates: international cooperation of the university concerning education and scientific research, organization of doctoral studies, rights and duties of doctoral students, of self-governing students' union and organizations that the doctoral student can belong to, the issue of disciplinary liability of doctoral students, and payments of financial support and scholarships.

- Regulation of the Minister of Science and Higher Education of August 9, 2017 as regards the doctoral studies and doctoral scholarships (Official Journal of Laws of 2017, item 1696),

This regulation lays out conditions and procedures for organizing and conducting doctoral programmes by organizational units at universities and in scientific institutions, including provisions for doctoral studies prolongation, conditions that must be met by the head of a doctoral programme, specification of the authorizations required from the body providing the doctoral studies, boards of the organizational unit and the head of the doctoral studies, as well as requirements for providing scientific supervision and didactic services by the employees with current scientific achievements or experience in research and development; for participation in doctoral programmes held by organizational units of universities and in scientific institutions; for granting doctoral scholarships, including their duration.

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Moreover, the Regulation defines the minimum increment of doctoral scholarship; a specimen of the doctoral student's identity card and the fees charged for issuing of the doctoral student's ID.

- Regulation of the Minister of Science and Higher Education on education in doctoral studies in higher education institutions and research institutions (Journal of Laws of 2017, item 256)

This Regulation specifies: rules of education process of the doctoral studies; optional courses for enhancement of didactic of vocational skills, minimum load of courses, and amount of ECTS points (European Credit Transfer System); number of hours for vocational training (including those performed as didactic duties during doctoral studies conducted at the university); as well as requirements for particular types of doctoral programmes.

- Regulation of the Minister of Science and Higher Education of September 26, 2016 on detailed mode and conditions of execution of activities under procedures for conferment of the academic degree of doctor, habilitated doctor, and academic title of professor (Journal of Laws 2016, item 1586)

This regulation specifies detailed mode and conditions of performing activities in procedures for conferment of the academic degree of PhD.

University legal order

Formal and legal conditions at the university level are defined by such documents as:

- The Rules for Doctoral Studies at the University of Lodz,

The Rules regulate in particular: organizational units of the University of Lodz entitled to provide PhD / doctoral studies, organization of the doctoral studies (including, among others, their mode, duration and possibility of prolongation, tasks of the board of the basic organizational unit in the scope of organization of the doctoral studies, the program of doctoral

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studies, the right to individual degree programme, documentation of the course of the studies, assessment of exams and obtaining credits, the reference period), tasks of the doctoral studies manager, recruitment process, rights and obligations of the doctoral student, disciplinary liability of doctoral students, scientific supervision provided by the organizing unit, terms and conditions of graduating.

- Guidelines for preparing plans and programmes for doctoral studies at the University of Lodz.

Those guidelines define the rules and regulation for preparing plans and programmes for the doctoral studies at the University of Lodz.

Property rights belong to the University, while copyrights belong to the doctoral student.

Criteria for evaluation of PhD students at the Socio-Economic Faculty of the University of Lodz:

- Card of the courses,
- Positive opinion of the scientific supervisor, including information on advancement of the dissertation (% of the work done),
- Evaluation of the classes run by the doctoral student. The evaluation is made by:
 - The lecturer, with whom the doctoral student co-runs the classes
 - Students in the USOS system

Structure

At the moment the Rules for Doctoral Studies at the University of Lodz does not provide for practical placements outside the University. The only obligatory duty is vocational training in

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form of performing didactic duties or participating in their delivery, in the amount of maximum 90 hours per year, and minimum of 10 hours.

Usually programmes of doctoral studies do not provide courses delivered entirely by entrepreneurs. Nevertheless such cooperation is possible, in form of guest meetings with entrepreneurs during chosen classes.

The Faculties organize trainings on entrepreneurship and setting up a business. On Faculties there are also Business Councils, and a Center for Training and Internship.

Also, the University of Lodz has its Regional Center for Patent Information, which is a non-departmental organizational unit with research, development, didactic, training and service providing tasks. The Center collects, processes, and provides source and signal patent information, as well as subject literature in this field.

Moreover, there is a Technology Transfer Center at the University of Lodz. The aim of the center is to create, at the University of Lodz, mechanisms that will facilitate and intensify transfer of innovative technologies and knowledge from the University of Lodz to businesses and other outside institutions. The Regional Center for Patent Information, which was founded by Rector's Regulation No. 25, of 25 February 1999, and the post of the University of Lodz Patent Attorney have been incorporated to the Center.

PhD student, student and persons from outside the University of Lodz, who are authors of intangible goods, can be partners in a spin-off company, members of the company's bodies, consultants or its employees. The University can offer shares in the spin-off company to the employees, PhD students, students and persons from outside the University, taking into account their contribution in generating the good. Shall the author demand such right – the University cannot refuse shares in such a company.

University can grant a license for commercialization of industrial property or University's know-how to the spin-off company founded by employees, PhD students or persons from outside the University of Lodz.

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Decisions to grant a license are made by the Rector of the University of Lodz, or a person authorized by the Rector to do so, upon request of the Director of the Technology Transfer Center of the University of Lodz. Licensing fees are calculated with consideration for the interests of the University and the authors. If the fees depend on the economic results, or other economic parameters determined in the licensing agreement of using the license subject, the University reserves the right to control the amount and value of the income from sales generated by the licensee. All procedural and supportive activities related to the evaluation of the economic value of the contribution in kind made to the spin-off company, or to granting a license are conducted by the University of Lodz Technology Transfer Center.

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Appendix C

Establishing the degree of preparation of universities and companies for cooperation.

[Adapted from Davey, Baaken, Muros, & Meerman, A. \(2017: 148\).](#)

Area	Activity	Indicator
Education	Joint Curriculum	Number of programmes/curricula developed in cooperation with industry
		Number of courses with guest lecturers from industry
		Number of dual education programmes
	Lifelong learning	Number of industry professional trained
		Number of training projects for industry
	Student mobility	Undergraduate internships in businesses
	Joint supervision and number of doctoral theses	
	total number of months of the stays	
Research	Professional mobility	Number of teaching staff or researchers temporary from HEIs to business
		Number of researchers moving temporary from businesses to HEI
		Number of weeks that academics move from HEI to business
		Number of weeks that industry researchers move from businesses to HEI

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	Joint R&D	Number of contract research deals Number of joint R&D projects Number of scientific publications Number of co patents (applied) Number of co patents (granted) Number of positions funded by joint R&D projects or contracts
Valorisation	R&D commercialization	Number of disclosures of inventions Number of patents applied Number of patents granted Number of patent licensed Licence income
	Entrepreneurship	Number of academic spin-offs Number of employees of academic spin-offs Annual turnover of academic spin-offs Number of graduate spin-offs Number of employees of graduate spin-offs Number of start-ups by academic Number of start-ups by students Percentage of spin-off that exist after 5 years Percentage of start-ups that exist after 5 years
Governance	Governance	Existence of a TTO or other supporting unit at the university Staff (FTE of the TTO)

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Participation of business people in
HEI/Faculty boards

Participation of academics in business
boards

External organisation providing
support to UBC

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Appendix D.

University-Business cooperation contract sample.
(Inspired by German Research Foundation, 2011)

The following Agreement is hereby concluded
between

represented by the Administration of the Academic Research Institution on behalf of the

Institute:

Director:

- hereinafter referred to as the "University" -

and

- hereinafter referred to as the "Company" -

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Article 1 - Subject of the Cooperation Agreement

The Parties agree to conduct a research project ("Cooperation Project") entitled

jointly on the basis of and during the term of this Agreement.

The subject of the Cooperation Project is

The details of the project-related work are laid out in the work plans agreed between the Parties.

Article 2 - Contributions by the Parties

Each Party shall provide the staff and in-kind contributions required for the conduct of the Cooperation Project as is necessary on its part and bear the corresponding costs. The services to be provided by the University may be supplemented by funds from the Company.

Article 3 - Support by the DFG (The German Research Foundation)

(1) The Parties expect that the DFG shall decide on the support of the Cooperation Project once it has evaluated the proposal.

(2) The DFG's current guidelines for the use of funds, award letter and general guidelines shall be deemed as the basis of this Agreement and shall be acknowledged as binding by the Parties; however, the Company shall only acknowledge these guidelines and terms to the extent that it will be affected by them.

Article 4 - Cooperation

(1) The Parties shall use the time and care necessary for the implementation of the Cooperation Project as required and in consideration of the generally accepted rules of science and technology, in order to achieve an optimum result. The Parties shall conduct



work-related discussions and agree on the progress of the work at reasonable intervals, involving the employees entrusted with the project-related work.

(2) Each Party shall name a contact person to be contacted with regard to all matters that will need to be agreed within the scope of the cooperation.

(3) Employees of either Party who work on defined tasks at the premises of the respective other Party for a limited time, within the scope of the project-related work, shall be subject to the instructions given by the employees responsible at the Party concerned, to the extent required for carrying out the work. The relationships under the relevant service regulations and employment contracts shall not be affected.

Article 5 - Work Results, Rights of Use

(1) All protectable and non-protectable work results generated under the Cooperation Project exclusively by the employees of one Party are the property of this Party.

(2) The Parties grant each other, for the duration and purposes of the Cooperation Project, the non-exclusive, non-transferable, non-sublicensable, irrevocable and royalty-free right of use to the protectable and non-protectable work results generated under the Cooperation Project.

(3) In addition, the Parties grant each other, for the duration and purposes of the Cooperation Project, the non-exclusive, non-transferable, non-sublicensable and royalty-free right of use to previously generated protectable and non-protectable work results to the extent necessary for the realisation of the Cooperation Project.

1. (4) The Parties shall agree on a case-by-case basis on the granting of further rights of use, particularly for purposes outside of the Cooperation Project and after the expiration



of the Cooperation Project. Such rights shall be granted on terms customary in the market.

The University is willing in principle to grant the Company, on terms customary in the market, non-exclusive, or possibly exclusive, rights of use to the University's work results for purposes outside of the Cooperation Project or after the expiration of the Cooperation Project. The Parties shall come to the necessary agreements at the appropriate time.

In the event that the University grants the Company an exclusive right of use, the University shall retain for its own research and educational purposes a right of use that is non-exclusive, non-transferable, sublicensable only for research partnerships, irrevocable and royalty-free.

(5) Joint work results are work results in which employees from both Parties are involved and whose parts cannot be attributed to one Party alone. Rights of use shall be granted in accordance with Article 5, paragraph 7, sentences. 3 ff.

(6) Each Party may, according to its discretion, apply for a domestic and/or foreign patent or utility model for any invention made under the Cooperation Project based on work results generated by that Party, and claim the resulting industrial property rights.

(7) Joint inventions are inventions in which employees of both Parties are involved and whose parts cannot be the subject of industrial property rights applications filed separately by each Party. The Parties shall come to agreements on the treatment of joint inventions, especially the application for and maintenance of industrial property rights and on the responsibility for the associated costs. The Parties grant each other an irrevocable, worldwide, transferable, sublicensable and royalty-free right of use to these



joint inventions for all uses, provided the other Party's contribution to the joint invention is greater than one-third. If this is not the case, the Parties grant each other a non-exclusive, non-transferable, sublicensable, irrevocable and royalty-free right of use for the purposes and duration of the Cooperation Project. For purposes outside of the Cooperation Project or after the expiration of the Cooperation Project, the right of use shall be granted on terms customary in the market.

(8) If a Party is not interested in filing an application for industrial property rights, the other Party is free to pursue, at its own expense, the registration and exploitation of the relevant work results. The Party filing such an application shall release the other Party from having to pay inventor compensation.

(9) The Parties are not responsible for ensuring that the rights of use granted under this Agreement are free of third-party rights. If they become aware of any third-party rights, they shall inform the other contracting Party accordingly and without delay.

Article 6 - Confidentiality

(1) The Parties hereby agree that they will not disclose any recognisably confidential operational and business information that the respective other Party has become aware of during the Cooperation Project to any third party; this obligation shall also continue to apply for a period of three years beyond the term of this Agreement.

(2) This obligation (pursuant to Article 6, paragraph 1) shall not apply to information that

- - is common knowledge through publications or the like,
- - becomes common knowledge through no fault of the receiving Party,
- - was demonstrably known to the receiving Party before the date on which it was provided,

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- - was generated by the receiving Party independently of such provision,
- - was provided to the receiving Party by a third party without any obligation to confidentiality.

(3) The DFG is not deemed to be a “third party” within the meaning of this clause insofar as the DFG is entitled to such information according to its current grant conditions, award letter and general guidelines.

Article 7 - Publications

(1) Each Party shall have the right to publish the work results it has achieved within the scope of the Cooperation Project. However, the mutual protectable interests of either Party must also be taken into account.

(2) The Parties shall notify each other in due time about planned publications. Unless the other Party objects within a period of four weeks after it has received the proposed publication, its consent to the publication shall be considered granted. The publication date may be suspended for a limited time at the request of either Party, but no longer than for a period of five months, for example, in order to enable the respective Party to file an application for industrial property rights. In the event that the Parties are unable to reach an agreement on the content and/or the form of the planned publication within the said time limit, the publication in question may also be filed for publication without the consent of the other Party provided that the publication does not disclose the other Party’s work results or confidential information.

(3) All publications shall refer explicitly to the Cooperation Project as the origin of the published results and to the DFG as the sponsor providing the funds.



(4) The employment rights and obligations of any staff members of the University with regard to publications shall not be affected. The Company shall take the legal obligations and justified interests of doctoral and postdoctoral researchers into account to a reasonable extent, i.e. also by granting its consent to a shortening of the compulsory waiting period defined in Article 7, paragraph 2, if attainment of a doctorate or habilitation is affected by the work in the Cooperation Project.

(5) The rights of the DFG as the sponsor of this Cooperation Project, particularly its entitlement to report on the work and the results achieved within the scope of DFG funding, shall not be affected.

Article 8 - Warranty, Liability

(1) The Parties shall waive the enforcement of any warranty claims within the scope of the Cooperation Project with regard to the know-how provided and the achieved work results.

(2) Otherwise, each Party, to the extent permitted by law, shall only be held liable for any property damage or financial losses caused by wilful intent or gross negligence. Liability for consequential damages shall be excluded.

Article 9 - Term of Agreement and Termination

(1) This Agreement shall take effect upon the DFG's granting of funds to the University. The Agreement shall expire upon completion of DFG funding, unless any arrangements or obligations beyond the end date have been agreed.

(2) This Agreement may only be terminated early for good cause; termination must be made in writing. The DFG must be informed accordingly.



Article 10 - Final Provisions

If any individual provision of this Agreement is held to be or becomes ineffective, the validity of the remaining provisions shall not be affected. In such a case, the Parties shall endeavour to agree on a supplementary clause to this Agreement in the spirit of the initially intended purpose by mutual consent.

Any amendments or supplements to this Agreement must be made in writing and shall be subject to the prior consent of the DFG. This shall also apply to an amendment of the written form clause itself.

..... (City, Date)

..... (University)

.....
(University Administration)

..... (City, Date)

.....(Company)

.....

(Management)

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Appendix E.

Format to address Intellectual property rights issues. (Gov UK, 2016)

(1) [.....]

(2) [.....]

PATENT AND KNOW-HOW LICENCE

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THIS AGREEMENT dated [.....] 20[] is
made BETWEEN:

- (1) [.....], whose administrative offices are at
[.....] (the
University); and
- (2) [.....] [LIMITED], a company registered in
[England] under number [.....], whose registered office is at
[.....] (the Licensee).

DEFINITIONS

In this Agreement the following expressions have meaning set opposite:

this Agreement:	this document including its Schedule, as amended from time to time in accordance with clause 9.9;
a Business Day:	Monday to Friday (inclusive) except bank or public holidays in [England];

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Confidential Information:	the Know-how; and any technical or commercial information disclosed by one party to the other [and identified as confidential before or at the time of disclosure];
the Effective Date:	[<i>insert date the licence is to begin</i>];
the Field:	[<i>insert business area</i>];
the Know-how:	unpatented technical information in the Field developed prior to the Effective Date by the University, that is not in the public domain and that relates directly to the inventions claimed in the Patents;
the Licence:	the licence granted in clause 2;
the Licensed Products:	any and all products that are manufactured, sold or otherwise supplied by the Licensee or any of its sub-licensees and which: <ul style="list-style-type: none"> · are within any Valid Claim of any of the Patents; and/or · incorporate, or their



development or production
makes use of, any of the Know-
how;

the Net Receipts: the amounts received by the Licensee
from the grant of sub-licences under the
Patents and the Know-how, less any
Value Added Tax or similar tax paid in
respect of those amounts;

the Net Sales Value: the invoiced price of a Licensed Product
sold at arm's length or, where the sale is
not at arm's length, the price that would
have been invoiced if the sale had been
at arm's length, after deducting:

- normal trade discounts and
credits given;
- the costs of carriage,
insurance, freight and packaging
if charged separately to the
customer; and
- import duties and sales taxes
actually paid by the Licensee or
its sub-licensee;



the Patents: any and all of the patents and patent applications set out in the Schedule, including any continuations, continuations in part, extensions, reissues, divisions, and any patent supplementary protection certificates and similar rights based on, or deriving priority from, them;

the Territory: [the world]OR [*insert geographical area*]; and

a Valid Claim: a claim of a patent or patent application that has not expired or been held invalid or unenforceable by a court of competent jurisdiction in a final and non-appealable judgment.

2. GRANT OF LICENCE

2.1 The University grants to the Licensee [a non-exclusive][an exclusive] licence in the Field under the Patents, and to use the Know-how, to develop, manufacture, have manufactured, use and sell Licensed Products, but only in the Field and only in the Territory.

2.2 The Licensee will not assign the Licence but may grant sub-licences, [provided in each case its first obtains the written consent of the University, which will not be



unreasonably withheld or delayed], and may disclose to sub-licensees such of the Know-how as is necessary for the exercise of the rights sub-licensed, provided that:

- 2.2.1 the Licensee must provide the University with a copy of each sub-licence within 30 days after its grant;
- 2.2.2 obligations and conditions matching those in this Agreement, and sufficient to protect the security of the Know-how, the Patents, and the interests of the University, must be imposed on every sub-licensee;
- 2.2.3 the royalties and other payments required by the sub-licence are at rates or amounts not less than provided for in this Agreement;
- 2.2.4 the sub-licence must terminate immediately on the termination of this Agreement for any reason;
- 2.2.5 the sub-licence must be personal to the sub-licensee and not capable of assignment without the University's written consent; and
- 2.2.6 the Licensee must indemnify the University and keep the University indemnified against any and all loss, damages, costs, claims or expenses which are awarded against or suffered by the University as a result of any act or omission of the sub-licensee.

2.3 The Licensee will ensure that the Licensed Products and the packaging associated with them are marked suitably with any relevant patent or patent application numbers to satisfy the laws of each of the countries in which the Licensed Products are sold or supplied and in which they are covered by the claims of any of the Patents.



2.4 No licence is granted to the Licensee other than as expressly stated in this clause
2. The University reserves all other rights under the Patents and in respect of the Know-how.

3. KNOW-HOW AND CONFIDENTIALITY

3.1 The University will provide to the Licensee all of the Know-how in its possession or control that the University is free to disclose and that is reasonably necessary for the development of Licensed Products, subject to the Licensee complying with clause 3.3.

3.2 The Licensee agrees that for a period of [10] years from the Effective Date, or for so long as any substantial part of the Know-how remains secret (whichever is the shorter), it will not use the Know-how except in accordance with this Agreement.

3.3 Neither party will [for [3][5][7][10] years after the date of this Agreement,] disclose to any third party, nor use for any purpose except as expressly permitted by this Agreement, any of the other party's Confidential Information.

3.4 Neither party will be in breach of any obligation to keep any information confidential or not to disclose it to any other party to the extent that it:

3.4.1 is known to the party making the disclosure before its receipt from the other party, and not already subject to any obligation of confidentiality to the other party;

3.4.2 is or becomes publicly known without any breach of this Agreement or any other undertaking to keep it confidential;

3.4.3 has been obtained by the party making the disclosure from a third party in circumstances where the party making the disclosure has no reason to believe that there has been a breach of an obligation of confidentiality owed to the other party;

3.4.4 has been independently developed by the party making the disclosure;

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3.4.5 is disclosed pursuant to the requirement of any law or regulation (provided, in the case of a disclosure under the Freedom of Information Act 2000, none of the exceptions to that Act applies to the information disclosed), or the order of any Court of competent jurisdiction, and the party required to make that disclosure has informed the other, within a reasonable time after being required to make the disclosure, of the requirement to disclose and the information required to be disclosed; or

3.4.6 is approved for release in writing by an authorised representative of the other party.

3.5 If the University receives a request under the Freedom of Information Act 2000 to disclose any information that, under this Agreement, is the Licensee's Confidential Information, it will notify the Licensee and will consult with the Licensee. The Licensee will respond to the University within 10 days after receiving the University's notice if that notice requests the Licensee to provide information to assist the University to determine whether or not an exemption to the Freedom of Information Act applies to the information requested under that Act.

3.6 Neither the University nor the Licensee will use the other's name or logo in any press release or product advertising, or for any other promotional purpose, without first obtaining the other's written consent[; except that the University may identify the sums received from the Licensee in the University's Annual Report and similar publications].

4. PAYMENTS

4.1 The Licensee agrees to pay to the University the [non-refundable] sum of £[*insert amount*] on the signature of this Agreement.

4.2 The Licensee will pay to the University a royalty of [*insert figure*]% of the Net Sales Value of all Licensed Products sold, leased or licensed by the Licensee [or its sub-licensees].

4.3 [The Licensee will pay to the University a revenue share of [*insert figure*]% of the Net Receipts.]

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4.4 In marketing the Licensed Products, [neither the Licensee nor any sub-licensee will][the Licensee will not] accept or solicit any non-monetary consideration without first obtaining the written consent of the University, except that the Licensee [and sub-licensees] may use a commercially reasonable quantity of Licensed Products for promotional sampling.

4.5 For the purpose of calculating royalties under this clause 4, a Licensed Product will be regarded as sold, leased or licensed by the Licensee [or a sub-licensee] when invoiced or, if not invoiced, when shipped or delivered by the Licensee [or sub-licensee].

4.6 If the Licensee [or a sub-licensee] is obliged to pay any royalty to any third party (except the Licensee's parent, subsidiary, associated or affiliated companies), for the right to make, use or sell a Licensed Product, the Licensee [or sub-licensee] may deduct from the royalty payment due to the University the royalty payment actually made to that third party, up to a maximum of [*insert figure*]% of the royalty payment due to the University.

4.7 All payments to be made under this Agreement will be made to the University in pounds sterling without any deductions apart from any withholding tax which is required to be deducted under any applicable law. If any withholding tax is imposed in relation to any payment made or to be made to the University under this Agreement, the Licensee will pay that withholding tax and promptly send the University tax payment certificates and other evidence of the tax withheld and paid to the tax authorities so as to enable the University to reclaim the withheld tax.

4.8 All amounts payable to the University under this Agreement are exclusive of VAT, export or import duties or any similar tax or duties which the Licensee will pay at the rate from time to time prescribed by law.

4.9 Any exchange of currency made to calculate sales for the purpose of this clause 5 will be determined as at the last Business Day of each quarter, using the average of the average daily buying and selling rates quoted by Barclays Bank plc (or any other London clearing bank which the University may nominate) during that quarter.

4.10 The Licensee will send the University a report within [60] days after the end of each calendar quarter, showing the Net Sales Value of each Licensed Product sold [and



the Net Receipts], and a calculation of the royalties [and revenue share]due for that quarter, together with a cheque for those royalties [and that revenue share].

4.11 If the Licensee fails to make any payment due to the University under this Agreement, without prejudice to any other right or remedy available to the University, the University may charge interest both before and after any judgement) on the amount outstanding, on a daily basis [at the rate of [four] per cent per annum above the London Interbank Offer Rate from time to time in force] OR [in accordance with the Late Payments of Commercial Debts (Interest) Act 1998]. That interest will be calculated from the date or last date for payment to the actual date of payment, both dates inclusive, and will be compounded quarterly. The Licensee will pay that interest to the University on demand.

4.12 The Licensee [and the Licensee's sub-licensees] will keep complete and accurate accounts of all Licensed Products sold and will permit the University or its agents to audit those accounts solely for the purpose of determining the accuracy of the royalty reports and payments. If any audit reveals a discrepancy of more than [10]% to the detriment of the University, the Licensee will reimburse the University for the costs of that audit.

5. INTELLECTUAL PROPERTY

5.1 [The Licensee will, at the Licensee's expense, use all reasonable endeavours to obtain patents in the University's name pursuant to each of the patent applications listed in the Schedule and will pay [*insert figure*]% of all renewal fees in respect of the Patents when they fall due. If at any time the Licensee notifies the University that the Licensee does not wish to reimburse the University's costs in respect of any of the Patents, the Licence will be deemed to exclude those Patents and the Licensee's responsibility for the future costs and expenses will terminate in respect of those Patents on the date of the University's receipt of the Licensee's notice.]

OR

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[The University will, at the University's expense, use all reasonable endeavours to obtain patents in the University's name pursuant to each of the patent applications listed in the Schedule. The Licensee will pay [*insert figure*] % of all renewal fees in respect of the Patents when they fall due. If at any time the Licensee notifies the University that the Licensee does not wish to reimburse the University's costs in respect of any of the Patents, the Licence will be deemed to exclude those Patents and the Licensee's responsibility for the future costs and expenses will terminate in respect of those Patents on the date of the University's receipt of the Licensee's notice. If at any time the University notifies the Licensee that it does not wish to maintain any of the Patents, the Licensee may, at its expense, maintain those Patents.]

5.2 Each party will promptly inform the other if it becomes aware of any infringement or potential infringement of any of the Patents in the Field. The parties will discuss how to respond and will try to agree who is to pay the costs of any action and how any damages are to be shared. If the parties fail to agree, the Licensee will be entitled to take action at its own expense and retain any damages after reimbursing the University for any expenses it has incurred in assisting the Licensee.

5.3 Each party will promptly inform the other if it becomes aware of any infringement or alleged infringement of any third party rights by the manufacture, use or sale of Licensed Products, or of any challenge to the validity of any of the Patents. The parties will discuss how to respond and will try to agree who is to pay the costs of any defence or settlement.

6. WARRANTIES AND LIABILITY

6.1 The University warrants as follows:

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6.1.1 as between it and its employees and students, it is the absolute and unencumbered owner of the Patents and has caused its employees and students to execute such assignments of the Patents as may be necessary;

6.1.2 it is not aware that any third party owns or claims any rights in any of the Patents;

6.1.3 it is not aware (but without having carried out any investigation) that any third party owns or claims any rights which would be infringed by use of the Patents in accordance with this Agreement.

6.2 Each of the parties acknowledges that, in entering into this Agreement, it has not relied on any warranty, representation or undertaking except those expressly set out in this Agreement and each party waives any claim for breach of any representation (unless made fraudulently) which is not specifically contained in this Agreement as a warranty.

6.3 Without limiting the scope of clause 6.1.1, the University does not give any warranty, representation or undertaking:

6.3.1 as to the efficacy or usefulness of the Patents or Know-how; or

6.3.2 that any of the Patents is or will be valid or subsisting or (in the case of an application) will proceed to grant; or

6.3.3 that the use of any of the Patents or Know-how, the manufacture, sale or use of the Licensed Products or the exercise of any of the rights granted under this Agreement will not infringe any intellectual property or other rights of any other person; or

6.3.4 that the Know-how or any other information communicated by the University to the Licensee under or in connection with this Agreement will produce Licensed Products of satisfactory quality or fit for the purpose for which the Licensee intended; or

6.3.5 as imposing any obligation on the University to bring or prosecute actions or proceedings against third parties for infringement or to defend any action or proceedings for revocation of any of the Patents; or

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6.3.6 as imposing any liability on the University in the event that any third party supplies Licensed Products to customers located in the Territory.

6.4 The Licensee is responsible for the design and construction of the Licensed Products and the University has no responsibility or liability in that respect.

6.5 The Licensee will indemnify the University and every employee[and student] of the University (the Indemnified Parties), and keep them fully and effectively indemnified, against each and every claim made against any of the Indemnified Parties as a result of the Licensee's manufacture, use, sale of, or other dealing in any of the Licensed Products, provided that the Indemnified Party in question must:

6.5.1 promptly notify the Licensee of details of the claim;

6.5.2 not make any admission in relation to the claim;

6.5.3 allow the Licensee to have the conduct of the defence or settlement of the claim; and

6.5.4 give the Licensee all reasonable assistance (at the Licensee's expense) in dealing with the claim.

The indemnity in this clause will not apply to the extent that the claim arises as a result of the indemnified Party's negligence, breach of clause 3 or the deliberate breach of this Agreement.

6.6 Subject to clause 6.8, and except under the indemnity in clause 6.5, the liability of either party to the other for any breach of this Agreement, any negligence or arising in any other way out of the subject matter of this Agreement will not extend to any indirect damages or losses, or any loss of profits, loss of revenue, loss of data, loss of contracts or opportunity, whether direct or indirect, even if the party bringing the claim has advised the other of the possibility of those losses or if they were within the other party's contemplation.



6.7 Subject to clause 6.8, and except under the indemnity in clause 6.5, the aggregate liability of each party to the other for all and any breaches of this Agreement, any negligence or arising in any other way out of the subject matter of this Agreement, will not exceed in total [insert amount].

6.8 Nothing in this Agreement limits or excludes either party's liability for:

6.8.1 death or personal injury;

6.8.2 any fraud or for any sort of liability that, by law, cannot be limited or excluded; or

6.8.3 any loss or damage caused by a deliberate breach of this Agreement or a breach of clause 3.

6.9 The express undertakings and warranties given by the parties in this Agreement are in lieu of all other warranties, conditions, terms, undertakings and obligations, whether express or implied by statute, common law, custom, trade usage, course of dealing or in any other way. All of these are excluded to the fullest extent permitted by law.

7. DURATION AND TERMINATION

7.1 The Licence will take effect on the Effective Date and (subject to the remaining sub-clauses of this clause 8) will continue in force [on a country by country basis] until the later of:

7.1.1 the date on which all the Patents have expired or been revoked without a right of appeal; and

7.1.2 the [tenth] anniversary of the Effective Date.

7.2 Either party may terminate this Agreement with immediate effect by giving notice to the other party if:

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7.2.1 the other party is in breach of any provision of this Agreement and (if it is capable of remedy) the breach has not been remedied within [30][60][90] days after receipt of written notice specifying the breach and requiring its remedy; or

7.2.2 the other party becomes insolvent, or if an order is made or a resolution is passed for its winding up (except voluntarily for the purpose of solvent amalgamation or reconstruction), or if an administrator, administrative receiver or receiver is appointed over the whole or any part of the other party's assets, or if the other party makes any arrangement with its creditors.

7.3 The Licensee will use [its best][all reasonable] endeavours to develop and commercially exploit Licensed Products, in order to maximise the financial return for both parties. Within 60 days after the end of each calendar year, the Licensee will provide the University with a report detailing the progress made and steps taken during the calendar year in promoting and marketing Licensed Products. [If the University, on reasonable and demonstrable grounds, concludes from any such report that the progress made and steps taken by the Licensee are insufficient or inadequate, the University may terminate this Agreement by giving the Licensee not less than 30 days' notice.]

7.4 The Licensee may terminate this Agreement by giving the University not less than 90 days' written notice at any time, provided that the Licensee can and does bring all sub-licences to an end on the same date, and continues to make any payments due under clause 6.1 in respect of renewal fees falling due within one month after the effective date of termination.

7.5 [If the Licensee or any of its sub-licensees challenges the validity within the common market of any of the Patents, the University may, in relation only to that patent, terminate this Agreement with immediate effect by giving written notice to the Licensee.]

7.6 On the termination or expiry of this Agreement under clause 7.1 the Licensee will have the non-exclusive right to use the Know-how.

7.7 On the termination of this Agreement other than under clause 7.1, the Licensee[and its sub-licensees] may use or dispose of their stocks of Licensed Products for a period of [*insert period*] after the effective date of termination (subject to the payment of



royalties as set out in clause 4) but will no longer be licensed under the Patents and will no longer have any rights to use the Know-how.

7.8 Clauses 1, 3.2, 3.7, 5, 6, 7.5, 7.6, 7.7, 8 and 9 will survive the expiry or termination of this Agreement for any reason and will continue indefinitely.

8. FORCE MAJEURE

If the performance by either party of any of its obligations under this Agreement (except a payment obligation) is delayed or prevented by circumstances beyond its reasonable control, that party will not be in breach of this Agreement because of that delay in performance. However, if the delay in performance is more than [3][6] months, the other party may terminate this Agreement with immediate effect by giving written notice.

9. GENERAL

9.1 Notices: Any notice to be given under this Agreement must be in writing, may be delivered to the other party by any of the methods set out in the left hand column below, and will be deemed to be received on the corresponding day set out in the right hand column:

Method of service	Deemed day of receipt
By hand or courier	the day of delivery

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By pre-paid first class post	the second Business Day after posting
By recorded delivery post	the next Business Day after posting
By fax (provided the sender's fax machine confirms complete and error-free transmission of that notice to the correct fax number)	the next Business Day after sending or, if sent before 16.00 (sender's local time) on the Business Day it was sent

The parties' respective representatives for the receipt of notices are, until changed by notice given in accordance with this clause, as follows:

For the University:	For the Licensee:
Name:	Name:
Address:	Address:



Fax number:

Fax number:

- 9.2 Headings: The headings in this Agreement are for ease of reference only; they do not affect its construction or interpretation.
- 9.3 Assignment: Neither party may assign or transfer this Agreement as a whole, or any of its rights or obligations under it, without first obtaining the written consent of the other party. That consent may not be unreasonably withheld or delayed.
- 9.4 Illegal/unenforceable provisions: If the whole or any part of any provision of this Agreement is void or unenforceable in any jurisdiction, the other provisions of this Agreement, and the rest of the void or unenforceable provision, will continue in force in that jurisdiction, and the validity and enforceability of that provision in any other jurisdiction will not be affected.
- 9.5 Waiver of rights: If a party fails to enforce, or delays in enforcing, an obligation of the other party, or fails to exercise, or delays in exercising, a right under this Agreement, that failure or delay will not affect its right to enforce that obligation or constitute a waiver of that right. Any waiver of any provision of this Agreement will not, unless expressly stated to the contrary, constitute a waiver of that provision on a future occasion.

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- 9.6 No agency: Nothing in this Agreement creates, implies or evidences any partnership or joint venture between the parties, or the relationship between them of principal and agent. Neither party has any authority to make any representation or commitment, or to incur any liability, on behalf of the other.
- 9.7 Entire agreement: This Agreement constitutes the entire agreement between the parties relating to its subject matter. Each party acknowledges that it has not entered into this Agreement on the basis of any warranty, representation, statement, agreement or undertaking except those expressly set out in this Agreement. Each party waives any claim for breach of this Agreement, or any right to rescind this Agreement in respect of any representation which is not an express provision of this Agreement. However, this clause does not exclude any liability which either party may have to the other (or any right which either party may have to rescind this Agreement) in respect of any fraudulent misrepresentation or fraudulent concealment prior to the execution of this Agreement.
- 9.8 Formalities: Each party will take any action and execute any document reasonably required by the other party to give effect to any of its rights under this Agreement, or to enable their registration in any relevant territory provided the requesting party pays the other party's reasonable expenses.
- 9.9 Amendments: No variation or amendment of this Agreement will be effective unless it is made in writing and signed by each party's representative.
- 9.10 Third parties: No one except a party to this Agreement has any right to prevent the amendment of this Agreement or its termination, and no one except a party to



this Agreement may enforce any benefit conferred by this Agreement, unless this Agreement expressly provides otherwise.

- 9.11 Governing law: This Agreement is governed by, and is to be construed in accordance with, English law. The English Courts will have exclusive jurisdiction to deal with any dispute which has arisen or may arise out of, or in connection with, this Agreement, except that either party may bring proceedings for an injunction in any jurisdiction.
- 9.12 Escalation: If the parties are unable to reach agreement on any issue concerning this Agreement or the Project within 14 days after one party has notified the other of that issue, they will refer the matter to [*insert officer*] in the case of the University, and to [*insert officer*] in the case of the Licensee in an attempt to resolve the issue within 14 days after the referral. Either party may bring proceedings in accordance with clause 10.11 if the matter has not been resolved within that 14 day period, and either party may apply to the court for an injunction whether or not any issue has been escalated under this clause.

SIGNED on behalf of the University:

SIGNED on behalf of the Licensee:

.....
Name

.....
Name

.....
Position

.....
Position

.....
Signature

.....
Signature



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Appendix F

Recruitment of doctorate students:
The perspective of the business sector
(Borrell-Damian, Morais, & Smith, 2015)

Please indicate the characteristics the PhD student should have to carry out the collaborative doctoral project in your company.

	Low importance				High importance	
Social skills and experiences	<input type="checkbox"/>					
Team player	<input type="checkbox"/>					
Ability to recognise and integrate ideas and resources from a wide pool of sources	<input type="checkbox"/>					
A high level of technical proficiency	<input type="checkbox"/>					
Ability to work well across disciplinary/functional boundaries	<input type="checkbox"/>					
Proven capabilities to work in depth and at the frontiers of knowledge	<input type="checkbox"/>					
Ability to explain and communicate to non-specialists	<input type="checkbox"/>					
Originality and creativity	<input type="checkbox"/>					
Customer orientation	<input type="checkbox"/>					
Leadership potential	<input type="checkbox"/>					
Entrepreneurial mindset	<input type="checkbox"/>					

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Appendix G

PhD industrial supervisor practicalities checklist¹²

- I can provide the working materials needed to facilitate the work of the PhD student.
- I have defined a detailed plan of activities with the PhD student and academic supervisor
- I have defined the most important milestones in the detailed planning
- I have reflected on the expectations I have from the student and from the research to be developed.
- I know what the PhD student and the academic supervisor expect from me.
- I know who owns the results of the research being developed.
- I know the procedure to handle sensible data
- I know how the final report will be presented at my company/organization

¹² Inspired by the [Swedish Royal Institute of Technology](#)



Appendix H

Funding possibilities

Type of funding	Description	Link
European		
Horizon 2020	Horizon 2020 is the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020) – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.	https://ec.europa.eu/programmes/horizon2020/en/background-material
Erasmus + Knowledge Alliances	Knowledge Alliances offer the opportunity for organisations to develop a project that contributes to boosting innovation in higher education and businesses, developing entrepreneurship skills and stimulating the flow exchange of knowledge between higher education and businesses.	https://ec.europa.eu/programmes/erasmus-plus/opportunities/knowledge-alliances_en
European Structural and Investment Funds	<p>The European Structural and Investment (ESI) Funds, include five separate EU funds: the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund, the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF).</p> <p>About €450 billion of EU funding over the 2014-2020 programme period is allocated to Member States and implemented through</p>	https://ec.europa.eu/research/infrastuctures/index.cfm?pg=esi

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	nationally co-financed programmes.	
Local		
United Kingdom		
The Concordat to Support the Career Development of Researchers	This is an agreement between the funders and employers of researchers in the UK aimed at promotion of inter-sectoral mobility of researchers, including business placements (Davey, 2017)	
UK Research and Innovation	UK Research and Innovation is a new body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish. We aim to maximise the contribution of each of our component parts, working individually and collectively. We work with our many partners to benefit everyone through knowledge, talent and ideas	https://www.ukri.org/
Spain		
Joined Research Projects	Under an official and legal framework UBC is implemented by research projects developed by Universities with the funding support from companies. This type of projects are oriented to the development of R&D approaches.	https://www.ucm.es/otri/financiacion-articulo-83-lou

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Research Labs in Universities	Universities provide space, equipment and staff for the development of R&D lines oriented to the needs of the company. A multi-annual budget is provided by companies (3 years as minimum)	https://otri.unizar.es/es/catedras
Industrial Doctorate	A co-funding formula supported by National/Regional Governments and companies to develop PhD lines with candidates under the Univ. regulation and support	https://www.madrid.org/uploads/documentos/orden_1921-2018_de_convocatoria_di_firma_da.pdf
Grants for young PhDs	In order to promote the recruitment of PhDs in companies. National Government provides some tax reductions if a young PhD is hired in the company	https://sede.micinn.gob.es/portal/site/eSede/menuitem.df29f2378d5d10a0cee63510223041a0/?vgnextoid=e7ac1339c3f03410VgnVCM1000001d04140aRCRD&
Poland		
NCBiR	Strategic research and development programs are high-budget programs resulting from the state's scientific and innovative policy, serving the social and economic development of Poland.	https://www.ncbr.gov.pl/
NCN	The National Science Center is an executive agency established to support scientific activities in the field of basic research, i.e. experimental or theoretical work undertaken primarily to acquire new knowledge about the basics of phenomena and observable facts.	https://www.ncn.gov.pl/

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RPO	The program defines the activities and areas of support in the new financial perspective 2014-2020 for each voivodship. There are 16 operational programs in which funds for R & D are provided.	https://rpo.lodzkie.pl/
Greece		
Hellenic Foundation for Research and Innovation	<p>H.F.R.I. aims to promote research and innovation in Greece and in particular to evaluate and fund research, especially activities and technological applications , without thematic exclusions or geographical constraints, but solely on the basis of scientific quality and excellence.</p> <p>H.F.R.I. was created out of the vital need to support young scientists and as a necessary tool in reversing the outflow of outstanding scientists abroad. In order to achieve its goals H.F.R.I.:</p> <ol style="list-style-type: none"> 1. Grants scholarships for doctoral dissertations and post-doctoral studies 2.Funds high quality research projects in which post-graduate students, researchers and faculty members are scientific responsables 3.Finances the purchase of research equipment 4. Enables Universities, TEIs and research and technology stakeholders to access the financing of innovative research programs 5. Supports the creation and operation of start-ups in order to exploit research results <p>H.F.R.I.'s initial funds amount to € 240 million and are provided by the Public Investment Program (€ 60 million) and the</p>	http://www.elidek.gr/en/homepage/

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	European Investment Bank (€ 180 million).	
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<p>State Scholarships Foundation (IKY)</p>	<p>State Scholarships Foundation, in the framework of the Operational Programme “Education and Life Long Learning” within the National Strategic Reference Framework (2014-2020) implements the Action “Scholarships Programmes by the State Scholarships Foundation”, funding Phd studies in Greece.</p> <p>IKY supports also PhD candidates of the Humanities in the framework of the cooperation with the National Bank of Greece Programme. Ten scholarships are given in specialised sectors of humanitarian and social disciplines for the elaboration of a doctoral thesis in Greece. The Programme’s duration is three years. Scholarships are granted also to Greek graduates of Greek and equivalent foreign universities to conduct a doctoral research with European perspective in the fields of humanitarian and social disciplines (History and Culture, Economy, Legal, Social and Political Sciences) in the European University Institute of Florence. Moreover, IKY finances scholarship holders within the context of its collaboration with CERN. It is a scholarships programme offered by IKY for the employment at CERN of scientists having graduated from Greek universities in the field of Theoretical and Experimental Particle Physics</p>	<p>https://www.iky.gr/en/</p>
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<p>Onasis Foundation</p>	<p>The Foundation has established the Program of Scholarships since 1978. Initially the program awarded scholarships to Greek University graduates for postgraduate studies or doctoral studies in countries worldwide. In 1998 the program started awarding scholarships for doctoral studies in Greek public universities. More than 100 Scholarships for Hellenes are awarded each year for both studies in Greece and abroad in various fields of study. University Professors, Academicians, specialized Scientists and renowned artists are invited to serve as Academic Advisors. Their participation and contribution are both honorary and voluntary. Former scholars of the Foundation, who currently hold academic positions in Universities in Greece and other countries worldwide, are also invited to serve as academic advisors.</p>	<p>http://www.onasis.org/en/scholarships-greeks.php</p>
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