



**EUROPEAN FOODBUSINESS TRANSFER LABORATORY FOR STIMULATING
ENTREPRENEURIAL SKILLS, FOR FOSTERING INNOVATION AND FOR BUSINESS
CREATION IN THE FOOD SECTOR / FOODLAB**

**Guidelines on new approaches to bridge
academic and food business stakeholders**

Deliverable No. (use the number indicated on technical annex)		D3.1	
Workpackage No.	WP3	Workpackage Title	Development of new educational content, methodologies, and organization
Task No.	T3.1	Task Title	Guidelines to facilitate know-how transfer and knowledge exchanges among academic and business partners
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Status (F: final; D: draft; RD: revised draft):	Final
Nature (PU: Public; RES: restricted; CO: confidential)	PU
File Name:	FOODLAB-D3.1-v.2.Guidelines_new_approaches
Project start date and duration	01 January 2015, 36 Months



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List of abbreviation

ANRT: “Association National Recherche Technologie” or National Association of Research and Technology

BBSRC: Biotechnology and Biological Sciences Research Council

CASE: Collaborative Awards in Science & Technology

CIFRE: “Conventions Industrielles de Formation par la Recherche” or Industrial Conventions for training by research

CLIB: Cluster Industrielle Biotechnologie

DTC: Doctoral Training Centre

EID: European Industrial Doctorates

EIT: European Institute of Innovation & Technology

EPSRC: Engineering and Physical Sciences Research Council

GENCAT: Generalitat de Catalunya

HEI: Higher Education Institutions

iPhD: Industrial thesis

IRCSET: Irish Research Council for Science, Engineering and Technology

KIC: Knowledge and Innovation Communities

MSCA: Marie Skłodowska-Curie Actions

PhD: Philosophiæ doctor

RCUK: Research Councils UK

SFI: Science Foundation Ireland

TIDA: Technology and Innovation Development Award

YEBN: Young European Biotech Network



1 Introduction

Requirements specification of the part “Guidelines on new approaches to bridge academic and food business stakeholders”

Source: DETAILED PROJECT DESCRIPTION – V3

“The continuous sharing of information between academic, industrial and socio-economic partners is at the basis of the learning and training system that the consortium wants to develop with this project. Therefore this task will allow comparative analyses of existing solutions put in place by HEI or companies to facilitate information sharing (remarkable solutions that may have been developed in Europe or elsewhere) and definition of possible shared educational activities.”



2 Existing solution

2.1 Europe

2.1.1 Ecotrophelia contest and IDEFI-ECOTROPHELIA program

The Ecotrophelia contest – in particular through a dedicated website – is a showcase for different student projects concerning food innovation. The IDEFI-ECOTROPHELIA program set up in France, including numerous actors from Higher Education Institutions (HEI), is currently working on providing a way for knowledge to be shared between a student project and interested companies. At the end of the program, companies will have access to detailed accounts of the project in exchange for a financial contribution. This system will allow the valorisation of the students' project from 2010.

2.1.2 Industrial thesis - iPhD programmes

In the field of food industry, a good way of improving the connection between academic and food business stakeholders is the same as the one being developed in the field of Life sciences: PhD programmes involving industry and academia in Europe also named iPhD programmes. Indeed, these programs reinforce the links between the three areas of academia, industry, and also government. They facilitate contact and the circulation of people between industry and academia.

The same programs can be offered either for Life sciences or for Food sciences (Table 1 Comparison between the iPhD program in Europe (none exhaustive list). A list of European iPhD programmes has been established here by the Young European Biotech Network (YEBN) Website:

<http://www.yebn.eu/projects/industrial-phd-programs-iphds-all-over-europe/>

In this chapter, the extracts from the website Youth Conference on Careers in Life Sciences are set in quotes.



Table 1 Comparison between the iPhD program in Europe (none exhaustive list)

Program Name	Program Driver(s)	Starting date	Main Funding Source	Field(s) of Research
CIFRE (France)	ANRT (Association National Recherche Technologie)	1981	ANRT -Ministère de l'Éducation Nationale	All
Doctorats industriels GENCAT (Catalunya)	Generalitat de Catalunya	2012	Mixed (government, companies)	All
Industrial CASE (UK)	Research Councils UK	1994 (social sciences), 2004 arts&hum)	Mixed (RCUK, companies)	All
EIT Digital – Doctoral Schools (EU and individual universities, eg. Budapest DTC, Hungary)	European Institute of Technology	2012	KIC (Knowledge and Innovation Communities)	EIC Digital Action Lines in the domain of Information and Communication Technologies
ErhvervsPhD (DK)	Ministry of Higher Education and Science	1970	Mixed (companies, Innovation Fund Denmark – existing from 2014)	All
PhD I-Talents (Italy)	Ministry of Education and Confindustria (Association of Italian Companies)	2015	Mixed (Ministry of Education, companies)	Energy, Food, Cultural Heritage, Mobility, Health, Life Science
CLIB Graduate Cluster (Germany)	Consortium of Universities Heinrich-Heine-University Düsseldorf, Bielefeld University and TU Dortmund University	2009	Mixed (the three Universities and Ministry of Innovation, Science and Research of the federal state of North Rhine-Westphalia)	Biotechnology
Scuola di dottorato Agysistem	Individual University		Mixed (companies, Commission for Technology and Innovation, EU)	Agryfood



2.1.2.1 CIFRE conventions

“Since 28 years CIFRE conventions (Conventions Industrielles de Formation par la REcherche) facilitate the contact between industry and academia placing PhD-students at the interface of the both, to build up collaboration between public laboratories and a company.

The project finished with the defense of the PhD thesis after three years. The CIFRE processes are financed by the French Ministry of education and research via the ANRT (Figure 1 Functioning of the CIFRE program).”

Website: http://www.anrt.asso.fr/fr/espace_cifre/accueil.jsp?r=3&p=1#.VxXy9npztzk

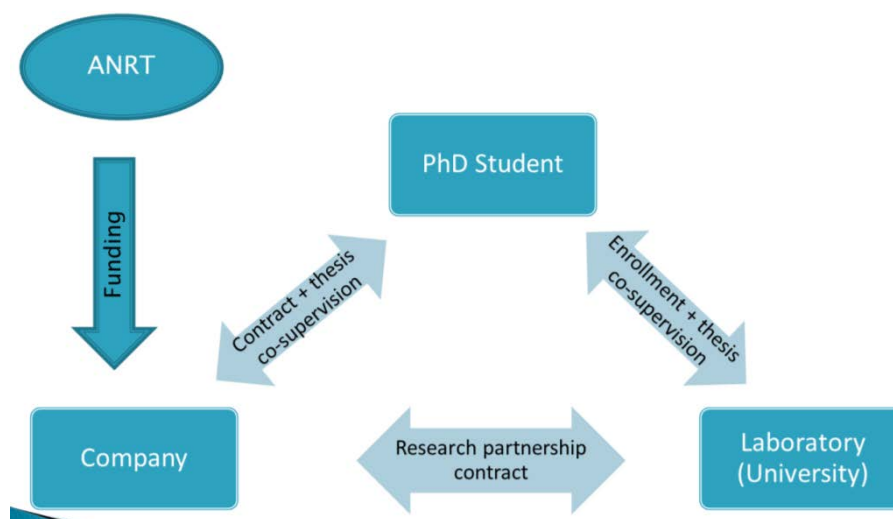


Figure 1 Functioning of the CIFRE program

2.1.2.1.1 Details

CIFRE by Ministry of Research; CIFRE Brazil by Brazilian Council for the science and technology (since 2013)

Duration: 3 years

Cost: 23,000 euro (min) by company; 14,000 by ANRT + research tax credit

Enrolment: joint selection; enrolment in the doctoral school attached to the university laboratory

Supervision: joint (academic guidance and company monitoring)

Structure: research period divided between academia and company

Training: specific skills (PM, business plan, industrial and intellectual property...)



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Degree: regular PhD degree

Statistics: about 4,000 CIFRE (since 1981)

Distinctive features: all types of non-academic sectors (SMEs, big and corporate companies, associations, public sectors)

2.1.2.2 Doctorats industriels - GENCAT

Website: <http://doctoratsindustrials.gencat.cat/> - (Figure 2 Functioning of the Doctorats industriels - GENCAT program)

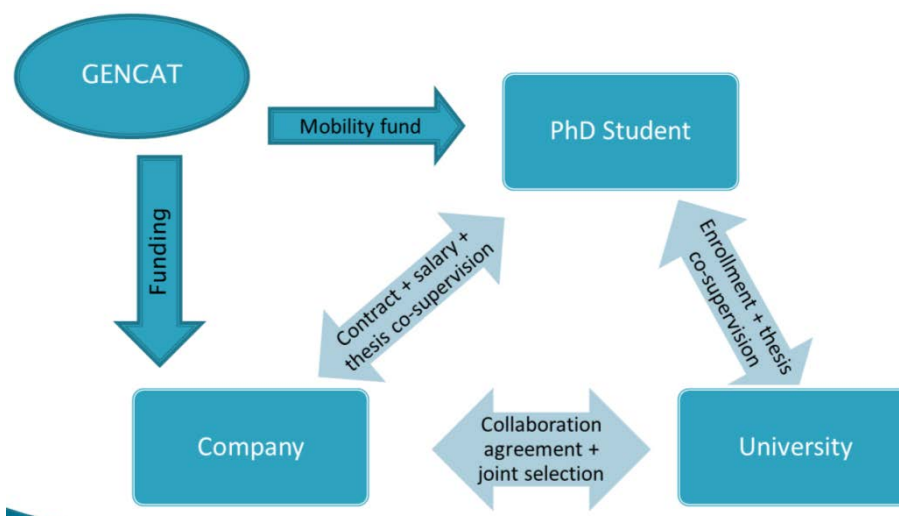


Figure 2 Functioning of the Doctorats industriels - GENCAT program

2.1.2.2.1 Details

Industrial doctorate projects co-funded by the Government of Catalonia; Industrial doctorate projects with specific funding

Duration: 3 years

Costs: 22,000 Euros (min) by company + mobility fund/university fees/overhead costs by the Government of Catalonia

Enrolment/Hiring: joint selection by academia and company but the PhD candidate must be admitted to the doctoral programme in the university

Supervision: joint (academia and company)

Structure: research period divided between academia and company



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Training: specific skills (project management, business plan development, industrial and intellectual property, etc.)

Degree: Industrial Doctorate with distinction

Statistics: 2012: 17 applications; 2013: 113 applications; 2014: 96 applications

2.1.2.3 Swedish Research Council's programme

“The Swedish Research Council’s programme for collaborative projects involving industry and higher education comprises two forms of grant: ID Project (Industrial PhD Student’s Project) and IFA Project Grants. ID Projects offer postgraduate education for employees in industry and business, while IFA Projects enable postdoctoral researchers to obtain qualifications for further careers in research. The programme is implemented in close collaboration between Swedish higher education institutions (HEIs) and Swedish companies.

The purpose of this form of grant is to support advanced and mutual knowledge transfer between Swedish higher education institutions and companies with commercial operations. This knowledge transfer takes place through project collaboration between an individual researcher (the applicant or Researcher), a company (the Company) and a higher education institution (the HEI or host HEI).”

Website: <http://www.vr.se/inenglish.4.12fff4451215cbd83e4800015152.html>

2.1.2.4 ErhvervsPhD

Website: <http://innovationsfonden.dk/da/soegemulighed/erhvervsphd-ordningen> (Figure 3
Functioning of ErhvervsPhD)

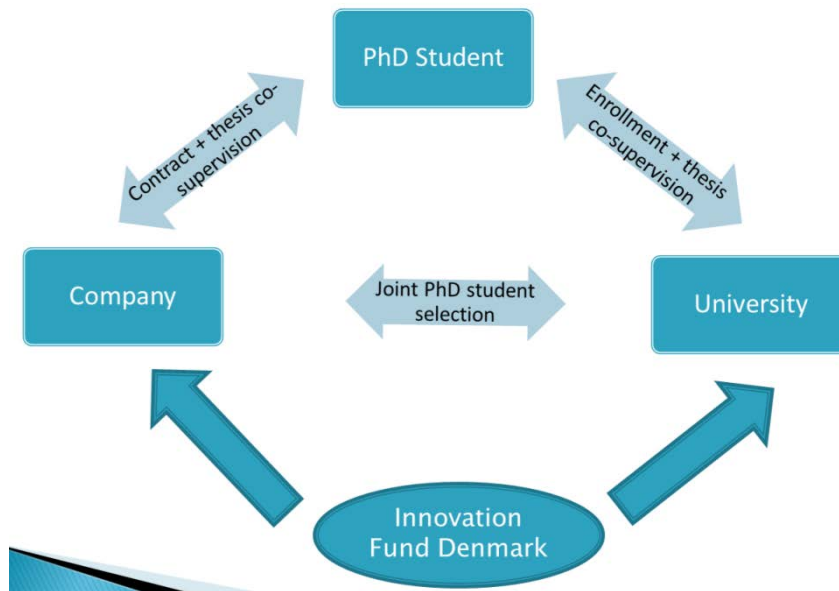


Figure 3 Functioning of ErhvervsPhD



2.1.2.4.1 Details

Duration: 3-4 years

Costs: student salary: 17,000 DKK by company + 17,000 DKK by Innovation Fund DK (through the company); the university receives from 252,000 to 360,000 by Innovation Fund DK to cover academic supervision and other expenses;

Enrollment/Hiring: joint selection; enrollment in the doctoral programme of the university (also foreign university)+ contract in the company

Supervision: joint (academia and company). A third party can be included as co-supervisor (e.g. from a government research institute)

Structure: research period equally divided between academia and company

Training: exclusive work on the research project; no teaching

Degree: normal PhD degree + Industrial PhD certificate

Statistics: about 1.200 projects (until 2009)

Distinctive features: from 2013, the Erhvervs PhD programme was extended to cover PhD project also in the public sector

2.1.2.5 Enterprise Partnership Scheme

“The Enterprise Partnership Scheme is an innovative initiative where the Irish Research Council for Science, Engineering and Technology (IRCSET) links with private enterprise and eligible public bodies to co-fund postgraduate scholarships and postdoctoral fellowships among the most promising researchers in Ireland.

The Scheme offers researchers the opportunity to gain additional beneficial experience and insight into the commercial arena while completing their research.

It provides industry with flexible and easy access to an exceptional pool of competitively selected, high calibre researchers and the opportunity to build links with relevant academic research groups.

The Scheme facilitates the establishment of new relationships and the strengthening of existing relationships between industry and academia while offering financial support to researchers at an early stage of their career development.”

Website: <http://www.research.ie/scheme/enterprise-partnership-scheme>

2.1.2.6 Technology and Innovation Development Award (TIDA)

“To facilitate greater interaction with industrial partners and enhance the generation of new applied technologies, the Science Foundation Ireland (SFI) has designed the Technology and Innovation Development Award (TIDA).



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It recognises the importance of encouraging SFI funded researchers and engineers to develop new technologies independently, or through interaction with industry collaborators. Such interactions can lead to SFI funded researchers becoming more informed about industrial priorities and research needs, whilst allowing industrial collaborators to become more informed about important new science and engineering research developments in Ireland. SFI also recognise the potential opportunity to further develop technologies from SFI funded research along a more applied or commercial path.”

Website: http://www.sfi.ie/content/content.asp?section_id=464&language_id=1



2.1.2.7 European Industrial Doctorates (EID)

Website: http://ec.europa.eu/research/mariecurieactions/about-msca/actions/itn/index_en.htm
(Figure 4 Functioning of Figure: functioning of EIT Digital Doctoral School)

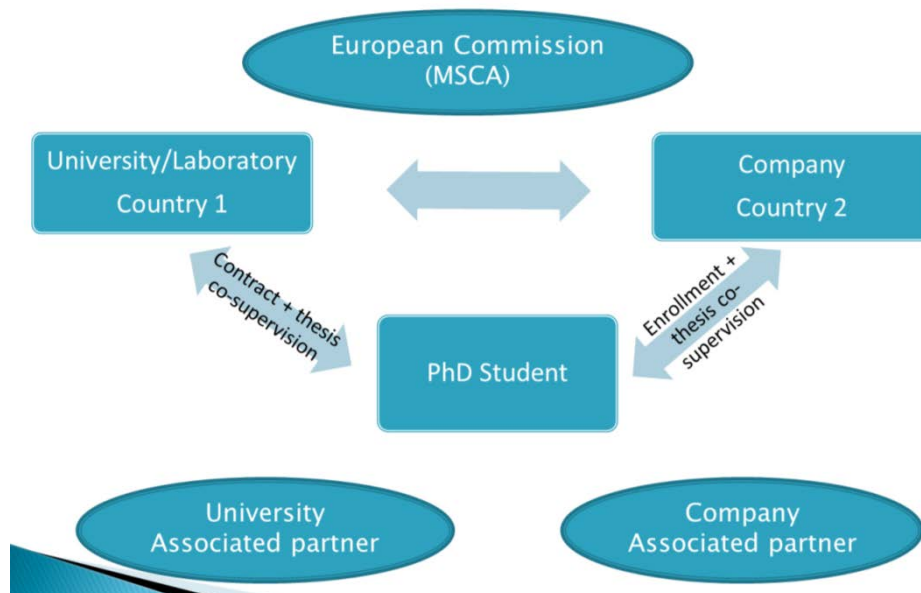


Figure 4 Functioning of Figure: functioning of EIT Digital Doctoral School

2.1.2.7.1 Details

Duration: 3 years

Costs: covered by the European Commission through Marie Skłodowska Curie Actions – Initial Training Network: research unit cost + institutional unit cost (research and training costs)

Enrollment/Hiring: enrollment in a university located in Country A and hiring in a company located in Country B (consortium of at least 2 beneficiaries)

Supervision: joint supervision (academia and company)

Structure: research period divided between academia and company (at least 50% of the total time)

Training: non-scientific skills such as entrepreneurship, communication and intellectual property management

Degree: regular PhD degree

Statistics: call 2012: 123 proposals; call 2013: 107; call 2014: 159



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Distinctive features: as in other MSCA, «mobility rule»: PhD candidates, at the moment of recruitment, can not have lived or worked for more than 12 months in the Country of their future host organization

2.1.2.8 CASE-studentships ('Collaborative Awards in Science and Engineering')

“CASE-studentships at the BBSRC allow students to receive high quality research training in collaboration with an industrial partner.

BBSRC is one of 7 Research Councils that work together as Research Councils UK (RCUK). Its mission are to promote and support, by any means, high-quality basic, strategic and applied research and related postgraduate training relating to the understanding and exploitation of biological systems and to advance knowledge and technology (including the promotion and support of the exploitation of research outcomes), and provide trained scientists and engineers, which meet the needs of users and beneficiaries (including the agriculture, bioprocessing, chemical, food, healthcare, pharmaceutical and other biotechnological related industries), thereby contributing to the economic competitiveness of the United Kingdom and the quality of life. “

Website: <http://www.bbsrc.ac.uk/skills/>

2.1.2.9 Industrial CASE

“Industrial CASE at the EPSRC provides funding for PhD studentships where businesses take the lead in arranging projects with an academic partner of their choice. They allocate awards to companies as well as agents such as knowledge transfer networks and regional development agencies.”

Website: <https://www.epsrc.ac.uk/PostgraduateTraining/CollabTraining/IndustrialCASE/>

2.1.2.9.1 Details

Industrial CASE Studentships; Industrial CASE Partnerships

Duration: 4 years

Costs: (at least) 1/3 by BBSRC + co-funding by the company

Supervision: joint (academia and company)

Structure: research period divided between academia and company (min 3 up to 18 months)

Degree: normal PhD degree

Distinctive features: only companies (or also other non-academic partners) who have been invited by the BBSRC may enter the programme

2.1.2.10 Graduate Cluster

“The Graduate Cluster is a joint initiative of three German universities: Heinrich-Heine-Universität Düsseldorf, Universität Bielefeld and Technische Universität Dortmund. In the frame of the programme, which is embedded into the Cluster Industrial Biotechnology CLIB2021 and co-financed



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by the Ministry of Innovation of North Rhine-Westphalia, overall 84 PhD positions are offered to excellent candidates in the field of Industrial Biotechnology.”

Website: <http://www.clib-graduatecluster.de/?-The-CLIB-GC->

2.1.2.11 PhD Talents

Duration: 3 years

Costs: co-funding by the Ministry of Education to the company for PhD holders’ contract (up to 3 years) - Italy

Selection/Hiring: contract by the company for PhD holders co-selected by the university and the company

Supervision: company supervision

Structure: full time period in the company (R&D sector)

Exit: opportunity to extend the 3-year co-financed contract

Statistics: 2015: 136 PhD ITalents projects

Distinctive features: PhD ITalents as a model based on the virtuous circle «counselling/information/placement), to be proposed beyond PhD education

2.2 Other country

“The Canada developed a “single desk of research and development centre” (see the URL link: <http://www.foodtechcanada.ca/fr/>). This website works like a HEIs / business “yellow pages”. Companies can find teams of researchers in their field of work very easily. This website identifies precisely the skills, knowledge, contacts details of the team. Thus, the company can easily contact them in order to start an exchange. This kind of website is very clever and convenient because very often the companies don’t know the existence of a well-equipped laboratory sometimes very close to them.”



3 Proposals for Europe

3.1 Scale of the HEI

3.1.1 Mixed team of students

A mixed team of students from different HEIs - specialised in food technology, business, marketing, etc. – can be constituted between the HEIs in the regional food clusters mentioned above. Using a systemic approach, knowledge between students will be easily shared. The aim is to break down barriers between disciplines and familiarize the participants with different languages associated with different fields: technical, marketing and financial, for example. In the future, the hope is that this early exposure to a variety of standpoints will facilitate communication between departments inside a company.

3.1.2 Tutored projects

In some HEIs (but not all), students participate in and/or lead numerous projects during their cursus: this may take the form of a **training period** from two to six months, but also **individual or group tutored projects**. These kind of projects constitute a significant part of students' informal learning. If it is not already the case, the HEIs should create these small **tutored projects** to give students more practical and professional training opportunities, but also to keep in touch with what companies need and are looking for. Making such student projects known to companies might encourage the latter to take on students to work on their business projects at a minimum fee (if any). The various projects, their modalities (number of students, students' work place - laboratory or company, etc.) and the scheduled period of the project should be listed on the HEIs' web site and also communicated to the relevant companies. *Via* these projects the teachers, students and company employees will become closer and be able to start long-term collaboration with the HEIs. This topic will be discussed further in the deliverable **D3.6 - Definition of new educational organizations to support transfer of innovative projects from HEI to Food companies**.

3.2 Regional scale: fostering regional competitive regional food clusters

Competitive regional food clusters should be identified and listed. They should include Higher Education Institutions (HEI) - specialised in food technology, business, marketing, and other relevant fields- , R&D and technical Centres, small and medium-sized companies (SMEs), and large companies. The HEIs present in these clusters should specialise one part of their laboratory and their services in line with recognised business interests. This is only realistic if engineers and teacher-researchers at the HEIs are able to exchange with companies in order to understand their challenges and needs. This process can allow researchers to invest in their laboratory and make improvements depending on the market demand.



3.3 European Food Yellow pages Web platform

The development of a **European Food Yellow Pages Web Platform** will help business stakeholders to get in touch easily with the R&D teams in HEIs and technical centres. To go even further, on this platform the specialisation of the researchers (with publications) and a brief outline of their work should also be available. This tool will be developed during the FOODLAB project and the topic is described in more detail inside the deliverable **D5.2-Development of shared web platforms and e-tools**. The “European Food Yellow pages Web platform” will contain all this information and will be named the FOODLAB database. The FOODLAB database will help companies to have a good view and clear understanding of the work done by researchers. Moreover, teachers and consultants from different HEIs will be able to contact each other and work together for example on student projects. In conclusion, the regional food clusters will be reinforced through the existence of the FOODLAB database (Figure 5).



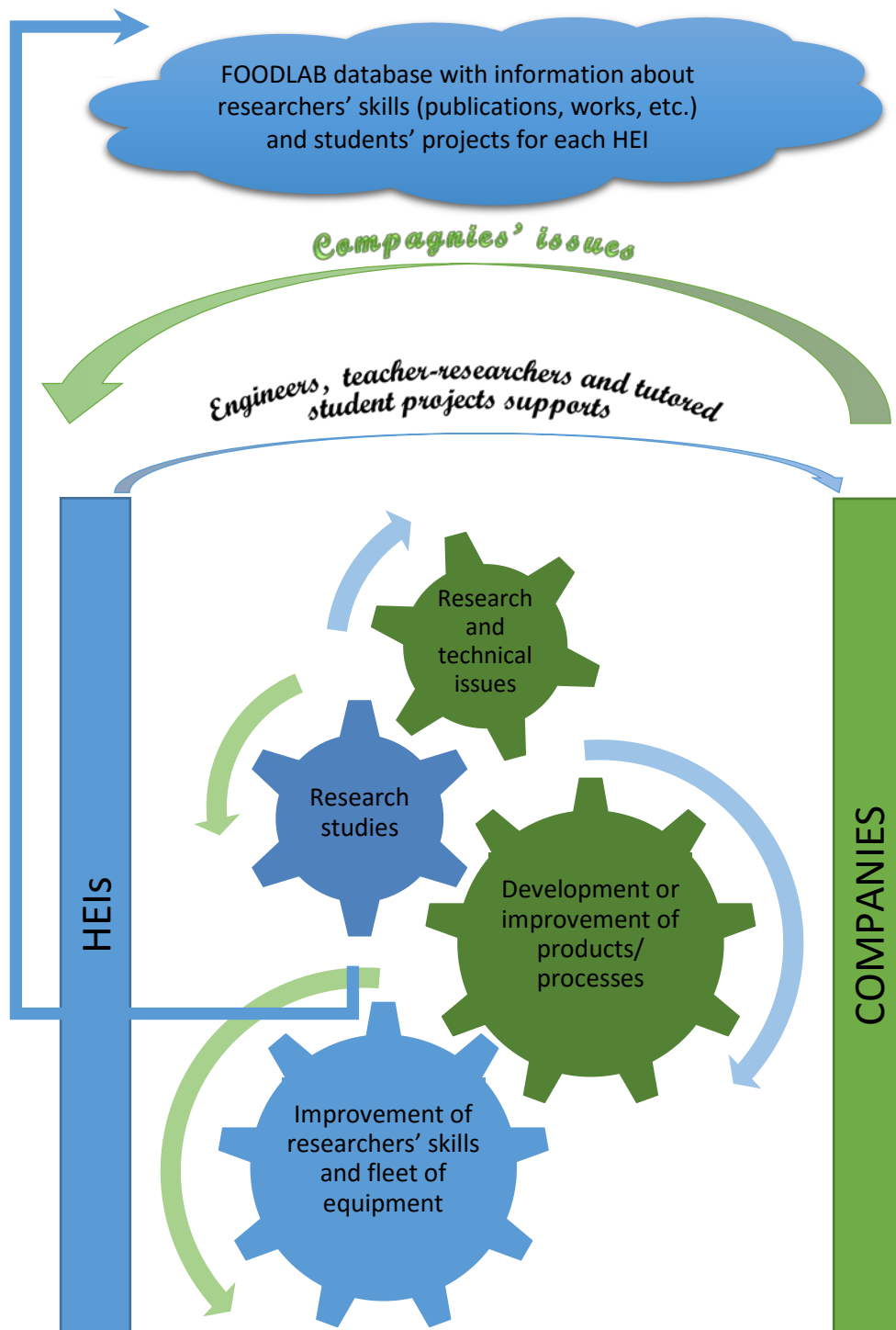


Figure 5 Virtuous cycle of the communication and the transfer of knowledge between academic and business world contributing to fostering of the regional food clusters.



4 Bibliographic reference

<http://www.yebn.eu/projects/industrial-phd-programs-iphds-all-over-europe/>, from Young European Biotech Network, consulted in December 2017

