Good Practices in University-Enterprise Partnerships

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Andrea Detmer
Maria-José Vieira
Foreword

This report summarises the work developed by a team of European researchers during almost three years. We have examined university-business partnerships (UBPs) in six European countries and 18 universities and we have deeply revised 10 cases of good practices in UBPs.

The report presents a detailed view of UBPs activities in the participating institutions and it offers a good panorama of what is happening in European universities. Two main conclusions could be advanced in this foreword: European universities are more active in developing relationships with business than it could be supposed; and, secondly, they are extremely imaginative in developing innovative structures for supporting these activities.

UBPs are an area in continuous development and change all around Europe. As a consequence, it is possible that some details presented in the report could be outdated due precisely to the fast developments which are occurring in most countries and institutions.

The financial support of the Directorate General Education and Culture (DG EAC) has been the key factor in developing this project. The present report has been made possible by the effort of all the participants and the coordination work carried out by Andrea Detmer and Maria-Jose Vieira especially. But the most important input has been the generous cooperation of many people in all the institutions revised. We are extremely grateful to all of them as they made this study possible.

Valencia, February 2010

José-Ginés Mora
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1. Introduction

Universities' are playing a key role in generating the knowledge, innovation and human capital required to increase European international competitiveness in a knowledge-based economy. In order to tackle the challenges involved, universities require modern approaches towards research, innovation and knowledge transfer. One of the core strategies to increase their performance is university-enterprise partnerships (UEPs).

The variety of UEPs is wide and comprises different types of enterprises, university entities involved, and structures and functioning of the partnerships. Due to their complex and mixed structure, which involves different interests and stakeholders, and due to their potential strong impact, UEPs governance is critical to their success.

The aim of the project “GOODUEP: Good Practices in University-Enterprise Partnerships” is to contribute to the development of efficient UEPs governance structures and practices aligned with the stakeholders’ strategic plans and respond to the knowledge-based economy requirements. The project analyses university-enterprise interaction at three levels of action: national level, focusing on particular governmental policies affecting UEPs; institutional level, observing the development of such relations and the institutional support structures put in place to promote, facilitate and manage them; and partnership level, identifying good practices and analysing the key variables which affect the successful development of UEPs. The three levels have been analysed through case studies involving in total six countries, 18 universities and 10 partnerships.

The GOODUEP project is financed with support from the European Commission under the Lifelong Learning Programme of the Directorate General for Education and Culture. Six European partners participated in the project: CQ-CEGES (Valencia University of Technology) in Spain who coordinates the project, INCHER (University of Kassel) in Germany, the National Research Council in Italy, CHEPS (University of Twente) in the Netherlands, CPP (Adam Mickiewicz University) in Poland and the Institute of Education (University of London) in the United Kingdom. GOODUEP is a two-year project developed between 2007 and 2009.

This report presents the results of the GOODUEP project and is organised as follows:

1. Methodology. The methodology applied and key analytical issues are described.

1 The term ‘university’ is used in this report to represent all types of higher education institution.
2. **Context.** Given the importance of the contexts where UEPs take place, these contexts are described at three levels: European, national and institutional. Within the national context description, three aspects are presented: economic and industrial structure, R&D financing and performance, and higher education (HE) systems and other research organisations. Finally, an introduction to the 18 institutional cases is presented, supported through brief fiches, which summarise the main institutional characteristics and the core aspects in relation to UEPs.

3. **Mapping of governance and policies for UEPs.** In this chapter the results from the six national and 18 institutional case studies are presented from the perspective of the policies and governance structures and practices put in place at both levels in order to support UEPs development. In the first place, a brief description of the ample set of UEPs observed in European higher education systems and institutions is presented, offering examples of cases analysed in this project. This characterisation of UEPs activities sets the framework for the subsequent analyses in this report.

Next, governance models and policies for UEPs are discussed at two levels: national and institutional. At both levels, four policy aspects and governance implications are analysed:

- Funding research and innovation
- Intellectual property
- Coherence between the labour market and curricula
- Academics’ external income and other incentives to academics

In addition, at a national level, the issue of fiscal incentives to enterprises for developing UEPs is analysed. On the other hand, at an institutional level, other specific initiatives to develop or strengthen linkages with companies are discussed, including the participation of enterprises in institutional governance boards, enterprises loyalty initiatives and cultural, social and sports activities.

Finally, support structures put in place at an institutional level are analysed according to the functions they perform. Support structures represent institutional policy instruments to achieve the policy aims described in the previous section. Specifically, they are initiatives taken, in this case by universities, to facilitate the development of UEPs for both internal and external users, including academic staff, clients of enterprises and entrepreneur students. It has been noted that some functions, for example support in protecting research results, are organised in different institutions through different schemes and governance models. Thus, to permit comparability of those governance models, the analysis is based on the support functions.

4. **Good practices in UEPs.** This chapter presents the results of the partnership-level analysis. An introduction to the 10 case studies is presented with
brief fiches and their main results are organised in eight topics identified as core aspects for the development of UEPs.

5. Final conclusions and policy orientations. Based on the three levels of analysis and six national, 18 institutional and 10 partnership cases studies, the main conclusions of the GOODUEP project are presented. These are organised in two sections: general conclusions and UEPs research considerations. This set of conclusions lead to empirically-based policy recommendations for the main European UEPs stakeholders.
2. Methodology

The GOODUEP project explores and analyses UEPs in European universities with a particular focus on their governance and on good practices presented in different contexts. This explorative international perspective is developed with a methodology based mainly on case studies at different levels. Six countries, 18 universities and 10 partnerships are analysed in terms of the specific policies for fostering UEPs and of the governance models and support structures to develop them. The country-level policies are assessed based on desk-research, while the institutional and partnerships ones are analysed through field-research. For the three levels of analysis, reports based on common templates are developed; in the case of national and institutional reports, by local researchers and in the case of partnership-reports, by teams of one national and other foreign researchers. With these three levels of information, two broad analyses are developed: Mapping of governance and policies for UEPs based on the national and institutional case studies and good practices in UEPs based on the partnerships cases.

The case studies have the following characteristics:

1. National case studies. National case studies evaluate the general conditions for developing UEPs in Germany, Italy, the Netherlands, Poland, Spain and the UK. The six countries were selected in order to achieve representativeness of the European higher education diversity. The national-level data is presented in national reports based on a common template which comprises five areas:
   - National HE system
   - National/ regional policy agenda on innovation
   - National /regional policies, legal framework and funding on UEPs
   - Institutional policies to promote UEPs
   - Enterprises policies to promote UEPs

The national-level context presented in this report is based on the six national reports and on standardised indicators from international datasets. Specifically, the description of the economic and industrial structure and R&D financing and performance is based on statistics from the OECD and European agencies. The description of higher education and research systems is based on the national reports.

2. Institutional case studies. Institutional reports diagnose UEPs currently developed at European universities in terms of their types, the institutional po-
licies to promote them and the governance structures used to develop them. The diagnoses are presented in institutional reports, in which UEPs activities are described for each of the 18 universities.

Similarly to the national cases, institutional ones were selected seeking to cover the diversity within higher education systems in the six countries analysed. The following variables were considered in the selection, aiming to present diversity in these aspects:

- Types of universities in the country/study area
- Size of universities
- Geographical aspects
- Teaching/research orientation
- Originality of content/structure of possible partnership
- Originality of governance structure

Also, selected universities do have some activity in regard to UEPs, but are not necessarily in the most privileged conditions. Three universities per country were selected and visited by a research-team of the national GOODUEP partner. In each visit, one or two cases from the main types of partnerships existing in each university were assessed in more detail.

Institutional reports are based on a common template which comprises three main topics:

- Introduction of the university, the regional context and the evolution of universities’ role in the context of the regional economy
- Institutional perspective to UEPs in terms of the main types of UEPs developed in the university and their key characteristics. This includes: types of activities developed in the partnerships, volume of partnerships, staff involved, the university’s counterpart in the partnerships, funds invested and revenues obtained, sources of funds and main governance structures of the partnerships. It also includes topics on the university policy and strategy towards UEPs, the means of implementation and policy instruments.
- Characteristics of selected partnerships. An outlook of one or two cases from each institution was offered in order to select the set of in-depth case studies for the next stage of the project. The outlook comprised a brief description of the partnership, the stakeholders involved and the governance and management models used.

4 In order to preserve the privacy of participant universities, these institutional reports are not publicly available. Only summary fiches are included in this report.
The institutional–level context description presented in this report is based on the institutional reports and consists of a general introduction of key facts and figures of the 18 analysed universities.

3. Partnership case studies. In order to assess good practices in the governance models of UEPs, 10 specific partnership cases were selected from those observed in the institutional cases. The 10 partnerships have distinct characteristics in terms of the activities developed, the scope and size and the stakeholders involved. The cases include science parks, research institutes, joint teaching programmes and joint support structures for promoting entrepreneurship.

With the aim of assessing specific UEPs in the framework of the GOODUEP project as well as to develop an instrument to assess UEPs beyond this scope of action, an analytical framework for analysing UEPs was developed and tested in the 10 cases. The analytical framework includes aspects on the national, regional and institutional contexts in which UEPs are developed and on the governance of UEPs. The latter one focuses on the partnership-level structures, mechanisms and instruments for governance. Where relevant, the governance analysis comprises the interaction not only between university and enterprise partners but also with governmental actors. The analytical framework is presented in the Annexes.

The cases were assessed on-site by international teams which reported the cases with a predefined standardised template which included the analytical framework as well as an introduction to the partnership and an identification of key success factors.

These three-level sets of cases studies are analysed in two topics: ‘Mapping of governance and policies for UEPs’ and ‘Good practices in UEPs’ which form chapters 4 and 5 of this report. These analyses followed the next methodology:

**MAPPING OF GOVERNANCE AND POLICIES FOR UEPs**

Based on the six national and 18 institutional reports, a mapping of UEPs was developed. This consisted of a transversal analysis of national and institutional cases in relation to the main variables affecting UEPs at both levels. Qualitative variables were identified, including aspects of the contexts in which UEPs are developed, the policies to regulate and promote them, the governance schemes and also the institutional structures to support the development of UEPs.

The mapping analysis has the following sections:

· Types of UEPs
· National-level governance and policies for UEPs
· Institutional-level governance and policies for UEPs
Institutional support structures for UEPs

‘GOOD PRACTICES IN UEPs’

The 10 partnership-level case studies provided the basis for the analysis of good practices for UEPs. The variables included in the analytical framework were analysed transversally for the 10 cases and seven main topics, regarded as essential in their development and representative of good practices from different partners in the partnership, were analysed in detail. The topics are related mostly to the governance schemes adopted by the group of stakeholders involved in the UEPs. These themes are:

· Leadership in partnerships
· Public authorities and subsidies, private donors and funding
· Research and teaching aspects of partnerships
· University-enterprises staff mobility
· Funding regulations (including overheads)
· Increasing income/available budget to universities by UEPs
· Trust in UEPs
· Flexible management and governance structures
· Legal status of UEPs support structures
3. Contexts of university-enterprise partnerships

The contexts in which UEPs take place play a crucial role in determining, to a great extent, the degree of intensity and volume of the partnerships, and the disposition of the varied stakeholders to be involved in them. The contexts’ impact is manifested formal and informally and observed in the university and enterprise cultures, in the mechanisms through which both groups of actors interact with each other and in the resulting partnerships’ models. The means by which contexts affect UEPs are abundant; mostly determining the needs, interests and willingness of UEPs’ stakeholders in inducing, permitting or participating in the partnership.

Contextual aspects of UEPs have been differentiated from practices for UEPs with the following criterion: aspects which may affect the development of UEPs but are not developed in order to regulate or promote UEPs, they are regarded as contextual aspects; aspects which are developed specifically to regulate or promote UEPs are not contextual aspects and are considered in the policy and governance chapter.

In this project, two contextual levels are considered: national-regional and institutional. The national-regional contexts are described for the six countries in which UEPs are analysed considering the following features: economic and industrial structure and higher education and research systems. These characteristics are regarded as those with a high and direct impact in the development of UEPs. The institutional contexts are presented for the 18 universities analysed in this project, describing key features and some particular aspects in relation to the institutional approach towards UEPs.

The focus of this project is on the governance of UEPs. Governance schemes are particularly complex for these interactions given the number and type of stakeholders involved and the diversity of models used to manage and govern such partnerships. The contextual aspects described in this section play an important role in shaping the governance schemes used in UEPs as the context affects the personal attitude and institutional approach towards these interactions. Therefore, the contextual aspects described below provide a framework for better understanding of the UEPs policy and governance analyses. In particular, it is noteworthy that simple comparisons of governance models, disregarding their contexts, are not feasible or appropriate as different schemes function and are responsive to different contexts.

3.1 NATIONAL CONTEXTS

In this section, a comparative description and analysis of some characteristics of the national economic and industrial structure, the financing and performance on Research and Development, types of HE systems and national policies promoting UEPs are presented.
3.1.1 Economic and Industrial Structure

There are no specific questions about the economic and industrial structure in the national template. However, as an important element to analyse UEPs, most national reports make some reference to the economic and industrial structure in the country:

**Germany (DE)**

In 2005 about 80% of all enterprises belong to the category: enterprises with less than 500 employees. Enterprises with more than 500 employees have a share of less than one percent among all enterprises. Of all enterprises in the category with less than 500 employees about 80% belong to the category of very small enterprises with a maximum of nine employees. Of all research and development expenditures by higher education institutions, 14% was funded by private business in 2005. Efforts investing in the external R&D of small and very small enterprises with less than 20 employees have been marginal. More than 90% of external grants at the disposition of German institutions of higher education has been provided by enterprises with more than 500 employees. Almost 80% of all R&D spending by enterprises is done in the domains of automotive engineering, electro-technology, mechanical engineering and the chemical industries. According to OECD, R&D expenditures made up an average of 5.4% of total enterprise spending in 2005.

**Italy (IT)**

Italy lacks industrial groups over 20 Billion € (only: Eni, Fiat, Pirelli, Telecom); 4.2 million enterprises (95% with less than 10 people, 3 million with no employees at all and only 3,200 with more than 250); manufacturing specialization in low- or medium-tech; innovation investments more on production process systems than on product innovation.

**The Netherlands (NL)**

The Netherlands has a relatively small share of R&D intensive sectors. Industrial R&D in the Netherlands is dominated by a few multinational companies in chemistry and electronics. While the dominance of a few firms has somewhat declined over the recent years, the top 7 companies still contribute 50% of all private R&D activities, making private R&D highly dependent on the developments in these few companies. Philips alone contributed 20% of all private R&D. Electronics is the biggest sector of R&D activities (38%), but some other fields like IT, food technology and biotechnology have been growing in recent years.
What worries authorities is the rising share of companies with no R&D activity at all and the share of R&D carried out by small and medium size enterprises (SMEs) is low by international standards (positive effect of tax incentives for private R&D).

In comparison to leading EU countries, the Netherlands has a relatively low private R&D expenditure. To some extent this is linked to the structure of the Dutch economy.

**Poland (PL)**

Overall, the economy in Poland is based on relatively low labour costs rather than on high technologies. The major industries are still heavy industries and ca. 18% of the population still works in agriculture. There is nevertheless a strong tendency for employment structures in Poland to become similar to those in major OECD economies. Between 1994 and 2004, the share of those employed in agriculture and forestry decreased from 24% to 18%, those employed in manufacturing decreased from 32% to 29%, and those employed in services increased from 44% to 53% (still far below the OECD average). There are only four companies with considerable (marginal by OECD standards) R&D investments - BRE Bank, Telekomunikacja Polska, Netia, and Orlen, with R&D: 23, 17, 9, and 5 M€ (in 2007).

**Spain (ES)**

Enterprises in Spain are mainly constituted by Small and Medium Enterprises (SMEs) rather than big companies. The Spanish manufacturing sector is concentrated mainly in low, medium-low and medium-high technologies such as food products, textiles, chemicals, metal products, machinery and equipment and transport equipment.

Private spending on R&D remains relatively low compared with other OECD countries. Data from the European Innovation Scoreboard show that the number of Spanish firms that innovate in-house to improve their competitiveness is far below the European average. Furthermore, most of the investment in technology is related to capital goods and semi-finished products.

**United Kingdom (UK)**

Continued move from manufacturing to service industries (however financial turnover in the manufacturing sector has remained fairly stable). Financial services account for over 30% of the UK’s GDP.
The need of categorising national economies and industrial structures into several variables should be considered. At least, two variables that could be useful for analysing the potential of the industry sector in the country are the impact of big companies in contrast to SMEs and the importance of high-technology industries. The following table shows broad descriptive categories.

Table 1. Share of big companies and intensiveness of technology industries

<table>
<thead>
<tr>
<th>Country</th>
<th>Big Companies</th>
<th>Technology Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Germany</td>
<td>Large Share</td>
<td>High-Medium</td>
</tr>
<tr>
<td>IT Italy</td>
<td>Small Share</td>
<td>Low-Medium</td>
</tr>
<tr>
<td>NL Netherlands</td>
<td>Moderate-Large Share</td>
<td>High-Medium</td>
</tr>
<tr>
<td>PL Poland</td>
<td>Small Share</td>
<td>Low</td>
</tr>
<tr>
<td>ES Spain</td>
<td>Small Share</td>
<td>Low-Medium</td>
</tr>
<tr>
<td>UK United Kingdom</td>
<td>Large Share</td>
<td>High-Medium</td>
</tr>
</tbody>
</table>

For example, the *Science, Technology and Industry Scoreboard* shows that medium-high-technology industries, such as electrical machinery, motor vehicles, chemicals and machinery and metal products account for over 50% of Germany’s manufacturing exports (Japan being the only OECD country that has a larger share of these industries in total exports). In the case of the top 100 European companies, German and British companies (together with France) account for most of the European share of R&D investments. The top international R&D performers coming from Europe are concentrated in Germany (34.7%), France (20.9%) and the UK (19.1%). As can be seen from the following table extracted from the Third European Report on S&T Indicators (CE, 2003), companies in Germany and the UK constitute 53.8% of European knowledge investment conducted by top European R&D performers. Making up this list are many well-known international companies as Volkswagen, Mercedes Benz, Siemens or Bayer in Germany; GlaxoSmithKline or AstraZeneca in the UK; Philips Electronics in the Netherlands or Fiat in Italy.
Table 2. Top international companies by number and R&D investment, 2000

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>NUMBER OF FIRMS</th>
<th>R&amp;D EXPENDITURE IN € MILLION</th>
<th>SHARE IN TOTAL (500 FIRMS) %</th>
<th>SHARE IN EU-15 TOTAL (132 FIRMS) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELGIUM</td>
<td>2</td>
<td>542</td>
<td>0,2</td>
<td>0,6</td>
</tr>
<tr>
<td>DENMARK</td>
<td>4</td>
<td>782</td>
<td>0,3</td>
<td>0,9</td>
</tr>
<tr>
<td>GERMANY</td>
<td>28</td>
<td>29859</td>
<td>9,7</td>
<td>34,7</td>
</tr>
<tr>
<td>GREECE</td>
<td>0</td>
<td>0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>SPAIN</td>
<td>2</td>
<td>202</td>
<td>0,1</td>
<td>0,2</td>
</tr>
<tr>
<td>FRANCE</td>
<td>32</td>
<td>17948</td>
<td>5,8</td>
<td>20,9</td>
</tr>
<tr>
<td>IRELAND</td>
<td>1</td>
<td>325</td>
<td>0,1</td>
<td>0,4</td>
</tr>
<tr>
<td>ITALY</td>
<td>7</td>
<td>4538</td>
<td>1,5</td>
<td>5,3</td>
</tr>
<tr>
<td>LUXEMBOURG</td>
<td>0</td>
<td>0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>NETHERLANDS</td>
<td>8</td>
<td>5556</td>
<td>1,8</td>
<td>6,5</td>
</tr>
<tr>
<td>AUSTRIA</td>
<td>0</td>
<td>0</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>PORTUGAL</td>
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<td>0</td>
<td>0,0</td>
<td>0,0</td>
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<td>FINLAND</td>
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<td>3343</td>
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<td>3,9</td>
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<td>SWEDEN</td>
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<td>6495</td>
<td>2,1</td>
<td>7,6</td>
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<td>UK</td>
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<td>16402</td>
<td>5,3</td>
<td>19,1</td>
</tr>
<tr>
<td>EU-15</td>
<td>132</td>
<td>85992</td>
<td>28,0</td>
<td>100</td>
</tr>
<tr>
<td>US</td>
<td>208</td>
<td>134515</td>
<td>43,8</td>
<td></td>
</tr>
<tr>
<td>JAPAN</td>
<td>127</td>
<td>71135</td>
<td>23,1</td>
<td></td>
</tr>
<tr>
<td>OTHER COUNTRIES</td>
<td>33</td>
<td>15787</td>
<td>5,1</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>500</td>
<td>307429</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>


3.1.2 R&D FINANCING AND PERFORMANCE

Gross Domestic Expenditure on R&D as a percentage of GDP, considering financing and performing sectors, has been the most frequent indicator used in the national reports. In most reports, more information on expenditure on R&D in the Business Enterprise Sector (BERD), in the Higher Education Sector (HERD) and other national indicators has been added. In this section, information has been unified using the *Main Science and Technology Indicators* (2007) and the *European Innovation Scoreboard* (2007) as sources. Additionally, excerpts from the national reports illustrate these figures.
### Table 3. Expenditure on R&D

<table>
<thead>
<tr>
<th></th>
<th>GERD</th>
<th>BERD</th>
<th>HERD</th>
<th>GOVERD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>as a percentage of GDP (2005)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>2.48</td>
<td>1.72</td>
<td>0.41</td>
<td>0.35</td>
</tr>
<tr>
<td>IT</td>
<td>1.1</td>
<td>0.55</td>
<td>0.33</td>
<td>0.19</td>
</tr>
<tr>
<td>NL</td>
<td>1.73</td>
<td>1.01</td>
<td>0.5</td>
<td>0.24</td>
</tr>
<tr>
<td>PL</td>
<td>0.57</td>
<td>0.18</td>
<td>0.18</td>
<td>0.21</td>
</tr>
<tr>
<td>ES</td>
<td>1.12</td>
<td>0.6</td>
<td>0.33</td>
<td>0.19</td>
</tr>
<tr>
<td>UK</td>
<td>1.78</td>
<td>1.09</td>
<td>0.45</td>
<td>0.19</td>
</tr>
<tr>
<td>EU 27</td>
<td>1.74</td>
<td>1.09</td>
<td>0.39</td>
<td>0.24</td>
</tr>
<tr>
<td>TOTAL OECD</td>
<td>2.25</td>
<td>1.53</td>
<td>0.4</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007

GERD: Gross Domestic Expenditure on R&D
BERD: Expenditure on R&D in the Business Enterprise Sector
HERD: Expenditure on R&D in the Higher Education Sector
GOVERD: Government Intramural Expenditure on R&D

### Figure 1. Gross Domestic Expenditure on R&D as percentage of GDP

**Source:** OECD, Main Science and Technology Indicators, 2007

Considering Gross Domestic Expenditure on R&D as a percentage of GDP, only Germany has a higher percentage than the OECD country average over the years among the countries included in this survey. R&D expenditure in the United Kingdom and the Netherlands has remained close to the EU average since 2002 but is decreasing slightly. In contrast, this expenditure is lower in Italy and Spain (although it has increased over the years), and substantially lower in Poland.
Considering Gross Domestic Expenditure on R&D as a percentage of GDP, only Germany has a higher percentage than the OECD country average over the years among the countries included in this survey. R&D expenditure in the United Kingdom and the Netherlands has remained close to the EU average since 2002 but is decreasing slightly. In contrast, this expenditure is lower in Italy and Spain (although it has increased over the years), and substantially lower in Poland.

Table 4. Gross Domestic Expenditure on R&D by financing and performance sectors

<table>
<thead>
<tr>
<th>Country</th>
<th>Industry</th>
<th>Government</th>
<th>Industry</th>
<th>Higher Education</th>
<th>Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>67.6</td>
<td>28.4</td>
<td>69.3</td>
<td>16.5</td>
<td>14.1</td>
</tr>
<tr>
<td>IT</td>
<td>39.7</td>
<td>50.7</td>
<td>50.4</td>
<td>30.2</td>
<td>17.3</td>
</tr>
<tr>
<td>NL</td>
<td>55.1</td>
<td>36.2</td>
<td>58.3</td>
<td>28.1</td>
<td>14.5</td>
</tr>
<tr>
<td>PL</td>
<td>33.4</td>
<td>57.7</td>
<td>31.8</td>
<td>31</td>
<td>36.4</td>
</tr>
<tr>
<td>ES</td>
<td>46.3</td>
<td>43</td>
<td>53.8</td>
<td>29</td>
<td>17</td>
</tr>
<tr>
<td>UK</td>
<td>42.1</td>
<td>32.8</td>
<td>61.6</td>
<td>25.6</td>
<td>10.6</td>
</tr>
<tr>
<td>EU 27</td>
<td>54.1</td>
<td>34.7</td>
<td>62.6</td>
<td>22.5</td>
<td>13.8</td>
</tr>
<tr>
<td>TOTAL OECD</td>
<td>62.7</td>
<td>29.5</td>
<td>68</td>
<td>17.6</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007

The industry sector was the major source of financing of domestic R&D in OECD countries in 2005, accounting for more than 62.7% of funding. The role of the business sector and the government in funding R&D differs notably across the six countries analysed in this study. The business sector funded 67.3% of R&D in Germany and 55.1% in the Netherlands, both percentages above the EU27 average of 54%. In the remaining countries the business sector accounts for around 40 to 45% of funding. In Poland the respective contribution is only 33%. Both, in Italy and Poland, government is the major source of R&D funding.

The business sector also performs most R&D in all countries except for Poland. GERD performed by industry is higher than the OECD average in Germany, and close to the EU27 average in the United Kingdom and the Netherlands.

Currently, European countries aim at increasing the expenditure in R&D in order to get closer to the objective of the Lisbon Agenda and the Barcelona Council of expending 3% of GDP on R&D by 2010.
**DE**

GERD on R&D spending is envisaged to grow from 2.5% in 2004 to 3.0% of GDP by 2010. While research in public institutions is overwhelmingly financed through public sources, private R&D and innovation activities receive a small public contribution. (According to the national R&D survey, only 3.6% of the total R&D expenditure in the private sector was financed by government sources).

**IT**

Low R&D intensity (1.16% on GDP) and very low BERD share (43%).

**NL**

In 2005 Dutch R&D expenditure was 1.73% of the GDP, which is lower than the OECD average (2.26% of GDP) or the EU15 average (2.0%). The largest part of R&D activities is performed by the business sector, followed by the HE sector.

**PL**

In 2005, GERD, in terms of sector of performance: 31.6 % for the tertiary education sector (one of the highest among the OECD countries); 36.4 % for government-funded research institutes (the highest such proportion in the OECD area); and 31.8 % for the business sector, well below the OECD country mean; and 0.2 % in the private non-profit sector. Expenditure on R&D in 2005 in the government sector was 0.57 % (GERD/GDP), in the higher education sector it was 0.18 % (HERD/GDP), and in the business sector 0.18 % (BERD/GDP). The general picture is that more than 70% of R&D expenditure is distributed to the public sector, either to public higher education institutions or government-funded research institutes.

**ES**

The overall expenditure in R&D in Spain has increased considerably during the past two decades; however it remains far below the EU and OECD averages. Although Spanish expenditure in R&D as percentage of its GDP has increased from 0.79% to 1.12%, between 1995 and 2005 (data from 2007 raises this figure to 1.2%), it has not yet reached the average expenditure of OECD countries (2.26%). The government has set the target of reaching 2.5% of the GDP as expenditure in R&D by 2015.

**UK**

Nationally, there has been a steadily increasing emphasis over the last two
decades towards more, and more effective, R&D work. However, UK spending on R&D as a proportion of GDP remains persistently lower than in other advanced economies. Current government policies are to increase this to 2.5% by 2014 through greater public and private investments.

The UNESCO figures provided show UK R&D for 2004 at £20.3bn (25.8€Billion). The 2007 figures provided by Dept. of Innovation, Universities and Skills, the government department responsible for these data, give a comparable figure of £21bn. R&D spending by UK businesses (excluding universities and government or charitable establishments) in 2006 was £14.3Billion, of which manufacturing industry was responsible for 76%, service industries for 23%, and other industries 1%.

Table 5. Summary of R&D financing and performance

<table>
<thead>
<tr>
<th>Country</th>
<th>GERD MAINTLY FINANCED BY</th>
<th>GERD MAINTLY PERFORMED BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE Germany</td>
<td>INDUSTRY</td>
<td>INDUSTRY (HIGHER THAN OECD AVERAGE)</td>
</tr>
<tr>
<td>IT Italy</td>
<td>GOVERNMENT</td>
<td>INDUSTRY (FAR FROM EU27)</td>
</tr>
<tr>
<td>NL Netherlands</td>
<td>INDUSTRY</td>
<td>INDUSTRY (CLOSE TO EU27)</td>
</tr>
<tr>
<td>PL Poland</td>
<td>GOVERNMENT</td>
<td>GOVERNMENT</td>
</tr>
<tr>
<td>ES Spain</td>
<td>ABOUT EQUALLY</td>
<td>INDUSTRY (FAR FROM EU27)</td>
</tr>
<tr>
<td>UK United Kingdom</td>
<td>INDUSTRY AND GOVERNMENT</td>
<td>INDUSTRY (CLOSE TO EU27)</td>
</tr>
</tbody>
</table>
Tendencies in R&D financing and performance in the six countries in the last decade can be seen in the following graphs.

**Figure 2. Percentage of GERD financed by industry**

<table>
<thead>
<tr>
<th>Year</th>
<th>DE</th>
<th>IT</th>
<th>NL</th>
<th>PL</th>
<th>ES</th>
<th>UK</th>
<th>EU 27</th>
<th>TOTAL OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>60</td>
<td>41.7</td>
<td>46</td>
<td>36</td>
<td>44.5</td>
<td>48.2</td>
<td>51.9</td>
<td>59.5</td>
</tr>
<tr>
<td>2002</td>
<td>65.5</td>
<td>31.6</td>
<td>50</td>
<td>30.1</td>
<td>48.9</td>
<td>43.5</td>
<td>53.9</td>
<td>62.4</td>
</tr>
<tr>
<td>2003</td>
<td>66.3</td>
<td>31.2</td>
<td>51.1</td>
<td>30.3</td>
<td>48.4</td>
<td>42.2</td>
<td>53.5</td>
<td>62.1</td>
</tr>
<tr>
<td>2004</td>
<td>66.6</td>
<td>30.5</td>
<td>51.1</td>
<td>30.5</td>
<td>48</td>
<td>44.1</td>
<td>54.2</td>
<td>62.2</td>
</tr>
<tr>
<td>2005</td>
<td>67.6</td>
<td>33.4</td>
<td>55.1</td>
<td>33.4</td>
<td>46.3</td>
<td>42.1</td>
<td>54.1</td>
<td>62.7</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007

**Figure 3. Percentage of GERD financed by government**

<table>
<thead>
<tr>
<th>Year</th>
<th>DE</th>
<th>IT</th>
<th>NL</th>
<th>PL</th>
<th>ES</th>
<th>UK</th>
<th>EU 27</th>
<th>TOTAL OECD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>37.9</td>
<td>53</td>
<td>42.2</td>
<td>60.2</td>
<td>43.6</td>
<td>32.8</td>
<td>39.6</td>
<td>34</td>
</tr>
<tr>
<td>2002</td>
<td>31.6</td>
<td>37.1</td>
<td>37.1</td>
<td>61.9</td>
<td>39.1</td>
<td>28.9</td>
<td>35.2</td>
<td>29.6</td>
</tr>
<tr>
<td>2003</td>
<td>31.2</td>
<td>36.2</td>
<td>36.2</td>
<td>62.7</td>
<td>40.1</td>
<td>31.8</td>
<td>35.7</td>
<td>30.1</td>
</tr>
<tr>
<td>2004</td>
<td>30.5</td>
<td>36.2</td>
<td>36.2</td>
<td>61.7</td>
<td>41</td>
<td>32.9</td>
<td>35.3</td>
<td>30.2</td>
</tr>
<tr>
<td>2005</td>
<td>28.4</td>
<td>36.2</td>
<td>36.2</td>
<td>57.7</td>
<td>43</td>
<td>32.8</td>
<td>34.7</td>
<td>29.5</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007
### Figure 4. Percentage of GERD performed by the Business enterprise Sector

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>66.3</td>
<td>69.2</td>
<td>69.7</td>
<td>69.8</td>
<td>69.3</td>
</tr>
<tr>
<td>IT</td>
<td>53.4</td>
<td>48.3</td>
<td>47.3</td>
<td>47.8</td>
<td>50.4</td>
</tr>
<tr>
<td>NL</td>
<td>52.1</td>
<td>56.7</td>
<td>57.4</td>
<td>57.8</td>
<td>58.3</td>
</tr>
<tr>
<td>PL</td>
<td>38.7</td>
<td>20.3</td>
<td>27.4</td>
<td>28.7</td>
<td>31.8</td>
</tr>
<tr>
<td>ES</td>
<td>48.2</td>
<td>54.6</td>
<td>54.1</td>
<td>54.4</td>
<td>53.8</td>
</tr>
<tr>
<td>UK</td>
<td>65</td>
<td>64.8</td>
<td>63.7</td>
<td>62.8</td>
<td>61.6</td>
</tr>
<tr>
<td>EU 27</td>
<td>61.7</td>
<td>63.1</td>
<td>63</td>
<td>62.9</td>
<td>62.6</td>
</tr>
<tr>
<td>TOTAL OECD</td>
<td>66.7</td>
<td>67.7</td>
<td>67.5</td>
<td>67.6</td>
<td>68</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007

### Figure 5. Percentage of GERD performed by the Higher Education Sector

<table>
<thead>
<tr>
<th></th>
<th>1995</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>18.2</td>
<td>17</td>
<td>16.9</td>
<td>16.5</td>
<td>16.5</td>
</tr>
<tr>
<td>IT</td>
<td>25.5</td>
<td>32.8</td>
<td>33.9</td>
<td>32.8</td>
<td>30.2</td>
</tr>
<tr>
<td>NL</td>
<td>28.8</td>
<td>28.8</td>
<td>28.1</td>
<td>28.1</td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>26.3</td>
<td>33.9</td>
<td>31.7</td>
<td>32</td>
<td>31</td>
</tr>
<tr>
<td>ES</td>
<td>32</td>
<td>29.8</td>
<td>30.3</td>
<td>29.5</td>
<td>29</td>
</tr>
<tr>
<td>UK</td>
<td>19.2</td>
<td>24</td>
<td>24</td>
<td>24.5</td>
<td>25.6</td>
</tr>
<tr>
<td>EU 27</td>
<td>20.6</td>
<td>22.2</td>
<td>22.4</td>
<td>22.2</td>
<td>22.5</td>
</tr>
<tr>
<td>TOTAL OECD</td>
<td>16.3</td>
<td>17.4</td>
<td>17.7</td>
<td>17.7</td>
<td>17.6</td>
</tr>
</tbody>
</table>

Source: OECD, Main Science and Technology Indicators, 2007
In the European Innovation Scoreboard 2007, countries fall into four categories based on their innovation performance:

- Germany and UK are in the group of innovation leaders
- The Netherlands is in the group of innovation followers
- Spain and Italy are in the group of moderate innovators
- Poland is in the group of catching-up countries

Considering the five dimensions in which the 25 indicators of the European Innovation Scoreboard have been classified, the second dimension: knowledge creation summarises four indicators that measure the investments in R&D activities: public R&D expenditures, Business R&D Expenditures (BERD), share of medium-high-tech and high-tech R&D, and the share of enterprises receiving public funding for innovation.

Source: OECD, Main Science and Technology Indicators, 2007
The dimension: Intellectual Property summarises five indicators: EPO patents, USPTO patents, triad patents, community trademarks and community designs.

**Figure 7. Knowledge creation**

![Knowledge creation graph]

Source: European Innovation Scoreboard 2007 (February 2008)

The dimension: Intellectual Property summarises five indicators: EPO patents, USPTO patents, triad patents, community trademarks and community designs.

**Figure 8. Patents per million inhabitants**

![Patents per million inhabitants graph]

Source: European Innovation Scoreboard 2007 (February 2008)

### 3.1.3 HIGHER EDUCATION AND RESEARCH SYSTEMS

Most countries in the sample have a unitary Higher Education system made up of universities. Two countries, Germany and the Netherlands have a binary Higher Education system comprised of universities and the so-called universities of Applied Sciences, -Fachhochschulen in Germany and Hogescholen in the Netherlands-. Universities of Applied Sciences in both countries are vocationally oriented institutions in close relation with industry -originally mainly in teaching- and increasingly in their applied research.

**DE**

Fachhochschulen are colleges with a predominantly teaching role that award for-year diplomas and, increasingly since 1998, bachelor and master degrees.
Fachhochschulen programmes comprise one or two semesters of work experience (Praxissemester). In addition eight Länder recognize 42 Berufsakademien. These are colleges offering three-year programmes with a strong vocational emphasis characterised by a high level of work-based learning in enterprises.

**NL**

The aims of the hogescholen mainly relate to the provision of vocationally oriented education programmes geared to specific professions, hogescholen are increasingly engaging in applied research activities. However, the hogescholen so far receive very little in terms of public funds for their applied research.

The number of Higher Education Institutions (HEIs) in the six countries ranges from 56 in the Netherlands, to 75 in Italy and Spain, 150 in the United Kingdom, and more than 394 in Germany and Poland. The number of students in higher education in the analysed countries ranges from 0.55 million in the Netherlands to more than 2 million in Germany, Poland and the United Kingdom.

The ratio of persons trained in tertiary education in recent years (see the 25-34 column in table 6) varies from more than one third in the Netherlands, Spain and UK (also above the OECD average of 33%) to 28% in Poland, 22% in Germany and 17% in Italy. Over the last few decades, this ratio most strongly increased in Spain (256%, see ratio 25-34 related to 55-64), Poland (224%) and Italy (201%). In contrast, the increase remains below OECD average in the Netherlands, and no increase can be reported for Germany, both traditionally having a strong vocational education sector.

**Table 6. Percentage of the population that has attained total tertiary education by age group**

<table>
<thead>
<tr>
<th></th>
<th>25-64</th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
<th>25-34 RELATED TO 55-64</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DE</strong></td>
<td>24</td>
<td>22</td>
<td>25</td>
<td>25</td>
<td>23</td>
<td>97%</td>
</tr>
<tr>
<td><strong>ES</strong></td>
<td>28</td>
<td>39</td>
<td>31</td>
<td>22</td>
<td>15</td>
<td>256%</td>
</tr>
<tr>
<td><strong>IT</strong></td>
<td>13</td>
<td>17</td>
<td>14</td>
<td>11</td>
<td>17</td>
<td>201%</td>
</tr>
<tr>
<td><strong>NL</strong></td>
<td>30</td>
<td>36</td>
<td>30</td>
<td>30</td>
<td>25</td>
<td>146%</td>
</tr>
<tr>
<td><strong>PL</strong></td>
<td>18</td>
<td>28</td>
<td>17</td>
<td>13</td>
<td>13</td>
<td>224%</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td>30</td>
<td>37</td>
<td>31</td>
<td>29</td>
<td>24</td>
<td>152%</td>
</tr>
<tr>
<td><strong>OECD AVERAGE</strong></td>
<td>27</td>
<td>33</td>
<td>28</td>
<td>24</td>
<td>19</td>
<td>170%</td>
</tr>
</tbody>
</table>

The following Table 7 summarises some general characteristics related to the six national Higher Education systems as described in the national reports. This information should be contextualised and compared using OECD and EUROSTAT datasets (for example, information in the reports on indicators such as gross/net entry rate, completion or drop-out from higher education is either missing or varied in terms of sources and time reference).

**Table 7. Higher Education Systems**

<table>
<thead>
<tr>
<th>Country</th>
<th>HE System</th>
<th>Number of students</th>
<th>Programmes</th>
<th>Bologna reform</th>
<th>Enrolment tendencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>DE</td>
<td>Binary: Universities (or HEIs with university status) and Fachhochschulen (Universities of Applied Sciences). Total 383 HEIs</td>
<td>Around 2 million: 1.4 million in universities and 0.5 million in Fachhochschulen</td>
<td>Universities may deliver programs of any level</td>
<td>In progress (step-wise implementation since 1998)</td>
<td>Enrolment rate: increasing, mainly at Fachhochschulen</td>
</tr>
<tr>
<td>ES</td>
<td>Unitary: Universities (48 public and 26 private) Total: 74 universities.</td>
<td>1.5 million 90% in public universities</td>
<td>Universities may deliver programs of any level</td>
<td>In progress, new Bachelor programmes starting in 2008-09</td>
<td>Enrolment rate: decreasing except for doctoral programmes. In 2005 the net entry rate to universities was 43%; Retention rate in tertiary education was 75% in 2004, as compared to the OECD average of 70%</td>
</tr>
<tr>
<td>IT</td>
<td>Unitary: 77 universities, 19 of them private. Total: 77 universities.</td>
<td>1.75 million</td>
<td>Universities may deliver programs of any level</td>
<td>Yes, started in 2001. Considered as “too quick and problematic”</td>
<td>The gross enrolment in tertiary education has risen over past years. In 2005, some 59% of the population of tertiary age (18-25) are enrolled in the tertiary education system</td>
</tr>
<tr>
<td>NL</td>
<td>Binary system: university sector (13 universities and an Open University) and hogescholen (42 HBO institutions) Total: 56 HEIs</td>
<td>Around 0.55 million HBO-sector: 350,000 students in 2006/07 University sector: 206,000 students.</td>
<td>At universities: Bachelor’s, Master’s and PhD programs At hogescholen: vocationally oriented Bachelor’s and a few Master’s programmes</td>
<td>Yes, in 2002/2003</td>
<td>Increasing enrolment rate in private institutions. In 2005, gross enrolment rate 47.8% and net enrolment rate 36.8%</td>
</tr>
<tr>
<td>PL</td>
<td>Unitary: 448 universities of which 130 were public and 318 private Total: 448 universities</td>
<td>Around 2 million</td>
<td>Universities may deliver programs of any level</td>
<td>Yes</td>
<td>Participation in higher education, full-time and part-time, by the under 30s, has increased from 39.3% in 1999/2000 to 42.8% in 2005/06. About half of this increase has been in full-time under-21 participation</td>
</tr>
<tr>
<td>UK</td>
<td>Unitary (since 1992), 150 universities and university colleges Total: 150 universities</td>
<td>Around 2 million</td>
<td>Universities (full degree-awarding powers); university colleges (mainly teaching, lacking full-degree awarding powers)</td>
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</table>
NATIONAL RESEARCH INSTITUTES

There are important differences in the six countries in terms of the magnitude of specialised national research institutes. The UK is unusual in Europe in not having a significant network of specialised national research institutes. The opposite situation is represented by Germany, a country with an exceptionally large public research sector outside higher education. The institutes within the Fraunhofer Gesellschaft or Max-Planck-Gesellschaft are those which are most strongly interested in linkages to the private sector in applied research in science and engineering.

DE

German statistics on research expenditures suggests that the funds available for public research institutes correspond to more than 85% of research expenditures within the German HE system. Germany, thus, is a country with an exceptionally large public research sector outside higher education.

In Poland, available public funds for public research institutes are comparatively higher than research expenditures in higher education institutions. However, Polish research institutes (dependant on PAN) show the greatest distance from industry. Companies rarely place orders with even the most renowned PAN institutes. The PAN partners come from other academic institutions; they rarely work together with innovation incubators, nor do they establish spin-off companies. Funding for major intermediary institutions for science-industry mainly comes from public funds: state, regional, university and EU infrastructure funds.

In the Netherlands, the nine Research Institutes managed by the Research Council and the eighteen managed by The Netherlands Academy of Arts and Sciences constitute a strong network of national research institutes. There are also public research laboratories: 5 Large Technological Institutes (GTIs), 9 Leading Technological Institutes (LTIs), the Agricultural institutes, and several others. It should be noted that, in the Netherlands, the Leading Technological Institutes are a symbiosis of universities, industry and government and the majority of the staff is still hired by the university, whereas Large Technological Institutes and Agricultural Institutes qualify as national research institutes.

In Spain the Scientific Research Higher Council (CSIC) is very important as the main public interdisciplinary research institution in the country. In addition, several applied research institutes were under the responsibility of different ministries (e.g. the Ministry of Health, the Ministry of the Environment, the Ministry of Defence, etc.). The new Ministry of Science and Innovation has taken over most research institutes from the other ministries (except military research).
In **Italy**, main actors of research are, apart from universities (roughly 33% of R&D expenditures) and enterprises (48%), public research institutes (Enti Pubblici di Ricerca, 15% of expenditure and about 30,000 employed).

### 3.2 INSTITUTIONAL CONTEXTS

In this explorative analysis of UEPs in Europe, 18 universities have been studied, three for each of the six participant countries in the GOODUEP project. The 18 universities represent different types of institutions in each country. Also, since the six countries have varied types of HE systems, industrial sectors and governmental approaches towards UEPs, the 18 cases comprise a broad variety of UEPs in Europe.

The universities included in this analysis and the countries in which they are based are:

**GERMANY**
- University of Kassel
- Technische Universität Darmstadt
- Cologne University of Applied Sciences

**SPAIN**
- Valencia University of Technology
- University of Santiago de Compostela
- University of Seville

**ITALY**
- Politecnico di Torino
- University Commerciale Luigi Bocconi
- University of the Salento at Lecce

**THE NETHERLANDS**
- University of Maastricht
- University of Twente
- Utrecht University of Applied Sciences

**POLAND**
- Adam Mickiewicz University
- Poznan University of Economics
- Poznan University of Technology
These universities vary in a number of ways: including their size and outreach, their approaches towards research and teaching activities, their disciplinary specificity and their budgetary levels. In terms of size and extension, the 18 universities-selection includes institutions ranging in number of students from 8,000 students (U. of Twente) to 68,000 (U. of Seville) and in annual budgets from around 25 M (Poznan U. of Economics) to around 350 M (U. of Warwick). Regarding their approach to teaching and research, there is a variety between those which are mainly teaching-focused (such as Bocconi U., Adam Mickiewicz U., the Utrecht U. of Applied Sciences and the Cologne U. of Applied Sciences) including those recently increasing their research activity (U. of Maastricht) to large-scale multidisciplinary universities which have a long-standing research tradition (U. of Santiago de Compostela, U. of Seville, U. of Warwick). In relation to their disciplinary focus, five of them are technical universities, strongly focused on technology (Valencia U. of Technology, U. of Twente, Politecnico di Torino, Poznan U. of Technology, Technische Universität Darmstadt).

The following table summarises some general characteristics related to the 18 universities. Next are presented brief fiches for each of the 18 universities analysed, which describe key institutional features and approaches towards UEPs.
<table>
<thead>
<tr>
<th>UNIVERSITY</th>
<th>TYPE OF INSTITUTION</th>
<th>SIZE</th>
<th>BUDGET AND PROPORION OF BUDGET FROM INDUSTRY</th>
<th>SPECIAL FEATURES IN RELATION TO NATIONAL/REGIONAL CONTEXT</th>
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<tbody>
<tr>
<td>University of Kassel</td>
<td>Multidisciplinary university, 13 departments. Founded in 1970 as a “comprehensive” university.</td>
<td>About 15,000 students, 1,700 staff</td>
<td>Budget: 150 M€</td>
<td>Three initiatives are worthy of mention in relation to initiatives in the German state of Hesse, in which both, the U. of Kassel and Technische U. Darmstadt are involved: 1. Hesse Forum of Science - association of Hessian government, association of enterprises, consortium of industry and commerce and presidents of universities organises the dialogue between the partners with focus on R&amp;D. 2. Technology Transfer Network Hesse: platform for the exchange of information and marketing between universities and enterprises. 3. Intellectual Property Offensive: ten state universities cooperate to market product- and process-innovations.</td>
</tr>
<tr>
<td>Technische Universität Darmstadt</td>
<td>Technical university; founded in 1877.</td>
<td>About 17,500 students, 270 professors</td>
<td>Budget: 293 M€</td>
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</tr>
<tr>
<td>Cologne University of Applied Sciences</td>
<td>Multi-disciplinary teaching-oriented institution with applied research functions; founded in 1971 by merging and upgrading engineering schools and higher vocational schools.</td>
<td>About 16,000 students, 800 staff (largest of its kind in Germany), 2 campuses</td>
<td>Budget: 81 M€</td>
<td>Legal basis in North Rhine-Westphalia (NRW): higher education freedom law, 2006. It declares that the transfer of knowledge is an obligation and allows the universities to set up private enterprises and cooperate with third parties. Regarding the standing of the university staff as long as the normal assignments can be accomplished, are in relation to the usual tasks of the university and the results are adequately published. The alliance of innovation of the higher education institutions in NRW was set up to create more visibility for university R&amp;D activities. Two institutions for patenting and selling research findings and under the umbrella of the national initiative the patent agency PROvendis GMBH.</td>
</tr>
<tr>
<td>Politecnico di Torino</td>
<td>Founded in 1906 from the roots of the Technical School for Engineers; oldest technical university in Italy. Teaching and research. 6 Schools, 7 Interdepartmental Centres.</td>
<td>27,000 students, 1,700 staff, current expansion and change to new “Polis Campus”</td>
<td>Budget: 267 M€</td>
<td>Long-standing firm and thriving partnership with the automotive industry, FIAT having its seat in Turin. Piedmont invests 1.7% of its own GDP in innovation, more than three times the Italian average. The Politecnico indirectly benefits from the Regional Investment Contract to foster the internationalisation of the region through the growth of investments, especially in R&amp;D</td>
</tr>
<tr>
<td>University Commerciale Luigi Bocconi</td>
<td>Private university founded in 1902 specialized in business and economic education, 5 schools.</td>
<td>12,700 students, 1,370 staff</td>
<td>Budget 190 M€</td>
<td>The University is member of a technological district (Dhitech) on high-tech, supported by private companies and various governmental entities. The university’s Industrial Liaison Office was one of the first in southern Italy founded with the purpose of creating scientific and technological networks as well as supporting the departments in developing start-ups and research spin offs in a centralized way.</td>
</tr>
<tr>
<td>UNIVERSITY</td>
<td>TYPE OF INSTITUTION</td>
<td>SIZE</td>
<td>BUDGET AND PROPORTION OF BUDGET FROM INDUSTRY</td>
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<tr>
<td>University of the Salento at Lecce</td>
<td>Founded in 1955. The Scuola Superiore ISUFI—since 1999—based at the university, boosted its expansion and an increase in R&amp;D with the involvement of private companies.</td>
<td>28,775 students, 1,300 staff</td>
<td>Budget 150 M€</td>
<td>The University is member of a technological district (Dhitech) on high-tech, supported by private companies and various governmental entities. The university’s Industrial Liaison Office was one of the first in southern Italy founded with the purpose of creating scientific and technological networks as well as supporting the departments in developing start-ups and research spin-offs in a centralized way.</td>
</tr>
<tr>
<td>University of Maastricht</td>
<td>Newest U in NL (1976), initial regional orientation shifting to international approach, teaching and growing research, concentration areas: Life sciences, Innovation, and Governance. 7 Faculties.</td>
<td>11,500 students, 3,000 staff</td>
<td>Revenue: 31 M€</td>
<td>Ui was founded after decision to create new medical faculty—part of a future university—in the formerly economically disadvantaged city. Strong international focus and a majority of programmes are offered in English. Its teaching is structured around the problem-based-learning method.</td>
</tr>
<tr>
<td>University of Twente</td>
<td>Founded in 1961, entrepreneurial focused on technology. 5 faculties and 6 inter-disciplinary research institutes and centres.</td>
<td>8,000 students, 2,400 staff</td>
<td>Revenue: 268 M€</td>
<td>Chosen as the location to create a third technical university as a booster for the regional economy. Municipalities and provincial authorities are very supportive in TT, creation of spin out companies. Regional innovation agenda based on the joint financial commitment from various parties.</td>
</tr>
<tr>
<td>Utrecht University of Applied Sciences</td>
<td>Multidisciplinary regionally-oriented HBO (Hogeschool) founded in 1995 merging several independent institutions that provided higher vocational training. Considerable part-time and some dual-track enrolment.</td>
<td>35,000 students, 3 main locations, largest HBO in NL</td>
<td>Revenue: 223 M€</td>
<td>Country-level structure to ensure the participation of the business sector in curricular development and course supply. Participates in Task Force Innovation, established to strengthen the economy in the region.</td>
</tr>
<tr>
<td>Adam Mickiewicz University</td>
<td>Traditional multidisciplinary institution opened in 1919, severely teaching-oriented, 14 faculties.</td>
<td>49,000 students, 5,800 staff</td>
<td>Budget: 123 M€</td>
<td>Marginal relationships with the regional economy, limited to teaching and redesigning existing study programs.</td>
</tr>
<tr>
<td>Poznan University of Economics</td>
<td>Specialized university opened in 1926, 7 study areas.</td>
<td>16,000 students, 1,100 staff, 1 main campus and 7 other locations</td>
<td>Budget: 25 M€</td>
<td></td>
</tr>
<tr>
<td>Poznan University of Technology</td>
<td>University of technology, 9 faculties, 17 areas of studies.</td>
<td>18,000 students, 2,000 staff</td>
<td>Budget: 55 M</td>
<td>Public funding for research is considerably higher for technological universities.</td>
</tr>
<tr>
<td>Valencia University of Technology</td>
<td>40-year public technical, 15 schools and faculties, teaching and research</td>
<td>35,000 students, 4,600 staff, 4 campuses</td>
<td>Budget: 320 M€</td>
<td>Frequent partnerships with regional authorities for enterprise, university and science, for employment and training and with regional enterprises’ associations.</td>
</tr>
<tr>
<td>UNIVERSITY</td>
<td>TYPE OF INSTITUTION</td>
<td>SIZE</td>
<td>BUDGET AND PROPORTION OF BUDGET FROM INDUSTRY</td>
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<tr>
<td>University of Santiago de Compostela</td>
<td>Old (1495) public multidisciplinary, 30 centres, 80 departments</td>
<td>30,000 students, 3,300 staff, 2 campuses</td>
<td>Budget: 282 M€</td>
<td>Regional government promotes Plan for Research, Development and Technological Innovation reinforcing the coordination of the main players in the regional innovation system.</td>
</tr>
<tr>
<td>University of Seville</td>
<td>Old (1505) public multidisciplinary</td>
<td>68,000 students, 6,400 staff</td>
<td>Budget: 398 M€</td>
<td>Various regional agencies and programmes enhancing university interdisciplinary research in S&amp;T and TT.</td>
</tr>
<tr>
<td>University of Warwick</td>
<td>Since 1965, concentrated in 4 Faculties: Arts, Medicine, Science and Social Studies, teaching and high quality research</td>
<td>18,000 students, 5,000 staff, 3 campuses</td>
<td>Budget: 350 M€</td>
<td>Regional development agency provides resources for improving infrastructure, business development and enhancing people's skills. Important funding source for large-scale projects under development in which the U. participates: Research Hotel and Science City project.</td>
</tr>
<tr>
<td>University of Hull</td>
<td>University from the mid-1950s, developed from a university college. Medium-sized, regional multi-faculty institution, with important research strengths, and with a medical school managed jointly with York University.</td>
<td>20,000 students, 1,000 academic staff</td>
<td>Budget: 145 M€</td>
<td>Strong regional engagement, as the only university institution in the sub-region, with emphasis on support to SMEs. Region with significant levels of deprivation in north-east England. Important port area (the Humber estuary), and the University aims to extend its relations with firms working in the associated industries. Many knowledge transfer partnerships, and projects funded by the Regional Development Agency.</td>
</tr>
<tr>
<td>University of Hertfordshire</td>
<td>Former polytechnic, now developing a distinctive profile as a “business-facing” university.</td>
<td>24,000 students, 2,500 staff</td>
<td>Budget: 180 M€</td>
<td>The University of Hertfordshire presents itself as an entrepreneurial, student-focused university, with an emphasis on engagement with business in its prosperous region close to London with important manufacturing and service industries. It employs over 2,500 staff.</td>
</tr>
</tbody>
</table>
3.2.1 UNIVERSITY OF KASSEL (UK)

Geographical location and regional context: The city of Kassel is the only large city in the region with almost 200,000 inhabitants, serving the region of northern Hesse and surrounding areas with about one million inhabitants. It is located in the geographical centre of Germany – actually an economically rather weak area benefiting from the establishment of the university. The university sees itself as a key player and source of knowledge for development in this structurally weak spot of Germany. Some large companies are located in the area, e.g. B. Braun Melsungen, Kali und Salze, Wintershall; SMA, one of largest solar energy companies in the area, derived from spin-offs from the University of Kassel; the second largest VW plant is located in a suburb of Kassel; altogether, however, the regional economy is based primarily on SMEs.

The German state of Hesse organises and funds several initiatives ranging from centres for consultation and contact to funding of UEPs. A special focus is placed on strengthening the research capacities of universities through the establishment of the competitive research programme “Forschungsförderungsprogramm LOEWE”, comprising 20 M€ in 2008, 50 M€ in 2009 and 90 M€ in the subsequent years.

Profile: The University of Kassel (UK) was founded in 1970 as Gesamthochschule Kassel (comprehensive university). It intra-institutionally combined the binary system of the university and the University of Applied Sciences during the initial years. In the 1970s, it was the first university in Germany to provide a stage model of study programmes and degrees similarly to the Bologna model adopted since 1998, and it required a higher proportion of students to participate in internships than any other German university. Currently, UK provides study programmes in humanities, social sciences, engineering, natural sciences, agriculture, architecture and fine arts. The university employs 2,066 people, among them 327 professors. In winter 2007-2008, the UK had 15,468 students. In 2006, the university had a budget of 119 M€ borne by the state of Hesse plus 31.4 M€ third party funding.

Major policies, support structures and governance models for UEPs: As a new university beginning to build up research reputation and as an institution with roots from the two institutional types, UK fostered strong linkages with the region from the outset. Some years ago, systematic steps were taken to increase the breadth and scope the collaboration with external actors. UK set up a knowledge and technology transfer office UniKasselTransfer. This office provides services for UEPs and is in charge of the business incubator. Additional activity in the realm of LLL is developed for example with the International Management School UNIKIMS.
**Outstanding examples:** The Institute of Materials Technology – Polymer and Recycling Technology IMT. The professorship entitled “Polymer and Recycling Technology” was co-founded as an endowed chair by 29 industry and trade companies – all SME from the region – in 1994. The aim was to preserve and expand knowledge and expertise in the field of polymer development, processing, analysis and recycling. Few years ago, the chair became an integral part of the planning and the regular funding of the UK.
3.2.2 TECHNISCHE UNIVERSITÄT DARMSTADT

**Geographical location and regional context:** Darmstadt is a city of about 140,000 inhabitants in the German state of Hesse located in the so-called “Rhein-Main-Neckar Metropolitan Area” around Frankfurt am Main. The area is quite well off: with a gross domestic product of about 32,500 € per capita, it is ranked third in Germany and 13th in Europe. Among the well-known enterprises in the area are Merck Pharmacology, Aviation and Space Technology (ESOC) and others benefiting from the proximity to Frankfurt international airport.

The state of Hesse organises and funds several initiatives ranging from centres for consultation and contact to funding of UEPs. A special focus is placed on strengthening the research capacities of universities through the competitive research programme “Forschungsförderungsprogramm LOEWE” comprising 20 M€ in 2008, 50 M€ in 2009 and 90 M€ in subsequent years.

**Profile:** The Technische Universität Darmstadt (TUD) was founded in 1877 as a polytechnic with the name “Technische Hochschule zu Darmstadt”. In 1997, the name was changed to university. In 2005 the TUD became the first autonomous higher education institution in Hesse with public sponsorship. TUD focuses on engineering, information technology and natural sciences, but provides programmes in the social sciences as well. In 2007 the TUD had 17,538 students and employed 270 professors. The budget in 2007 comprised 211 M€ provided by the state of Hesse and 82 M€ of third party funding.

**Main policies, support structures and governance models for UEPs:** The policy pursued was described as a circular connection of four cornerstones: Governance, students, professors and enterprises/industry. In governance structures, standards are set and intended outcomes described. Lead by the vice-president for research, the central administration coordinates the collaborative research centres and is in charge of financing research, promotion of young researchers, strategic alliances, awards in science and partly transfer of knowledge and technology. Knowledge and technology transfer is considered a task of each professor. The system is set up in such a way that successful professors are granted more financial freedom and flexibility.

**Outstanding examples:** The business incubator TIZ is a cooperation of the TUD and the University of Applied Sciences Darmstadt together with the city of Darmstadt, the region Darmstadt-Dieburg, the two chambers of commerce and two local banks. Currently almost 100 enterprises with between one and twenty-five employees are located in the TIZ.
3.2.3 COLOGNE UNIVERSITY OF APPLIED SCIENCES (FHK)

Geographical location and regional context: The city of Cologne has about 1 million inhabitants, and the catchment area has over 2 million inhabitants. Among these are almost 70,000 students. With over 80,000 enterprises, some large enterprises and many SMEs, virtually all fields of business and manufacturing and service industries are represented here with a spectrum ranging from the motor and chemical industries through the media, banks and insurance companies to finishing and supplier industries.

The Ministry of Innovation, Science, Research and Technology of the Land North-Rhine Westphalia (NRW) has put forward various new programmes in the areas of high-tech, energy, bio and nano technologies with a volume of almost 300 M €. The attendant UAS competition “FH-Extra” is funded with 28 M € and will last until 2013. The funds for these programmes come from the Land NRW and from the EU (European Fund for Regional Development).

Profile: The Cologne University of Applied Science (FHK, in German: Fachhochschule Köln) was founded in 1971 through the upgrading and merging of former engineering schools and higher vocational schools, the oldest of them established in 1879. FHK has a site in Gummersbach, about 70 km away from Cologne. FHK provides study programmes in applied social sciences, engineering and information technology. With approximately 16,000 students in over 45 study programmes, FHK is the largest of its kind in Germany. In 2008, UC reports about 800 staff, among them 405 professors. The FHK had a budget of about 81.5 M € provided by the Land NRW plus 7.45 M € of third party funding in 2006.

Main policies, support structures and governance models for UEPs: In September 2007, the FHK announced its research strategy 2015 ("Forschungsstrategie 2015"). On the basis of a SWOT analysis, the FHK developed a vision and a mission statement, presented plans for strategic development and defined operative aims including figures to be reached through concrete measures. From the management perspective, the steering body uses the tools of balanced scorecard and intellectual capital statement ("Wissensbilanz"). Transfer of knowledge and technology was declared an area of strategic importance. To be more visible, FHK established seven meta-areas, named clusters as a research profile. The evolution of activities and third party funding for research has undergone a dramatic rise: external grants increased from 46,951 € in 1986 to 75 M € in 2006.

Outstanding examples: Integrated and Dual Study Programmes. The bachelor programmes facilitate study in parallel to work and are designed to prepare for specialised tasks. Initial professional training on an advanced level is provided in a lifelong learning setting. Moreover, students have to undertake accompanying projects.
3.2.4 VALENCIA UNIVERSITY OF TECHNOLOGY (UPV)

Geographical location and regional context: The UPV is based in the Region of Valencia, one of the 17 Spanish autonomous regions. The region is located on the east coast of Spain and has a population of more than five million inhabitants. The Valencian economic model is based on SMEs, 99% of all businesses in the region having less than 50 employees. However, some multinationals are present as well, such as Ford, which has long-standing partnerships with the UPV. The UPV has four campuses; two in the city of Valencia and two in other towns in the Region of Valencia (Alcoy and Gandía).

Profile: The UPV was created as a university in 1968 and is currently one of the four technical universities in Spain, specialised in engineering, architecture and management. Currently, the UPV is composed of 12 engineering schools and three faculties. In the academic year 2005-2006, there were 35,579 enrolled students in study programs leading to 58 undergraduate and graduate degrees. In addition, the university’s Continuing Education Centre offered 1,633 courses to 45,671 students, having the largest offer of life-long education in the Spanish University system. In the same year, the university employed 4,600 academic and non-academic staff. The UPV budget for 2006 was 320 M€.

Main policies, support structures and governance models for UEPs: The UPV has a clear institutional structure to support different types and stages of UEPs, combined with a rather implicit set of incentives to academics for developing activities with the environment. There are five main bodies supporting specific activities related to university-enterprises linkages:

1. Continuing Education Centre
2. Centre for Support to Innovation, Research and Technology Transfer
3. Institute for the Creation and Development of Enterprises (IDEAS)
4. Integrated Employment Service (service for work placements and graduate recruitment)
5. City of Innovation (science park)

Outstanding examples:

1. The Valencia Biomechanics Institute is a centre in partnership with companies and regional government which promotes and undertakes scientific research, technological development, technical advice and training in the area of Biomechanics. With this integrative model it has succeeded in national and international markets.

2. The Valencia Nanophotonics Technology Centre is a research centre which has an interesting development of UEPs through acquisition, creation and research collaboration with enterprises.
3.2.5 **UNIVERSITY OF SANTIAGO DE COMPOSTELA (USC)**

**Geographical location and regional context:** The USC is located in the city of Santiago de Compostela, in the region of Galicia, in the north-west of Spain. Santiago de Compostela is a destination of Jacobean pilgrims and was made a UNESCO World Heritage City in 1993. With a permanent population of 95,000 inhabitants, Santiago is Galicia’s fifth city, a region with important economic differences. While population and main fishing and manufacturing industries are concentrated on the western coast (where the University of Santiago is located) the eastern provinces are economically dependent on traditional agriculture. The industrial sector in the region is characterised by SMEs and a few big companies (mainly in the automobile and the textile sectors).

The regional government promotes the Galician Plan for Research, Development and Technological Innovation 2006-10 through the Galician Inter-ministerial Commission on Science and Technology (CICETGA). This Plan reinforces the coordination of the main players in the regional innovation system in which universities and public research institutes play a key role.

**Profile:** USC is one of the oldest Spanish universities, dating back to 1495 when it offered studies in Theology, Grammar and Arts. Currently, it is a comprehensive public university that develops teaching and research in all areas. The USC has over 3,300 employees and almost 33,500 students are enrolled in bachelor, master and doctoral programmes. The total university budget in 2006 was 282 M€ (approximately, 21% comes from external funding).

**Main policies, support structures and governance models for UEPS:** In its Strategic Plan, the USC portraits itself as a university involved in generating wealth and employment, promoting the creation of businesses and the generation of an entrepreneurial culture in the university community. For this purpose, the main support structures are UNIEMPRENDE for the creation of spin-offs through the Business Ideas Program, the Incubator and the Innovation and Technology Transfer Centre (CITT).

**Outstanding examples:**

1. UNIRISCO and UNINVEST, the financial structures of UNIEMPRENDE in which universities, enterprises and financial entities join together with the common aim of raising money for the creation of technology-based companies.

2. The Ceramic Institute is a centre which promotes and undertakes scientific research, technological development, technical assistance and training in the field of Ceramics. Its Portfolio can be summarised as follows: 6 projects in the National Plan for R&D; 4 projects PETRI/CDTI (National Centre for the Devel-
ponent of Industrial Technology); 4 European Projects; 26 R&D projects from the Ministry of Industry; 22 projects from the regional government; 126 client firms; 300 technological services; 102 publications in high impact journals; 24 patents of which 8 are exploited; 14 doctoral dissertations and 4 spin-offs.
3.2.6 UNIVERSITY OF SEVILLE (USE)

Geographical location and regional context: The University is located in Seville, Region of Andalusia, in the south of Spain. Seville is the fourth largest metropolitan area of Spain with 700,000 inhabitants. The local economy is highly concentrated in the service sector, while agriculture and industrial areas such as mining and petrochemical are also present.

The regional government promotes the Andalusia Plan for Research, Development, and Innovation (2007-2013), a 25 M€ initiative which aspires to increase business competitiveness, enhance science and technology and promote knowledge transfer in the region. The regional government has also established the Andalusia Technological Corporation which fosters ties between local universities and businesses. These initiatives have increased the linkages between the USE and local SMEs and have allowed the creation of joint research centres and projects with different public and private partners.

Profile: Public university created in 1505. Currently, it is a comprehensive institution that develops teaching and research in all fields. The USE has over 6,400 employees and over 68,000 students are enrolled in bachelor, master and doctoral programmes. The total university budget in 2007 was 398M€.

Main policies, support structures and governance models for UEPs: The USE is reshaping its institutional policy towards increasing the collaboration with external agents in breadth and scope. This is observed for example in the construction of the Centre for Research, Technology, and Innovation (CITIUS), launched in 2004. CITIUS is a centralized large-scale facility for developing and managing research and knowledge transfer, serving both, university researchers and external partners. Also, the recent creation of the Lifelong Learning Centre (in 2007) aiming to become more responsive to the society and enterprises’ training needs reflects the interest in developing closer linkages with other partners and clients.

Outstanding examples: Noteworthy is the current emphasis on the creation and support to spin-offs; while some of them are based in the CITIUS building, others like GreenPower Technology, dedicated to renewable energy, are based outside the university but have a close relationship with university researchers.
3.2.7 POLITECNICO DI TORINO

Geographical location and regional context: Turin is a main industrial centre located in the Piedmont Region, in the Northwest of Italy. The city hosts the automobile manufacturers FIAT and Lancia as well as the aerospace company Alenia besides other important domestic SMEs and approximately 700 foreign companies. At present, Piedmont’s government is fostering the internationalisation of the region through the growth of investments. Universities, innovation hubs as well as science and technology parks can benefit from this policy as they contribute directly or indirectly to new investment in R&D. Piedmont invests 1.7% of its own GDP in innovation (more than three times the Italian average) but it envisages the goal of 3% of GDP within the next three years. At present there are 18,000 R&D professionals in Piedmont (i.e. 11% of national R&D employees) working in 200 public and private R&D centres specialized in automotive and information & technology, as well as in other innovative sectors such as bio and nanotechnologies.

Profile: Founded in 1859, the Politecnico di Torino is the oldest technical university in Italy. It offers higher education in engineering and architecture. In the last ten years the university has more than doubled its size and number of performances. It now has a total of 27,000 students enrolled in more than 100 degree and post degree courses. Its staff is composed of over 900 lecturers and researchers, and around 800 administration staff. The forecast budget in 2007 was 267 M€.

Main policies, support structures and governance models for UEPs: The Politecnico has a long tradition in collaborating with industry, especially with the automotive sector. In the last decade this tradition has been enriched by research partnerships in many other fields ranging from aerospace technology to telecommunication. Despite of being the only Italian university to raise almost 50% of its research funds through external clients, the Politecnico has included a further exploitation of the UEPs-potential in its last strategic plan. Therefore part of the of the expansion project “Cittadella Politecnica” (170,000 square meters) has been reserved for a Business Research Centre where technological transfer to interested enterprises can take place directly. Apart from the university’s own laboratories the new Campus will host, several research centres of international corporations such as General Motors. Besides, in order to assist the academic researchers in managing UEPs the Politecnico has developed a centrally coordinated network of supporting offices manned by skilled administrative staff.

Outstanding UEPs examples: Apart from some 800 contracts with enterprises signed every year, the Politecnico runs several long-term UEPs that include both research and teaching collaboration. The Technology Transfer Centre, ISMB, the Technological District Torino Wireless and the Agreement with General Motors on sharing human capital and R&D facilities are examples of these UEPs.
3.2.8 UNIVERSITY COMMERCIALE LUIGI BOCCONI (ULB)

Geographical location and regional context: The Bocconi University is located in Milan - the largest urban agglomeration in Italy with over 7 million inhabitants and the capital Region Lombardy which produces about one fourth of the Italian GDP. Besides having a very productive agriculture the region is home to a system of thousands of SMEs and 42% of the foreign multinationals settled in Italy. The penchant for technological innovation in Milan's area is evidenced by the number of patents registered in the city (around 30% of all patents in Italy) and by the large investments in R&D, estimated to be 30% of all such expenses in the country, which in Milan are mostly made by private companies.

Profile: Bocconi is a private university founded in 1902. It was the first university in Italy to grant a degree in economics. Today it also offers studies in business administration; law and culture and communication management. Bocconi has its own graduate business school (SDA Bocconi School of Management) which offers over four hundred one-day and short courses for executives and ten postgraduate specialisation courses. In 2006 the University had 12,700 students and 1,370 staff members.

Main policies, support structures and governance models for UEPs: In order to survive and develop as a free private university, Bocconi must rely on partners willing to support its research and to send their staff members to be trained. Therefore, Bocconi has always maintained close collaboration and exchange with enterprises and other legal bodies, by actively involving them in the design and planning of its courses and research projects. To foster these partnerships the university runs different programmes and services, ranging from an Internship and Placement Office linking enterprises to students to a “Partners for Development Programme” dealing with defining targets in terms of research and innovative projects. The coordination of these programmes as well as the creation of similar ones has been assigned to a so called “Relation with Enterprises and Legal Bodies”- Service.

Outstanding UEPs examples: Besides customized research projects carried out for enterprises, which produce about 10-15% of the university’s budget every year, Bocconi’s stands out for its UEPs in the realm of education: sponsored chairs, guest lectures by professionals, hundreds of advanced courses for managers jointly designed by Bocconi and employing firms and the “Claudio Dematté” Research Division at SDA, where research results are transformed into training supply, represent perhaps the largest life-long-learning system in the country.
3.2.9 UNIVERSITY OF THE SALENTO AT LECCE (USL)

**Geographical location and regional context:** Lecce (100,000 inhabitants) is a major city in the Region Apulia. Although the local economy is mainly agricultural the Region is the most industrialized of Southern Italy having traditional manufacturers, oil refineries, steel and aeronautics industries, and a growing tourism sector. The most recent regional government policy to support local development includes different efforts to foster R&D activities and highly qualified human capital: the foundation of a Advanced School (ISUFI) for talented students; the creation of a database (CRIS) mapping all research projects and competences in the Apulian universities by the Regional Agency for Innovation and Technology (ARTI), the opening of a technological district (Dhitech) and hosting the National Nanotechnology Laboratory in Lecce are all measures meant to attract innovative companies to the region and improve the competitiveness of local enterprises.

**Profile:** Founded in 1955 the University of Lecce became a state university in the year 1967/68 and in the year 2007 it changed its name to University of the Salento. It offers higher education and performs research activities in law, engineering, humanities, social and natural sciences. The university has some 29,000 students and 1300 employees. The total university budget in 2007 was about 150 M€.

**Main policies, support structures and governance models for UEPs:** Despite the decentralized research system (departments sign contracts with enterprises autonomously) central administration is undertaking several efforts to concentrate information, standardize procedures and unify contact desks for all those socio-economic players willing to interact with the university. A central institutional committee monitors spin-off projects; an Office for business relation (DIS) is in charge of internships and graduate employment support; an Industrial Liaison Office links the research output to the enterprises’ innovation demand, the membership in the technological district Dithech guarantees technology transfer and applied education opportunities at an institutionally coordinated level.

**Outstanding UEPs examples:** Noteworthy structured UEPs, with their own legal body are the technological district Dhitech, and the Industrial Liaison Office (ILO). In both of them the university holds shares in the property and high positions in the governance structure.
3.2.10 UNIVERSITY OF MAASTRICHT (UM)

Geographical location and regional context: The University is situated in the Limburg region, in the southern part of the country. Together with the neighbouring areas in Germany and Belgium the region forms the Meuse-Rhine Euregion, one of the oldest cross-border cooperation regions in Europe. The region went through an economic decline when its traditional industry, mining, suffered due to economic restructuring. The University of Maastricht (UM) was established in order to contribute to the economic growth of the region and ever since UM interacts closely with regional authorities and the Euregion.

Profile: University of Maastricht is the youngest university in the Netherlands, established in 1976. It has developed from a regional teaching institution into a Master and PhD level research university. Training medical doctors was one of the initial tasks of the new university and medical and life sciences still hold a key position. UM has a clearly developed profile. It has a strong international focus: a high proportion of international students and staff; a majority of study programs taught in English; and a unique problem-based learning approach to its study programmes, incorporating a strong European dimension. In order to build up its research capacity, UM has a strategy to concentrate on a limited number of research areas. UM enrols about 13,100 students and employs roughly 3,500 employees. The UM is cooperating with the academic hospital.

Main policies, support structures and governance models for UEPs: UEPs are well developed in UM, varying from ad-hoc contract research projects to complex public-private research institutes and university spin-off companies. Commercialization activities are highly professionalized and there is a clear separation of tasks, management, and staffing. The Centre for Contract Research, established in 2004, concentrates expertise related to the acquisition and management of research contracts from a range of disciplines and departments within the university. The Centre provides advice in the area of subsidies, business operations, legal matters, intellectual property rights and spin-off, finance, tax and administration. The Holding company, legally separate from UM, handles a share portfolio of research-based companies that have spun out of the university facilitates.

Outstanding UEPs examples: Through its Holding company UM owns 27 spin-off companies, 21 of them with full ownership and 6 with minority shares. One of them is BioMedbooster, a technology transfer organisation for life sciences and related fields, set up by UM, the university hospital, and LIOF Industry Bank (the Regional Development Company) to identify and protect novel findings that have market potential, and subsequently to commercialize these inventions. This may either result in establishing a spin-off company, or in the closing of a licensing deal with third parties.
3.2.11 UNIVERSITY OF TWENTE (UT)

**Geographical location and regional context:** The region of Twente, close to the eastern border with Germany, is economically not as vibrant as the western part of the Netherlands. In the 1960s the region suffered heavily due to the decline of the textile industry. Establishing the UT was one attempt to revive the region. Since then public-private partnerships are well developed in the region. The provinces, the business community and the leading knowledge institutes have cooperated in order to develop Twente into a Top Technology Region in the field of material and health technology. A fund of 200 M€ was made available jointly by the province, the municipalities and industry to support the implementation of a regional innovation agenda.

**Profile:** UT was founded in 1961 as a technological university and is a member of the Federation of Technical Universities (3TU) in the Netherlands. Its five faculties include engineering, social and behavioural sciences. UT enrols circa 8,000 students and employs circa 2,400 employees. UT profiles itself as “the entrepreneurial university”. Research is organized into six high profile research institutes. Making the results from academic research available to society is an explicit goal of the UT. The UT is professional and highly successful in attracting external funding.

**Main policies, support structures and governance models for UEPs:** The main strategy towards UEPs has been the promotion of an entrepreneurial culture in the institution, among staff as well as students. Departments are allowed to keep most (about 97%) of the external income earned in contract work. Each research institute has its own structure for developing UEPs and has a commercial director who looks after income generation opportunities for the Institute. Three UT research institutes have a business accelerator for scouting business opportunities. Kennispark (Knowledge Park) is the main support structure that manages most of the UT knowledge commercialization. It handles specialised technology transfer activities on behalf of the university, manages facility sharing arrangements between the UT and high-tech businesses, and runs the UT Holding Company which manages the UT shares in its spin-off companies. Through the TOP program it facilitates coaching for early stage entrepreneurs and spin-offs. It also supports UT business accelerators that attempt to identify at an early stage the opportunities for commercialization of UT knowledge.

**Outstanding UEPs examples:** MESA+ is one of the largest nanotechnology research institutes in the world that engages in several forms of commercialization activities, such as patenting, licensing, start-up companies, business development, facility sharing, contract research, joint R&D projects and the education of industrial staff. Langezijds is a new facility on the campus, founded jointly with a private company, to house incubators, student entrepreneurs and various entrepreneurship-related services. Its new name will be De Etalage (Dutch for Showcase).
3.2.12 UTRECHT UNIVERSITY OF APPLIED SCIENCES (HU)

Geographical location and regional context: The city of Utrecht is the fourth largest city in the Netherlands. The area is relatively wealthy, with a large and diversified service sector. Several policy initiatives in the region encourage entrepreneurship, innovation and knowledge exchange. One of them, Task Force Innovation, is a regional platform consisting of representatives from the key regional partners – business, knowledge institutions (including HU) and government. It formulates plans and initiates projects to support innovation processes in the regional economy. As two concrete steps, the city and province, in cooperation with the business sector, HU and Utrecht University have established a Science Park and StartImpuls Utrecht. The latter provides seed funding to technology-based start-up companies. Part of the Science Park is the Centre for Entrepreneurship.

Profile: As a University of Applied Sciences (UAS), HU’s mission is to offer higher vocational education and to be a regionally engaged provider of applied research activities connected to the professions. HU is the third largest UAS in the Netherlands with ca. 35,000 students. HU offers a broad range of programs in sciences and engineering, social sciences, health, and education. The majority of the students follow studies at the Bachelor level (79%), but also Master degrees (22%) and to a lesser extent Associate degrees are offered. Although HU has no ambition to become a research-intensive university it aims to become more active in creating knowledge in connection to its educational and professional fields, to upgrade the HU’s staff through applied research, and to act as a regional knowledge provider.

Main policies, support structures and governance models for UEPs: HU has a decentralized approach to developing UEPs. In general, all faculties and programs have strong linkages with related industries and professions. When developing curricula, the faculties communicate actively with external partners in order to assure the labour market relevance of the curricula. Although the staff mobility between the HU and the private sector is not formally facilitated, the individual connections tend to be strong because professional experience is a criterion for hiring teaching staff. Publicly funded research programmes that are available to UAS – the Lector and RAAK programmes - require cooperation with external (industry) partners. In order to be a stronger partner in UEPs, HU aims to build focus and mass in its research and partnership activities by concentrating its research on six knowledge areas.

Outstanding UEPs examples: (1) The RAAK project “Utrecht Design” started in 2005 and is oriented at the creative industry in the region. It has two consortium members (the HU and the regional Task Force Innovation) and several business partners. (2) HU has 38 Lectors. A lector is a new (2001) position in UAS, equivalent to an associate professorship. Lectors are co-funded by the government and meant to increase the UAS’ research capacity and build linkages between the UAS and external partners.
3.2.13 ADAM MICKIEWICZ UNIVERSITY (AMU)

**Geographical location and regional context:** The University is located in Poznan, in Western Poland, in the capital city of the Wielkopolska Region and has about 800,000 inhabitants. It is the fifth largest city in Poland and its economic position is one of the best among big cities in Poland, the unemployment rate being one of the lowest in the country. It is the third largest academic and research centre in Poland.

**Profile:** AMU is one of the largest academic institutions in Poland. The University currently employs 2,800 faculty and about 2,000 administrative and technical staff members. It is a traditional type, comprehensive institution, almost one hundred years old (opened in 1919). It competes successfully with the two other largest and most prestigious Polish universities: Warsaw University and the Jagiellonian University in Krakow. The University teaches about 50,000 students (2008) and has 14 faculties offering BA, MA and PhD programs. Students can choose from 45 areas of studies and 173 specializations within them. AMU cooperates with over 100 partner universities abroad and has been consistently ranked in the 3-5 position in Poland, depending on the methodology applied. It has a budget of 123 M€ (2008), its external funding reaches 4.1% (“competitive research grants” 3.6% and “income from selling research results” 0.5% in 2007).

**Main policies, support structures and governance models for UEPs:** AMU has been consistently involved in increasing its cooperation with enterprises in the last few years, following a more general national trend to link academia more closely to industry, in both teaching and research, especially with the aid of various EU funds. AMU runs a Centre for Technology Transfer which provides support for UEPs in the form of wide-range training activities in the area of academic entrepreneurship, innovation, intellectual property rights, spin-off companies etc. for academic staff, graduates and students. The new rectoral team (as of 2008) strongly supports the idea that the University is closer to the needs of society, industry, and enterprises, especially with the financial assistance of EU structural funds available for government-sponsored studies in the areas of technical sciences, mathematical/IT studies and biotechnology. AMU Foundation is an important support structure for UEPs. It was created in 1990 and in 1995 it opened the first science and technology park in Poland. The Foundation, although a separate legal entity, is closely linked to AMU and the chairman of its board of funders is AMU’s Rector. The Foundation is a “meeting place for representatives of science, modern industry and all aspects of entrepreneurship. The main purpose of the science park is to bring research results (and research scientists) closer to the social and economic practice in the Wielkopska region”.

**Outstanding examples:** Examples of UEPs come mainly from the AMU support structure – AMU Foundation, and include partnerships and contracts in such areas
as archaeology, chemistry and chemical technologies, physics and medical physics, acoustics and computing, geology and economics. The Foundation runs an extremely successful Science and Technology Park which hosts about 50 companies on the premises of its business incubator.
\textbf{3.2.14 Poznan University of Economics (PUE)}

\textbf{Geographical location and regional context:} The University is located in Poznan, in Western Poland, in the capital city of the Wielkopolska Region and has about 800,000 inhabitants. It is the fifth largest city in Poland and its economic position is one of the best among big cities in Poland, the unemployment rate being one of the lowest in the country. It is the third largest academic and research centre in Poland.

\textbf{Profile:} Poznan University of Economics (PUE) has been among top Polish higher education institutions and has been ranked second among Polish universities of economics. It was opened in 1926. It offers 7 study areas: economics, finances and accounting, spatial economics, computing and econometrics, international relations, science of commodities, and management. It also offers 36 specializations in the study areas. At a postgraduate level, it offers 52 postgraduate programs and 3 Master of Business Administration Programs. The total number of staff (2007) is 1,148, including 589 academic faculty and 559 administrative staff. The total number of international students is 102. The total number of students at all levels is over 16,000. Its total budget is ca. 25 M€.

\textbf{Main policies, support structures and governance models for UEPs:} PUE is engaged in cooperation with the business community offering unique thematic blocks for students carried out by specialists from the world of business, executives and management of leading Polish companies and enterprises and professors from foreign universities. The core lecturers from the business community are management members from companies and enterprises belonging to the Partner Club of the University of Economics. The most important change in the role of PUE in the context of regional economy in the last decade has been through the growth of student enrolments, growth of MBA programs – i.e. in an indirect way. The direct role of PUE for the regional economy, through e.g. UEPs, has been marginal. PUE faculty has been heavily involved in the growth of the private higher education in Wielkopolska. The most important linkages with the economy have been established without PUE – either through PUE Foundation or its (outside) consulting centre.

\textbf{Outstanding examples:} A good example of indirect UEPs and linkages to the economy is the MBA program at PUE, offered at high fees. Regular MBA studies started already in 1995, with the enrolment of over 850; currently the number of MBA students has reached almost 2,700. PUE has moved its partnerships with enterprises to its PUE Foundation (and its Consulting Office) and an outside Centre for Economic Expertise. Both institutions are independent from PUE. The Consulting Office of the Foundation of the Poznan University of Economics is located at PUE. The Office was opened in September 2000 in the legal form of a company with limited responsibility. The main partner in the company is the PUE Foundation which controls 80% of
its shares. The PUE Foundation was founded in 1992 with the idea of bringing PUE and the world of business together. The Chairman of the Foundations’ Council is PUE’s Rector, and its President has been the same in recent 16 years. The Consulting Office belongs in 80 percent to the foundation but does not belong to the university.
3.2.15 Poznan University of Technology (PUT)

Geographical location and regional context: The University is located in Poznan, in Western Poland, in the capital city of the Wielkopolska Region and has about 800,000 inhabitants. It is the fifth largest city in Poland and its economic position is one of the best among big cities in Poland, the unemployment rate being one of the lowest in the country. It is the third largest academic and research centre in Poland.

Profile: Poznan University of Technology is the second technological university in Poland, with 9 faculties, 17 areas of studies, almost 18,000 students, a total staff of 2,143, including 1,173 academic staff. It also has 580 post-master students and 530 PhD students. Budget: 65 M€. Total income from the industry is 7.1% (2007). The changes in the regional context relevant for PUT include transformations of the regional economy from mostly publicly-owned to mostly private-owned (which resulted in ownership changes to its major industrial partners); the ongoing change away from heavy industry in the region towards more service-based economy and the relatively poor condition of the largest regional companies.

Main policies, support structures and governance models for UEPs: PUT has been involved in close cooperation with industry for many decades. Compared with the 1970s-1980s, the intensity of partnerships with the industry, as well as their financial dimension, seems smaller. The state continues to finance the technical sector in higher education much better than the traditional university sector. In terms of cooperation with the regional economy, PUTs relationships with it are very significant, including financially. In the last five years, the share of income from UEPs has been significant. In general, UEPs’ share of income in that period was between 0.81% (in 2006) and 7.21% (in 2007). In 2007 PUT organized its “PUT Council”, consisting of top representatives of large enterprises (and business associations) cooperating with PUT. Its goal is to promote various forms of partnerships between PUT and the local and regional economy. The most important characteristic is the almost complete decentralization of UEPs: contracts are signed at the level of departments and chairs (rather than at the central level of the rectorate).

Outstanding examples: PUT claims that the most important UEPs are not those high in the amount of funding involved; those most valued are long-lasting UEPs, contracts resulting from long-term cooperation. Traditionally, for instance, PUT was strongly linked (since 1965) to the HCP factory, until recently the biggest enterprise in Poznan, producing ship engines and train carriages. PUT for decades has been at the disposal of HCP and both institutions could count on each other. HCP is still a major UEPs partner, although not necessarily in terms of funding. The average UEPs in 2008 was in the range of 6,000 – 19,000 € so it seems relatively small. UEPs in 2008 included preparation of models of some systems (water-supply etc.), prepara-
tion of principles of selection of some products or services (e.g. recycling), research on parameters of various materials, measurements, feasibility studies on the application of various technologies or computing programs, evaluations of production places or workplaces etc. Governance structures are very simple. UEPs are based on close cooperation on a daily basis between the enterprise and the PUT team.
3.2.16 UNIVERSITY OF WARWICK (UW)

Geographical location and regional context: The University of Warwick is located outside the city of Coventry, in the West Midlands region, in central England. The area was formerly a major centre of vehicle manufacture and other engineering work, and while some of this remains, the region has been attempting to develop a stronger knowledge economy base. Its universities have been a key part of this strategy.

Profile: The UW was founded in 1965 as part of the UK’s planned expansion of higher education. It is a leading research institution, and has recently established a medical school. Since its founding, the University has put emphasis on inter-disciplinary cooperation and on seeking industrial-academic linkages: from 1980, the Business School and the engineering department, through the Warwick Manufacturing Group, began to develop partnerships with the regional manufacturing sector. The student population is about 18,200, of which about 60% are undergraduate and 40% graduate students. International students represent 24% of the student population. Out of 5,168 staff, 1,067 are academic-teaching staff and 844 research staff. Its annual budget is about 390 M€.

Main policies, support structures and governance models for UEPs: The UW has an approach to UEPs that is fairly standard throughout UK higher education. One of the top management team (a pro-vice-chancellor) has enterprise relationships and knowledge transfer as key responsibilities and a small administrative team provides specialist support to academic departments in developing projects, managing intellectual property, and so on. Internal financial arrangements reward individual academics, or their departments, in appropriate cases. The UW emphasizes its decentralized, flexible management structure.

Outstanding UEPs examples: The UW Science Park is a joint venture between public and private partners. Its shareholders are the UW, the local councils and the West Midlands Enterprise Board, an economic development consultancy. Funding for businesses is provided by public authorities as well as by private companies. The Science Park has evolved since its creation in 1984 not only in terms of size but also in terms of strategy and scope. Currently, the Science Park has four sites in the West Midlands, including its major base adjoining the UW campus with almost 400,000 sq ft of space in which 144 companies are based. A further satellite site is under consideration. The main business sectors are software and electronics.
3.2.17 UNIVERSITY OF HULL (UH)

Geographical location and regional context: Hull is a port city on the north-east coast of England. It is geographically relatively isolated from other large urban centres. Hull was formerly an important fishing port and manufacturing centre, and although the immediate area contains several large, modern ports, the city itself suffers from high unemployment and relatively severe social deprivation.

Profile: The University of Hull (UH) was founded as a small university college in the 1920s to meet local demand for higher education, financed (as was quite usual in Britain at the time) from local sources and tuition fees. It expanded in the post-war period, and obtained full university status, with degree-awarding powers, in the mid-1950s, with increasing amounts of government funding. It has continued to expand subsequently, and now has over 20,000 students in the full range of academic disciplines with some important academic strengths. It is in many ways a classic “civic” university. It has recently developed a medical school with the University of York.

Main policies, support structures and governance models for UEPs: The UH has an approach to UEPs that is fairly standard throughout UK higher education. One of the top management team (a pro-vice-chancellor) has enterprise relationships and knowledge transfer as key responsibilities, and a small administrative team provides specialist support to academic departments in developing projects, managing intellectual property, and so on. Internal financial arrangements reward individual academics, or their departments, in appropriate cases.

Outstanding UEPs examples:

1. Hull Logistics Institute: this is an example of taking knowledge applied, and to an extent created, in a consultancy setting, and bringing it back inside the University to contribute to master’s and doctoral programmes on logistics matters. The interaction with local firms showed that there was potential demand for such courses, which led to the creation of the Logistics Institute, as part of the University’s Business School. This has now strongly linked the University to the regional logistics industry in the local ports.

2. Another example is the Wound Care Institute, a joint creation of Smith & Nephew, an international medical supplies company with a local plant, the joint medical school of the Universities of Hull and York, and the National Health Service (NHS) hospital and primary care trusts operating locally. This collaboration has led to the development of new types of wound dressings, as a result of combining the different types of knowledge within the partner organisations.
3.2.18 UNIVERSITY OF HERTFORDSHIRE

Geographical location and regional context: The University of Hertfordshire is located just to the north of London, with good road and rail links to central London and the north of England. It is in a prosperous area with low unemployment.

Profile: The University is a former polytechnic, originally strongly focused on the (now vanished) local aircraft manufacturing industry, and is now developing a distinctive profile as a “business-facing” university, with this mission informing its teaching as well as research and consultancy. Its claim for itself is that “the University of Hertfordshire is an ambitious and entrepreneurial University. It offers excellence in teaching, learning and research and puts students at the heart of its activities. It is a model of a 21st Century University, international, business-facing and business-like in approach – making it distinctive in an ever-changing higher education environment.” The University employs over 2,500 staff and a turnover of about 180 M€, and has a student community of over 24,000, including more than 2,000 students from over 85 different countries.

Main policies, support structures and governance models for UEPs: The University has an approach to UEPs that is fairly standard throughout UK higher education. One of the top management team (a pro-vice-chancellor) has enterprise relationships and knowledge transfer as key responsibilities, and a small administrative team provide specialist support to academic departments in developing projects, managing intellectual property, and so on. Internal financial arrangements reward individual academics, or their departments, in appropriate cases. The University’s “business-facing” profile gives this work special prominence in the University.

Outstanding UEPs examples: The relationship with Heales Medical Ltd is a continuing one, covering different types of engagement. The firm provides outsourced occupational health care to a large number of public and private organisations. They sought help on developing open-source software to manage aspects of their business, and the University provided a KTP (knowledge transfer partnership) Associate to work on this project. This was followed by work by the School of Psychology on procedures for on-line assessment of stress at work. As well as benefitting the firm, this project also fed back into psychology teaching in the University. It also led to the creation of a spin-out company, owned jointly by two University academics and Heales, offering “on-line lifestyle management” (e.g. obesity control).
4. Mapping of governance and policies for UEPs

The relevance of fostering linkages between universities and enterprises is present in the objectives, missions or actions plans of most of the universities studied and their countries. However, the degree and means by which this is done varies enormously. The hypothesis that ‘UEPs policy and governance mixes’ determine to a considerable extent their success was embedded when starting the GOODUEP project. After analysing six countries and 18 universities, there is no doubt that their approaches to UEPs governance are decisive in the partnerships’ magnitude, intensity and success. However, these ‘UEPs governance mixes’ are extremely complex since: (i) the stakeholders involved are numerous and of different natures (e.g. institutional actors, governments, enterprises and their associations); (ii) by participating in UEPs and UEPs governance, stakeholders seek a variety of objectives (e.g. complying an institutional mission and generating additional income for universities and for individual academics, fostering economic growth and innovation in the case of governments, optimising their investment in research capacity and infrastructure in the case of enterprises); and (iii) the range of potential mechanisms to govern UEPs is tremendously vast. These mechanisms include explicit and implicit policies and regulations, institutional support structures for UEPs, and even the embedded university cultures which to a great extent determine academics’ actions. All these may promote and incentivise or limit and jeopardise the development of UEPs, shaping their propensity to becoming successful UEPs.

The analysis of UEPs’s governance and policies is organised into four sections:

1. Types of UEPs observed in the case studies;
2. National-level governmental policies and regulations affecting UEPs;
3. Institutional-level governance and policies for UEPs; and
4. Institutional support structures for UEPs as the practical organisation of institutional functions to develop the partnerships.

Specific policies for fostering UEPs are analysed at a dual-level, governmental and institutional, when feasible. The main types of policies observed in the 18 cases are examined; namely: funding research and innovation, intellectual property, promotion of coherence between curricula and labour market demands, academics’ external income and human resources, fiscal incentives to enterprises and other incentives to enterprises. Most of these policy issues are treated at both national and institutional levels; however, some of them are applicable to only one level.

Although generally, the development of these policies can be attributed to specific agencies at one level (governmental or institutional), in a number of cases, especia-
lly when policies are relatively advanced or complex, cooperative action is frequent and initiatives are developed by a number of stakeholders (including different levels of governmental authorities, one or more universities, private companies and investors). Besides these mixed approaches to policies which affect UEPs, other considerations need to be taken into account:

- The assessed types of policies do not necessarily target the promotion of UEPs exclusively, but they do affect their development. Given the variety of activities developed under the scope of UEPs, a broad variety of policies naturally affects them.
- Although some policies are in fact designed and implemented at one level (governmental, institutional), they may be caused by policies or actions at other levels; i.e. institutional-level policies may be designed as a consequence or complement to governmental-level ones (at local, national or European levels) and it may be too that governmental-level policies are a response to actions or demands from the institutional level.
- The policies analysed in the next sections may affect UEPs in diverse ways; e.g. by regulating the activities undertaken in the partnerships, by fostering universities and or enterprises to work together or by limiting their collaboration.

Policy connections between the different policy levels (EU, national, regional, institutional and partnership) have been identified. However, in-depth analysis of policy-making linkages between levels is beyond the scope of this project.

It is necessary to stress the fact that UEPs policies and governance are to a considerable degree dependent on the institutional and national contexts in which they take place, and therefore, the contextual aspects described in the previous sections provide a framework for better understanding of the governance practices and structures.

4.1 TYPES OF UNIVERSITY-ENTERPRISE PARTNERSHIPS

In order to analyse the policies and governance structures ruling UEPs it is necessary first to identify the different models of UEPs and the activities developed within the framework of the partnership. Given that the GOODUEP project seeks to provide a general overview of the vast diversity of UEPs developed in the 18 cases, in the identification and analysis of UEPs the terms university, enterprise and UEPs have been considered broadly, as follows:

- The term “universities” refers to any type of higher education institution.
- The term “enterprise” refers to all types of business organisations, irrespective of their size, economic sector, ownership or profitability; i.e. this includes both public and private enterprises.
The term “university-enterprise partnership” involves all types of linkages between universities and enterprises, irrespective of their formality, scope and types of activities involved.

The main focus of the UEPs analysis has been their governance, considered as:

“Governance is the structure of relationships that brings about organisational coherence, authorised policies, plans and decisions, and accounts for their probity, responsiveness and cost-effectiveness” (Gallagher, 2001).

In these terms, the range of partnerships observed has in fact been broad, varying in their type of activity, complexity, number of stakeholders involved, financial and funding systems, profitability, sustainability over time and evolution over time. During the project, a distinction has been made between major UEPs with a considerable critical mass in terms of activity, duration over time or financial involvement, and short-term small collaborations. Given the difficulty of analysing these types of collaborations, only the former ones; i.e. those with a considerable critical mass, have been analysed in detail. Although short-term small collaborations (such as staff mobility) have not been directly assessed, institutional services to support these activities have been included in the analysis. This section provides a summary of the types of UEPs observed in the institutional visits offering examples for each type of interaction.

It must be noted that in numerous cases, the structures to support UEPs are partnerships themselves. Usually these include not only universities and enterprises but notably, governmental agencies. This issue is discussed in the support-structure section.

As third mission activities, most partnerships between universities and enterprises are related to or derived from teaching or research activities. However, in a number of cases, particularly in wide-ranging long-term partnerships, the activities developed integrate teaching and research related activities. In other cases, distinction between the linkages with the first or second mission is less clear, for instance, in entrepreneurship-focused programmes, where training for commercial exploitation of research is offered. Also, some interactions between university and enterprise are not directly related with research or teaching activities, and have another focus, such as cultural activities for the community of participation in governing boards of the partner institution. The main types of partnerships seen in the 18 cases are described next:

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1. **Creating large-scale long-term projects for strategic joint research developing.** These include science and technology parks (e.g. Kennispark- Knowledge Park at the U. of Twente), business incubators (e.g. Biopartner Center Maastricht in which the U. of Maastricht participates), large scale research centres (e.g. the Centre for Research, Innovation, and Technology- CITIUS at the U. of Seville) and regional-level R&D infrastructure (e.g. Science City project in which the U. of Warwick participates).

2. **Valorising research results in various forms including the creation of spin-off’s and licensing protected research results.** At the U. of Santiago de Compostela, commercial exploitation of research results, in particular through the creation of spin-offs is fostered through a comprehensive programme with funding, training, consultancy and networking instruments.

3. **Funding chair positions supporting both teaching and research activities.** At the Politecnico di Torino and the U. of Kassel endowed chair positions which promote research and teaching in special fields of interest are frequently developed.

4. **Developing joint research between enterprises and university researchers.** Very common type of partnership which is receiving increasing public funding as a means to promote innovation. For example, in the Technological District in which the U. of the Salento participates, this is a core activity.

5. **Contracting research.** Common practice in most universities; observed in diverse areas, notably in S&T but also in other areas. At Poznan U. of Economics (PUE), for example, in 2006 a “virtual museum” for the National Museum for Agriculture and Food and Agriculture Industry in Szreniawa (near Poznan) was created. It was research done by the PUE’s unit for computing.

6. **Renting of research equipment and facilities.** Enterprises may rent specialised equipment which is usually not profitable for enterprises to acquire given their limited use. At some research institutes at the Valencia U. of Technology this takes place. Usually this type of renting is comprised in broader research contracts.

7. **Lectorate positions.** In the Netherlands, Universities of Applied Sciences (hogescholen) are not eligible for research funding from the government, but applied R&D has gained substantial importance since the appointment of “lectors”. To stimulate the transfer of knowledge further, the government has started a programme on knowledge circulation between hogescholen and companies, especially SMEs. An important element in this program is the so-called lectorate, a senior staff position in the hogescholen. The lector is required to build a so-called knowledge circle of professionals from within the hogescholen and the business sector. The lector should work on stimulating the external orientation of the hogescholen in his/her particular area of expertise, engage in innovating the curriculum, staff development of teachers and stimulating knowledge
transfer between the hogescholen and its environment. Government subsidies have been made available to create around a hundred lector positions since its creation in 2001. Recent evaluations of the lectorates provided evidence of modest successes in these areas and contributed to the continuation and extension of the lectorate experiment. At the Utrecht U. of Applied Sciences, government funding for lectors is essential for the development of research. The government pays for approximately 70% of the lector positions and the rest are funded by industry, public sector organisations, etc.

8. Curricular development and course supply. Collaboration between graduates’ employers and universities to design responsive study programs. For example, Dutch Universities of Applied Sciences have set up a national structure to ensure the connection between their study programmes and the labour market’s demands. For each programme, at a national level a professional profile and professional qualifications are formulated under the responsibility of the world of work. Representatives from the world of work participate in field committees providing information on relevant trends in the profession in order to improve and update the content of the programmes.

9. Further training to enterprises’ employees, designed by demand or not. Courses may be short and specific or long and more comprehensive, for instance in the form of Masters. This training is offered through centralised institutes or des-centralised by departments or academics to whom enterprises request their services. For instance, the International Institute In Lifelong Learning (IIL3) at the Technische U. Darmstadt offer services for industry and individuals and consultation and support for the different departments and institutes of the university. IIL3 acts as an intermediary between enterprises inquiring about training programmes and the department or academic in charge. On the other hand, at Bocconi U., further training is offered directly by its School of Business Administration offering over four hundred one-day and short courses for executives and ten postgraduate specialisation courses.

10. Organisation of internships for students in enterprises. In some institutions and study programmes, internships and placements are mandatory for all students while in others this is optional. This affects the need and development of support structures to organise the internships and the intensity of the collaboration. For instance, at the Utrecht U. of Applied Sciences, in full-time programmes, placements generally constitute one-quarter of a student’s study while in cooperative education programmes, approximately half of the programme will consist of paid work in the world of work. In these cases, a tripartite agreement is entered into between the employer, the student and the university, to the effect that the student will perform assignments required by the programme within the company. The Utrecht U. of Applied Sciences has approximately 300 internship places supervised by someone from the business sector and a teacher at the university.
11. *Graduates’ recruitment services which include facilities for students and enterprises* including: electronic portals and fairs for matching enterprises and students, graduates databases and career advice for students. For example, the Politecnico di Torino through its ‘Stage & Job supplies’ offers a variety of campus recruiting services consisting of business presentations, recruiting days, business games, career fairs, face to face interviews, CV days or company workshops.

12. *Developing the entrepreneurial culture.* Mostly this is aimed at fostering the creation of spin-offs in the short term, but also to promote a cultural change within students to reach more entrepreneurial cultures in the long term. These activities are mostly organised by the university and in many cases have cooperation of governmental funding. It is a research and teaching related activity since it mainly fosters the commercialisation of research results by training students, researchers and academics on entrepreneurship issues.

13. *Cultural, social and sports activities which are funded and developed jointly by enterprises and universities.* These are related to broader ‘third mission’ functions, which in many cases involve UEPs. Some examples are: shared financing and use of sports facilities at Warwick University; shared financing and promotion of concerts at the Valencia U. of Technology.

14. *Supply of non-research or teaching related services to enterprises.* Some universities are active in offering diverse services to the community, including enterprises. This includes consultancy, retailing, etc. The U. of Warwick stands out in this regard, obtaining almost a third of its income in this way.

15. *Financial participation of universities in companies not spin-offs.* Although this type of linkage may not necessarily represent a partnership as such, it is worth acknowledging, that some universities, such as the U. of Kassel, have shares in different enterprises. This situation can obviously increase the possibilities of developing partnerships between those enterprises and the university. NB in the case of spin-offs, university policies in relation to having shares in them, represents a research-related UEPs policy which is discussed in the section dedicate to this topic.

16. *Participation in the governance bodies of universities.* This is not too frequent. It takes place in German universities and in some other places such as the Bocconi U., which due to its private ownership and disciplinary focus on economics makes it more prone to this type of interaction.

It is seen that UEPs related to teaching issues are generally more specific and feasible to identify in terms of the functions of each stakeholder and the governance of the partnership; in those related to research activities, different levels of commitment, complexity and duration in the partnerships between universities and the industrial sectors are seen. While the simplest ones - i.e. consultancy and single
R&D projects - are usual in most of the 18 universities, large-scale joint ventures are less common. The governance of UEPs, however, may be complex even for ‘simple’ collaborations. It is noteworthy that some of the interactions described above are not designed to develop specific joint activities, but represent long-lasting wide-ranging collaborations, as is the case of enterprise participation in university governing bodies.

4.2 NATIONAL-LEVEL GOVERNMENTAL POLICIES FOR UNIVERSITY-ENTERPRISE PARTNERSHIPS

4.2.1 FUNDING RESEARCH AND INNOVATION

At governmental level, the majority of policies designed to promote university-enterprise partnerships are based on funding or co-funding R&D. Funding can be directed either to support the creation of clusters, tax relief, to facilitate mobility between the university and the enterprise sectors, to create spin-offs, or other initiatives. Policies aimed at promoting UEPs are usually part of a more general R&D policy. In most countries, ministries playing a relevant role in the design of R&D policies are the Ministry of Education and Science (or equivalent) and the Ministry of Industry and/or Economic Affairs (or equivalent). Additionally, other ministries have a big say in specific policies on R&D, such as the ministries dealing with health, environment, defence, etc. In general, most countries have inter-ministerial coordination units or specific innovation bodies in charge of supplying concrete policy recommendations (the Council for Innovation and Growth in Germany, the Innovation Platform in the Netherlands, the Interministerial Commission on Science and Technology in Spain, etc.)

In most countries policies at regional level (and the link between the national and the regional level) are also relevant. This is especially the case in Germany and in Spain, but is also significant in Italy, the United Kingdom and the Netherlands. For example, in the case of Germany, policies at regional level are very important in the region of Hesse and Nordrhein-Westphalia as in the case of Science4Life (U. Kassel) and the Research on Energy in North Rhine Westphalia competition (U. Cologne).

Policies designed to promote university-enterprise partnerships based on funding and subsidising R&D differ in their focus and scope, and also in the range of policy instruments.

In this study, the Netherlands is probably the country with more diverse and focused policy instruments. It is also a country where the government started to pay attention to public-private partnerships relatively early, at the end of the 70s (in fact, some policies have been in operation since the early 80s). However, the diversity
of policy instruments has raised a debate about the effectiveness of generic versus specific instruments. At a much later stage, in other countries such as Spain, the diversity of policy instruments implemented in the last years to promote public-private partnerships is increasing (though its effectiveness is under debate). On the contrary, in other countries policies based on subsidising or funding UEPs are very limited; as in the case of Italy. In Poland, public funds are not available to encourage the creation of UEPs. In fact, funds used for funding UEPs come from EU structural funds, and these funds are allocated, to a large degree, to technology parks, centres for technology transfer etc., usually located outside universities and managed as independent companies.

Different policy instruments to support UEPs based on financial subsidies are presented below.

**The Netherlands**

<table>
<thead>
<tr>
<th>INSTRUMENT</th>
<th>DESCRIPTION</th>
<th>YEAR OF OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation-Oriented Research Program (IOP)</td>
<td>Competitive grants for innovative technological research projects in public-private cooperation. Some 15 programs aimed at strategic areas are currently running</td>
<td>1996</td>
</tr>
<tr>
<td>Open Technology Program (OTP)</td>
<td>Competitive grants to stimulate projects in universities with a potential for application and commercialisation (ca 40% success rate)</td>
<td>1981</td>
</tr>
<tr>
<td>Leading Technological Institutes (LTIs)</td>
<td>LTIs are virtual research institutes established in research areas that are industrially relevant. Subsidies for cooperative research between public research institutions and private companies</td>
<td>1997</td>
</tr>
<tr>
<td>Societal Top Institutes</td>
<td>Subsidies for research institutes focusing on social innovation. Equivalent to LTIs. Oriented towards social themes and social innovation (pensions and ageing; urban innovation; international law, etc.)</td>
<td>2006</td>
</tr>
<tr>
<td>Economic Reinforcement Fund (ICES/KIS) (led to Bsik)</td>
<td>Subsidies for cooperative research between public research institutions and private companies</td>
<td>1998 - 2002</td>
</tr>
<tr>
<td>The Bsik Program (Knowledge and Research Capacity)</td>
<td>Competitive fund program that supports projects in public-private consortia that carry out research in selected priority fields, such as genomics and life sciences, ICT, Microsystems &amp; nanotechnology spatial planning, and sustainable system innovations. Bsik is in its third round</td>
<td>2003</td>
</tr>
<tr>
<td>Technopartner Program</td>
<td>Subsidies, venture capital for private companies, advancing entrepreneurial culture, greater spin-off activity. The programme integrated several smaller initiatives that supported the creation of technology-based startups</td>
<td>2004</td>
</tr>
<tr>
<td>Casimir</td>
<td>Subsidies to foster staff mobility between universities and private companies</td>
<td></td>
</tr>
<tr>
<td>WBSO</td>
<td>Tax incentive for R&amp;D investments in private companies</td>
<td>1994</td>
</tr>
<tr>
<td>Innovation vouchers</td>
<td>Subsidies to SMEs to obtain knowledge from universities and other public research institutions. Originally proposed by the Innovation Platform. Vouchers (of 7500 € each) can be used to obtain available knowledge from universities or other research institutes</td>
<td>2004</td>
</tr>
<tr>
<td>Knowledge circulation from Universities of Applied Sciences to companies</td>
<td>Subsidies to Lecturate positions in the Universities of Applied Sciences to build knowledge circulation between the private and public sector (in research and curriculum)</td>
<td>2001</td>
</tr>
</tbody>
</table>
Spain

In Spain, as a consequence of the re-launch of the Lisbon Strategy in 2005, the National Reform Programme addresses R&D as one of its nine pillars. Ingenio 2010 is the programme launched in order to shift the policy mix in Spain towards higher quality research and innovation. Ingenio 2010 belongs, at the same time, to the Spanish National Plan for Scientific Research, Development and Technological Innovation 2004-2007, the instrument of the Spanish government for the management of R&D. There are two programmes (PROFIT and CENIT) within Ingenio specifically aimed at supporting UEPs.

**PROFIT programme**

Programme for the Promotion of Technological Research. Support through interest-free loans for competitive research projects by firms and/or public research institutes. The Ministry of Industry manages the participation when firms are the main beneficiaries and the risk is low, while the Ministry of Education and Science manages the participation of public research institutes and firms in the very early phases of R&D. Projects are small-scale (80,000 € per project) and low risk, since they need to reimburse the loans over a short period.

**CENIT programme (National Strategic Consortia for Technical Research programme)**

Firms propose specific projects related to the priorities identified by the central government (health sciences and biomedicine, agro-food technology, ICTs, production and design technologies, environment and renewable energy, new materials and nanotechnology, sustainable mobility and security objectives) where the selected projects are funded via grants. The projects must include at least six members in a consortium which must include at least two large private enterprises and an equal number of SMEs. In addition, it should include two research centres associated with or sub-contracted by participating firms which must make up 25% of the total budget. Finally, the companies must be able to provide half the funding necessary for the project. Projects approved in the first round involve 178 firms (51% SMEs and 49% large firms) and 208 research groups in universities, public research centres and technology centres (representing more than 800 researchers FTE).
Within the CENIT and PROFIT programmes there are several specific actions:

- Mezzanine loans to university spin-offs and public and private research organisations, as well as technology centres, enterprise incubators and science and technology parks
- The INNOEMPRESA programme provides grants for innovation projects (in production organisation, marketing and sales management, environmental management, energy efficiency, logistics, distribution and design)
- Networking of technological centres. This action is comprised of four measures: i) to help business groups or associations explore their technological needs and consider the creation of new technological centres via the CREA programme; ii) to boost support of the PROFIT scheme for technology centres; iii) to foster the creation of consortia among technology centres (at least three technology centres from three different regions must participate)

Germany

A very influential UEP policy has been implemented in Germany: 17 fields of innovation were identified, among them nanotechnology, biotechnology, optical technology, micro-technology as well as information and communication technology. A group of leading representatives from industry and science was established in order to ensure that the initiatives for High-tech Strategy serve real demands. Each member of the “Industry-Science Research Alliance” is a viewed as a promoter for one or several of the 17 innovation areas and five cross-cutting fields of the High-tech Strategy. Thus, growth opportunities should be identified in a dialogue between science, industry and politics.

Among the main policy instruments that have been implemented to support UEPs based on financial subsidies are:

Research Bonus

The Federal Ministry of Education and Research (BMBF) increased its activities to create closer networks between the research system and small and medium-sized enterprises (SMEs). A so-called Research Bonus was introduced aimed at mobilizing additional potential for cooperation with SMEs in higher education institutions and public research institutions. The Research Bonus is expected to serve as an incentive to enhance the SMEs’ competences in the field of knowledge and technology transfer. Research, therefore, should contribute to a rapid translation of findings in research and development into innovations.

The Programme for the Support of Enterprise Links of Universities of Applied Sciences

The BMBF established the programme “FHprofUnd - Forschung an Fachhochschulen mit Unternehmen”. From 2007 onwards, consortia at universities of applied scien-
ces (possibly joined by universities as well) and SMEs are funded with this programme. The programme aims to support technology transfer and to initiate applied research at enterprises useful for competence enhancement of students and academic staff at universities of applied sciences. In 2007, 106 R&D projects were supported with altogether 23.2 M€, and in 2008, 333 projects with 77.2 M€.

“High-Tech Strategy”: 6-billion-programme for Research

The federal government invested an additional six billion euro in R&D from 2006 to 2009 in order to increase incentives for innovation. The funds are provided for projects and measures with promising impact on innovation activity and markets in the future. The new innovation policy also comprises the so called “High-Tech Strategy”. The Governments aims to increase its stake in innovation expenditure of SMEs, improve financing conditions for innovation and to improve the transfer of R&D output to marketable products. Moreover special support will go to technology and knowledge based starts-up.

EXIST

The Federal government also supports measures such as EXIST, thereby encouraging graduates and researchers to start up companies within universities (incubators and campus companies). This also comprises facilitating the spread of such practice (covering IPR, social rights, financial arrangements, administrative and legal simplification, etc.) and promotion schemes. Support is also provided for the dissemination of best practices through pilot projects involving, for example, university technology-transfer departments and, the regional institutions concerned (e.g. local authorities, chambers of commerce), risk capital companies and technology (in East-Germany INNO-Regio for general cooperation, PRO-INNO).

United Kingdom

The Higher Education Innovation Fund (HEIF) is a public fund aimed at supporting university-business interactions. It is scheduled to rise to £150m in 2010/11 (still modest in terms of funding for teaching and research). Other proposals supported the development of “Centres for Knowledge Exchange”, which are partnerships aimed at developing good practice in knowledge exchange between institutions and businesses and within a specific region or sector. These Centres operate what have become known as KTPs, Knowledge Transfer Partnerships, linking universities to enterprises in specific projects.

In the United Kingdom there are a number of initiatives which support UEPs in various ways. These are funded by different central government departments and Regional Development Agencies (RDAs). These publicly-funded Agencies have subs-
tantial funding available to support strategic developments which may involve universities and enterprises. Main initiatives are:

- The University Challenge Fund, to support the early stages of the commercialisation of university research
- TCS (formerly known as Teaching Company Schemes), where joint research is undertaken in a company setting involving university and company staff.

The following initiatives are aimed at mobility of staff:

- CASE (Cooperative Awards in Science and Engineering) Studentships, to allow postgraduates to undertake research of value to enterprises
- the Faraday Partnerships, aimed at allowing the movement of specialist staff between universities and industrial firms, to support product and process development
- Royal Society Industry Fellowships, to promote greater interchange of staff between enterprises and universities

Italy

Criticism of the National Program on Research led, amongst other actions, to the Industry 2015 Plan to fill the Italian gap in research and innovation. Actions within this plan are the Progetti di Innovazione Industriale (PII), new enterprise networks and innovative financing and administrative simplifications.

New instruments of the PII are structured to stimulate the cooperation between local governments, enterprises, universities and public research institutions. The procedure for this cooperation is the following:

- The government (several ministries) proposes the Strategic Lines indicating technological areas and general objectives of industrial innovation, for the approval of a political committee at the highest governmental level (Cipe).
- CIPE allocates a first budget (Fondo per la Competitività, in total 990 M€ for the first 3 years) and appoints a Project Manager for each one, who will set up the administrative interventions, the criteria of public and private partner selection, the specific objectives (prototypes of product/service with industrial and economical returns) and the scheduling of the whole project.
- The Agenzia per la diffusione delle tecnologie e per l’innovazione will operate as moderator in the call for tenders starting in March 2008, and monitoring the state of advancement of each project approved.
The development of Technological Industries is also a key policy at regional level for R&D formally recognised at national level. Districts will raise up to 25; through scientific and technological parks, universities are more or less integrated in this structure.

**Poland**

Several intermediary institutions have been established to strengthen the linkages between science and industry. The most important bridge is the Polish Agency for Enterprise Development (PAED), established on November 9, 2000. PAED’s activities include supporting the collaboration of SMEs with public research units and promoting the commercialization of R&D results and supporting academic entrepreneurship. In total, PAED is responsible for the disbursement of almost 1 Billion € from EU structural funds. Another important organization is the Polish Federation of Engineering Associations (NOT) which is a non-governmental network with about 50 branch institutions. NOT managed about 400 small grants for development projects run by SMEs. Other linking institutions include the Industrial Development Agency, centres of advanced technologies, technology parks and centres for technology transfer. In 2005, there were 77 actively operating innovation centres in Poland (44 centres of technology transfer, 7 technology incubators, 18 academic business incubators and 8 technology parks. The Polish Academy of Sciences (PAN) units show the greatest “distance from industry”, OECD stresses. Companies rarely place orders with even the most renowned institutes in PAN. The PAN partners come from other academic institutions; they rarely work together with innovation incubators, nor do they establish spin-off companies. Funding for major intermediary institutions for science-industry comes mainly from public funds: state, regional, university and EU infrastructure funds.

**4.2.2 INTELLECTUAL PROPERTY**

All countries in this study place special emphasis on different issues regarding R&D-related intellectual property rights. Several countries are currently working on patenting regulations which are considered especially relevant in the case of university-industry partnerships. In some countries, as for example in the case of Germany, patenting rules are considered to be an obstacle to UEPs, whereas in other countries as the United Kingdom, intellectual property seems not to represent a problem for UEPs.

**UK**

Intellectual property laws have not changed significantly during this period (two decades). A 2006 review, the Gowers report, made a large number of de-
tailed recommendations of a largely technical nature aimed at clarifying and improving IP law in the UK, covering copyright, designs, patents and trademarks. Two recent reviews in this area – the Lambert Review of 2003 and the Sainsbury Review of 2007 – did not find that the IP regime adversely affected UEPs in any major way.

In Germany several measures such as a period preclusive of prejudice to novelty and debates on first-declarant principle or first-inventor principle, are being considered to regulate intellectual property rights:

**DE**

Criticism has been formulated by enterprise representatives concerning the patenting regulations: the prevailing regulations and practices regarding publishing and disseminating research findings are likely to lead to a loss of many potential patents for universities and research institutes. Even in sectors where inventions should have been publicly tested before patent application, the patenting rules turn out to be obstacles.

The German research bodies are in favour of introducing a period preclusive of prejudice to novelty in German and European patent law. The employers’ and business associations also call for international harmonisation of the patent legislation. They suggest combining the European principle of first declarant principle with a revised version of the American principle of first inventor principle. The period preclusive of prejudice to novelty would reserve 18 months to allow specifying whether the issue of a publication is part of a patent pending.

In the case of Germany, the Netherlands and Spain, there are governmental units that advise on, promote and support intellectual property rights and address specific issues on UEPs: The patent exploitation agencies in Germany, the National Bureau of Intellectual Property in the Netherlands and the Patent and Trademark Office of the Ministry of Industry in Spain.

**DE**

UEPs as knowledge transfer are carried out following different schemes in the German research system. The patent exploitation agencies (Patentverwertungsagenturen, PVA) play a specific role for the universities as they are located at the crossroad between science and market. The PVA should be restructured to better fit needs; the required changes include: concentration on few technological fields, free choice over the legal form (for instance Ltd), free choice of universities and research organisations on the PVA, subsidies based
upon results and on a diminishing scale from the Federal State and the Län-
der, support for recruiting qualified personal and regular evaluation.

**NL**

A low extent of patenting and licensing by universities, despite the pro-active attitude of the Ministry of Economic Affairs and other relevant interest groups, has been one of the concerns in the Netherlands. The government suggested that organisational, jurisdictional and financial problems might prevent the research community from exploiting intellectual property rights more effectively. Nowadays the common approach in the Netherlands is that the financial benefits of IP are distributed between the university, the research group, and the researcher(s). The common approach to handling the IP and other procedures related knowledge transfer are not a result of a formal government regulation but it is an outcome of voluntary initiatives and learning from best practices. Dutch universities voluntarily agreed to this common approach to IP rights and the plan was initiated by the universities themselves. Both national and international initiatives have had an effect on universities' policies. For example, the Responsible Partnering initiative promoted by the EAU or the PROTON network have helped to elaborate standard contracts, codes of conduct and provided databases of best practices in science-industry relationships.

**ES**

The Spanish Patent and Trademark Office (SPTO) is an autonomous body in the Ministry of Industry, Tourism and Trade that promotes and supports technological and economic development by offering legal protection for the different types of industrial property by granting invention patents, utility models, industrial designs, protection titles, trademarks, trade names, and distributing information related to these. No other public body deals with patent and intellectual property rights.

In Spain, the classical patenting and licensing regulations apply. IP policies are being discussed and improved.

With the exception of Poland, the general trend is that benefits from intellectual property should be shared between the university, the research group, and the individual researchers. In Poland, only the institution owns the patent and researchers receive no benefits from exploiting a patent. Additionally, universities are supervised by state agencies that make sure that universities, as public institutions, are not exposed to risks to public funding; consequently, they do not benefit from establishing partnerships with the business sector:
The current patent law in Poland is complicated; it is the tertiary institution which owns the patent, and a faculty member is not normally entitled to any career-related rewards when applying for a patent. The step suggested is the following: “given the small number of patent applications, it seems clear that the incentives for employees to apply for patents need to be strengthened. One approach would be to give explicit weight to patent holding in appointments and promotions to academic posts, while another would be to provide direct financial benefits for the patent-holder by way of a salary increase or salary supplement”.

Although a new intellectual property law was passed, allowing the division of revenues from university-business companies between universities and companies, the practical follow-up steps have been marginal. Universities are very afraid of joining partnerships with the business sector because, as public institutions, they fall under the powerful supervision of controlling state agencies (e.g. The Highest Chamber of Control, or NIK).

4.2.3 COHERENCE BETWEEN LABOUR MARKET AND CURRICULA

Probably encouraged by the curricular reforms that have been taking place in Europe as a consequence of the construction of the European Higher Education Area, employability and the importance of paying attention to the professional relevance of the programmes are considered more and more at universities.

In Germany, we see more links between higher education and industry than most observers assume by having in mind the Humboldtian principle of “Einsamkeit and Freiheit” (solitude and freedom), which shaped the German university tradition, that considers academic work as most successful if it freed from any external pressures for immediate utility. As stated in the following paragraphs, it is common practice in Germany that external representatives of the world of work become members of review committees for individual study programmes, also that academic staff has been employed in industry and, furthermore, that students work part-time in activities related to possible future work.

Germany is one of those European countries that emphasize close links between pre-career education and professional tasks. At university level, study programmes in engineering and chemistry were developed in close communication with industry, and public employers and ministries took care that curricula in medicine, law and teacher training were developed with a strong emphasis on professional relevance. In the latter subjects, students were not awarded a university degree at all,
but rather had to pass a state examination at the completion of study following by a later second examination after a period of professional practice. In Germany, many students get direct contact with professional practice prior to or during the course of study. Moreover, students in various fields of study, e.g. engineering and business, are encouraged to write their bachelor, master or other thesis in cooperation with an enterprise, thus getting involved in a highly practical issue in the final stages of their study and possibly even contributing to problem-solving relevant to the enterprise.

DE

Technical universities in Germany traditionally had close links to industry. Most university professors in engineering have been employed in industry, as a rule in the R&D sector, before being appointed to professor position. The most typical career path is employment at a university between the university degree and the award of the doctoral degree; about ten years work in R&D in industry, and eventually a professorship at a university. There are no similar career patterns in physics, chemistry or biology, but industry recruiting graduates in those fields collaborated closely with academics in those areas, and industry has been historically viewed as playing a substantial role in discourses about the curricula in those fields.

In the late 1970s, a system of approval of study programmes and examination regulations for study programmes was developed in German higher education which made it mandatory to include representatives of the world of work (enterprises, professional associations, unions etc.) in curricula commissions (across fields or specific for individual fields) on a national level as well as within individual higher education institutions. When an accreditation system of study was established in Germany around 2000, again, representatives of the world of work became members of all committees as well as of all the review committees for individual study programmes.

There is also a tradition that a substantial proportion of German students work part-time during their study activities to earn part or all of their living costs. 40% of graduates had gainfully worked during the course of study in activities related to possible future work. Moreover more than 60% of students in Germany participate in internships during their course of study. Both figures are above the average for the European countries surveyed.

As a rule, the Fachhochschulen (Universities of Applied Sciences), founded since 1971 as a second type of higher education institution, have a strong applied curricular emphasis. In the framework of the Bologna Process, the officially contrasting aims of
predominantly theory-oriented universities and applied-oriented Fachhochschulen were blurred to some extent. First, upon completion of a bachelor degree, the same type of bachelorship is conferred at universities and Fachhochschulen. Second, both universities and Fachhochschulen are entitled to provide predominantly theory-oriented and applied-oriented master programmes; certainly, though, theory-oriented ones are far more frequent at universities and applied-oriented master programmes far more frequent at Fachhochschulen. Among others, most Fachhochschule programmes comprise one or two semesters of work experience (Praxissemester). Often, the theses address practical problems that have arisen from collaboration with industry, trade and public administration. In the Fachhochschulen the link with industry is assured by the regulation that the entry qualification for professors in these institutions is five years of professional practice after the awarding of a doctorate whereby at least three of the five years of professional practice should have been in a professional area close to the study programme for which the person is recruited.

Universities of Applied Sciences in the Netherlands have traditionally been in close cooperation with industry. Particularly in the Netherlands, a concrete policy has been implemented to stimulate the transfer of knowledge between hogescholen and SMEs.

**NL**

The government has started a programme on knowledge circulation between the hogescholen (Universities of Applied Sciences) and companies, especially SMEs. An important element in this program is the so-called lectorate, a senior staff position in the hogescholen that was created in the year 2001. Government subsidies have been made available to create around a hundred lector positions. The lector is required to build a so-called knowledge circle of professionals from within the hogescholen and the business sector (in particular SMEs). The lector should work on stimulating the external orientation of the hogescholen in his/her particular area of expertise, engage in innovating the curriculum, staff development of teachers and stimulating knowledge transfer between the hogescholen and its environment.

The Italian Ministry of Education passed a decree in 1999 revised in 2004 in order to implement the Bologna process. One of the measures of the decree is the obligation for universities to consult enterprises or other potential future employers when designing new programmes of study. Also, the schema for the evaluation of didactics includes criteria about who has been involved in the programme definition of a course. However, in most cases this directive is either not applied at all or the procedure takes place in a very formal way, i.e. the external stakeholder just approves
the study programme contents proposed by the academics. A similar norm has been established recently in Spain also in regard to the implementation of the Bologna process.

In the United Kingdom, current proposals are aimed at strengthening the role of employers in Further Education colleges (FE vocational education sector).

Although not stemming from policies at national level, training services offered by universities to enterprises are a common practice in all countries in this study. These training services are not necessarily technological or research based. In Poland, training services from individual academics are probably the most common type of UEPs.

4.2.4 Academics' External Income and Other (Des)incentives to Academics

In Spain since 1983 academics have the right to participate in R&D contract activities. The new Law of Universities (LOU, reformed in 2007), also enables academics to participate in or to create firms.

In the Netherlands, academics can directly get additional (individual) income from contracts under strict supervision. Any contract that hires a university employee directly and remunerates his/her time must be approved by the Dean. Compensation for active participation in UEPs and for success in bringing in external funding is dealt through regular university salary scales.

In Italy, it is generally unusual for academics to get additional income from contracts with enterprises. However, due to institutional autonomy some universities may adopt their own rules in this regard. E.g. at the Politecnico di Torino there are personal economic incentives for those academics that procure contracts and agreements with enterprises. These allowances have to be approved by the department and faculty representative bodies.

In Germany, professors are entitled to spend part of their working time on side activities (Nebentätigkeiten). If they do so, they have to report about it (i.e. they do not have to ask for permission), and they have to transfer some of the funds to their institution of higher education if they have utilized institutional resources for undertaking these activities (e.g. a lump sum of 20%, if no major resources were employed). According to a survey undertaken in 2007, the university professors’ side income is equivalent to 10% on average and the University of Applied Sciences professors’ side income is equivalent to 11% of their salaries. Junior academic staff has to ask for permission for activities to generate side-income, and actually, their income generated that way is substantially lower than that by professors.
As an incentive for fostering UEPs, in most countries, there are specific policies to promote staff mobility between universities and enterprises:

In Spain, the Programme Torres Quevedo integrates universities and enterprises with the objective of 1,300 PhD holders hired each year from 2010 by the private sector) (The Plan I3, with 130 M€ for the following 3 years for increasing the hiring of researchers with an accredited background).

In the Netherlands, the Casimir programme has been established by the Dutch Research Council (NWO) to foster mobility of researchers between public research organisations and the private sector and to make jobs in research more attractive. It gives subsidies (up to 160,000 € per project) for projects having three partners - a company, a university and an individual researcher.

In the United Kingdom, the Faraday Partnerships are aimed at allowing the movement of specialist staff between universities and industrial firms, to support product and process development. Also the Royal Society Industry Fellowships promotes greater interchange of staff between enterprises and universities.

However, mobility seems to be easier at the beginning of the academic career than at higher levels. In Germany, frequent recruitment of practitioners to university professor positions is confined to the areas of engineering, education and fine arts. Moreover, there is hardly any mobility from professor positions and top positions in enterprises and from top positions in enterprises to professorships at universities. This is different at Universities of Applied Sciences where many professors were working in an enterprise prior to their higher education career. Even part-time options do exist.

Barriers to mobility are remarkably high in the Polish case: In Polish higher education, it is not possible legally (and mentally) to move between sectors; the mobility of academics to the business sector would in fact most often mean leaving the public sector altogether, with very limited or no chances of return to academia.

4.2.5 Fiscal incentives to enterprises

The promotion of fiscal incentives to enterprises at national level is present in several countries. Germany is one of the few countries with tax incentives for private companies to invest into R&D activities. In contrast, fiscal incentives have been adopted in the other countries surveyed as one of the most salient measures for the promotion of UEPs. In Spain, a recent tax reform has reduced the general corporate tax rate by 15% for all companies, in one year for SMEs (from 30 to 25% by 2007) and in two years for the rest of firms (from 35% to 32.5% by 2007 and to 30% by 2008). The
reform has also introduced a new discount of 40% in the social charges corresponding to R&D staff for the company that cannot be combined with the use of R&D tax credits on corporate taxes. Finally, the tax reform has established a progressive reduction (8% for 2007, and 15% for 2008) in the level of the R&D tax credit. The current system of R&D tax incentives will not be available until 1 January 2012. However, the central government envisages evaluating the relative effectiveness of the two alternative R&D support measures (reduction in social charges for R&D staff versus R&D corporate tax credits) before the end of 2011 and will then decide which one is better adapted to the needs of Spanish firms.

In the Netherlands, the Private R&D tax credit (WSBO) is one of the most important instruments that encourage private R&D. The WBSO reduces tax on salaries and social security contributions for companies with employees and deducts a fixed amount from the profit for self-employed persons. The total budget of WBSO will amount to 450 M€ in 2007.

Also in the United Kingdom, taxation rules have been changed to encourage greater private R&D investment.

In Italy there are fiscal incentives both from the National government and at regional level for enterprises willing to invest in R&D, but these do not address explicitly university-enterprise partnership but rather research activities in general.

In Poland, tax treatment of R&D is unfavourable: the rate of tax subsidies for 1 USD spent on R&D in both SMEs and large firms are the lowest among OECD countries and reached in 2006 0.01 USD respectively, the highest rate being for Spain (0.44) and Italy and Mexico (both 0.37) for SMEs and Spain (0.28) and Portugal (0.27) for large firms.

4.3 INSTITUTIONAL-LEVEL GOVERNANCE AND POLICIES FOR UNIVERSITY-ENTERPRISE PARTNERSHIPS

Similarly as with the national-level policies, the institutional-level policies and governance models presented in this section need to be understood considering their corresponding national and institutional contexts. As mentioned earlier it has been seen that contextual variables, regarding for instance, the structure of the higher education systems, the industrial compositions, and the historical and cultural settings, are key determinants of UEPs development. Also, they are important variables in defining the aims and expected outcomes of such interactions, thus affecting institutional strategies towards UEPs.

In this section, five policy and governance aspects are analysed from an institutional
perspective based on the 18 universities visited. The aspects are:

- Funding research and innovation
- Intellectual Property
- Coherence between labour market and curricula
- Academics’ external income and other incentives to academics
- Other specific initiatives to develop/strengthen linkages with companies

4.3.1 FUNDING RESEARCH AND INNOVATION

At the institutional level, R&D funding policies affect the development of UEPs by determining:

1. The distribution of their own funds for research, and the extent to which these funds need or may match complementary external funding;
2. The mechanisms made available to bring in enterprises’ funding for research.

The second one strongly relates with other institutional policies such as intellectual property rights, overheads, academics’ salaries and specific programmes to motivate the engagement of enterprises in joint initiatives.

Distribution of institutional funding for research

This section describes the different observed models of institutional arrangement for distributing research resources, including those from external sources, between individual academics, research groups, departments and central administration. In the 18 observed cases, generally, criteria for distributing the institutional funding available for research does not directly seek UEPs enhancement. Nevertheless, there are cases where to some extent it is considered. For example, the Technische U. Darmstadt supports Centres for Research Excellence under a series of conditions, among others the centres have to “set up in cooperation with several partners from research and industry from outside the university, and attract constantly high third party funding”. More frequently there are policies seeking for more applied rather than basic research because applied research is more prone to be co-funded by enterprises and commercially exploited. Besides, multi and trans-disciplinary research tends to have these characteristics and has been especially funded in various cases.

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6 An exception could be some universities in the UK, where since the Research Assessment Exercise (RAE) values the development of joint research with enterprises, the fact of investing their own institutional funds for developing this kind of UEPs would represent a way of also seeking more public funds by being better assessed in the RAE and therefore being eligible for more public funds.
At the **U. of Twente** (UT), faculties and research institutes are organised in a matrix structure. Although some research activities are linked only to the faculties, most of the research at the UT is performed in the six Research Institutes (‘spearheads’). An explicit goal has always been to develop research which contributes to solving social and technical problems — problems that are increasingly characterised by their trans-disciplinary and interdisciplinary nature. The scientific directors of the Spearhead institutes receive their budgets directly from the university’s executive board and bring in a substantial amount of third party funds. Besides this spearhead policy, entrepreneurialism was also encouraged by the university’s internal allocation model that puts a premium on departments bringing in research funds from research councils and other competitive sources such as the innovation subsidies awarded by the Ministry of Economic Affairs. For many of these subsidies a prerequisite is that the university research group involves a partner from the private sector.

At the **U. of Warwick** (UW), important strategic actions to promote research are taking place, based on the argument that although it is a potentially risky area, the pay-off can be significant since innovative ideas, products and services can be developed. In addition, there is large scale increase in research council funds for interdisciplinary research, having a potential impact on the university’s income. Based on these premises, UW is implementing a wide set of actions to promote inter-disciplinary research. It includes: (i) “The Birmingham Science City Interdisciplinary Research Alliance”, which is supported by public funding and will develop joint research projects led by Warwick or the University of Birmingham, around four main interdisciplinary themes; (ii) “The Warwick Digital Laboratory”, co-funded by the university and public funding, aims to provide create effective knowledge transfer between disciplines, academia and industry; and (iii) Colocation in a doctoral training centre where researchers have a desk in addition to the one in their faculty/department as a means of promoting research collaboration.

Similarly, research is a priority for the **U. of Kassel** (UK). This includes research cooperation and dialogue with research institutions from all over the world. The university has four interdisciplinary research centres. The centres, established within the university as independent research units outside the departmental structure, contribute to a certain extent to the teaching in related disciplines and allocate numerous project-based third party funding. Each centre has its own director who is responsible for strategic planning and the activities of the centre.

In some of these cases, another relevant governance aspect in relation to the distribution of institutional research funds is seen: the decentralised way in which research funds are managed. At the **U. of Warwick** departments are responsible for defining their own research strategies; at the **U. of Twente**, concordant with the
idea of responsible centre budgeting, costs and revenue decisions are the responsibility of individual faculties and academic units. At the Technische U. Darmstadt, the system to distribute internal funding to departments, institutes and professors, which includes the assessment of teaching, research and scientific results, is set so that when results are successful, professors have more financial freedom and flexibility.

Conditions for attracting research funds from enterprises

Mechanisms to facilitate or limit enterprises’ research funds are manifested in general institutional strategies and in specific regulations affecting academics and enterprises interest in working jointly. Specific regulations dealing with intellectual property, academics’ salaries and specific programmes to motivate enterprises’ engagement in joint initiatives are analysed in the next stages of the report.

At the U. of Twente, a prominent feature of its financial policy has always been the goal of having faculties carry out research and teaching for third parties. Departments are allowed to keep most (about 97%) of the income earned in contract work. Within the institutional breakdown of research financing, external funding reaches 24%.

Another aspect which affects academics’ willingness to engage in research projects with external partners is the institution’s overheads policy applied to externally-funded research. The Valencia U. of Technology has a complex but favourable system for academics which clearly promotes their interest in engaging in externally funded projects.

Valencia U. of Technology (UPV)

Researchers have very beneficial treatment in terms of the overheads required to pass to the central administration at the UPV. For both, competitive grants as well as contracts, the only proportion that the university retains from external funding is 10% of the additional payments to individuals having a contractual relation with the university. The UPV is the only Spanish university, according to the Spanish network of knowledge transfer offices which has this generous overheads policy. This represents a major incentive for research groups in the UPV to develop externally-funded R&D.

In the Polish universities studied, the overheads levels vary between 15% and 30%. However, other complementary – especially social security, pensions and tax regulations – make it less attractive for academics to engage in externally-funded research in public universities.
Adam Mickiewicz U. (AMU)

Including the university’s overheads (between 20 and 30%), income taxes and academics payments for social contributions and pension schemes, the share of the contract revenues an academic can obtain is always below 50%.

Poznan U. of Technology

The range of overheads is between 15% and 30%, depending on the unit conducting contracted research. At the same time, each department and faculty has its own planned amount of overheads (for a given year; rather than percentage of overheads based on the turnover). Consequently, overheads are both negotiable and are smaller once the planned amount of overheads has been paid to the central level. It means that the more contracts a unit has the smaller percent of overheads it pays to the central administration. There is the minimum amount each unit has to pay to the central university level, though, depending on a number of variables which include the number of staff, previous contracts etc. A similar, negotiable structure of overheads is used for all other types of projects and contracts, including international (especially EU) projects and competitive research grants from the Ministry of Science and Higher Education. The actual levels are set by individual directors in charge of a given project.

Another aspect affecting institutional willingness to value and attract external funding is how external income is perceived in academics’ activities. At the Valencia U. of Technology, the activity in relation to UEPs developed by academic staff is slightly considered in the mechanisms used to allocate institutional funds to centres and departments. This funding is allocated considering indicators of activity and of results. One of the indicators of results is external resources attracted by full-time academics with PhDs. This includes resources from enterprises but is not exclusive to them.

4.3.2 INTELLECTUAL PROPERTY

Intellectual property (IP) is approached differently in the 18 cases; even within one institution, the concern and approaches to IP regulation varies. This is partly due to the dissimilar impact that IP may have on the exploitation of research results in different disciplines and to academics’ scepticism regarding the compatibility between academic and commercial exploitation of research results. Two main aspects regarding IP are covered in the reports: the institutional regulations and specific strategies for exploiting IP results. Issues dealing directly with the organisation of the support for exploiting IP are discussed in the support structures section.
Regarding IP regulations, the **Valencia U. of Technology** has a simple standard approach which seems to complement its exploitation strategy effectively. The university owns all IP rights, including inventions’ patents, utility models, designs and vegetable deriving from results of research developed by its members funded with own or external funds. In the case of collaborative projects with other institutions (universities or enterprises) there are special agreements to share IP property which are negotiated case by case. The basic distribution of income obtained from exploitation of protected research results is 60% to researchers and 40% to university. However, in special occasions if the researchers support the protection costs with their projects’ funding, they may receive up to 75% of the income.

At **Poznan U. of Technology**, IP is regarded as relevant due to its impact in acceding to public funds.

**Poznan U. of Technology**

Innovations and patents, as well as UEPs, are important for both the national categorization of departments and academic careers of individual academics. In this respect, technical sciences (and PUT) differ substantially from other areas of research. The rules of parameterization of departments – which are directly translatable into state subsidies for them – take into account UEPs, patents, and inventions.

The **U. of Maastricht** approaches IP policy comprehensively considering a range of related topics.

**U. of Maastricht**

Due to the rise in knowledge valorisation activities, the university has realized the need to lay down a clear policy in this area. In its strategic report for the period 2007-2010, the university identifies intellectual property as a central theme in the knowledge valorisation policy. This includes: determining patentability, publication strategy, patent strategy, potential economic or social market value, compensation, the possibility to exercise rights under patent law.

In relation to strategies for exploiting IP results, there are individual and joint strategies related to internal incentives and conditions for researchers to patent as well as to exploit them later. The **Universities of Kassel and Darmstadt** participate in the H-IP-O Hessische Intellectual Property Offensive, in which the ten state universities cooperate. Besides cooperating in such initiatives, in the three German cases, some criticism from the universities can be reported concerning the demand from politicians to generate income by patenting and licensing. All three universities evalua-
ted expressed that this is unlikely. In their opinion patenting requires an enormous amount of preparation and fees to be paid for the patent certificate, which can hardly be recuperated.

University of Kassel and T. U. of Darmstadt

With the slogan “Headstart Information - Future maintenance for your company” the ten state universities of Hesse cooperate within the project H-IP-O to market product - and process - innovations. H-IP-O “considers only such legally protected R&D results as innovations, which offer unique selling positions in the form of having verifiable substantial market potential, e.g. by cost saving or being an “enabling technology”. As self declared innovation scout HIPO undertakes the search for suitable experts or innovations of enterprise request for the transfer of outstanding results of research by Hessian universities. It compiles information about non-prosecuted patents and patent applications worldwide and supports small and middle companies by introducing new products, methods or innovations. Therefore three so called patent- and utilisation agencies (“Patentverwertungsagenturen”) were established in the regions of northern-, central- and southern Hesse. The one responsible for Kassel is the Society on Innovation Northern Hesse called GINO (“Gesellschaft für Innovation Nordhessen”) and is situated in the same building as UniKasselTransfer. It is organised as a limited liability company (“GmbH”).

The U. of Twente also cooperates with other universities in strategic development for fostering patenting.

U. of Twente

UT with the two other technical universities set up a new patent plan including: 1) after applying for the patent, inventor(s) receive a bonus of 1500 €; 2) if a patent is exploited the revenues will be used to cover all direct costs of the application and maintenance of the patent. After all these direct costs are paid, one-third is for the inventor(s), one-third is for the research institute involved, and one-third is for the patent fund of Holding Technopolis Twente. In 2006, UT applied for 24 patents.

The U. of Warwick is assessing its IP policy since it regards it as a critical instrument which affects not only the development of UEPs and the financial results of its commercial exploitation, but also the access to public funds and results in comparative reports which consider IP indicators. Furthermore, given the potential impact of IP management, the issue is raised of what aims the university has with its IP policy. In terms of the patenting and licensing regulations, these are similar to those in other
universities which present information: all patents are registered in the University’s name and the institution pays all patenting costs. When royalties are achieved the initial patent costs are reimbursed to the University and the residual income is then divided in equal parts between academics, the department to which the academics belong and the university. Where very large sums are involved individual negotiations take place.

**U. of Warwick**

IP policy is a major concern for the University both as an instrument which provides a foundation on which collaboration between researchers and enterprises can take place and because of the potential financial benefits that may accrue from successful exploitation.

However, the implications of IP policy are wider reaching since it has become a mechanism used for other purposes and since it raises some fundamental questions on the role of IP in university policy. IP has become a metric used by governments and universities to measure their productivity, which itself may have an impact on obtaining public funding. On the other hand, IP issues are recognised as disincentives for industries to work with universities. Furthermore, the importance of IP in terms of its potential commercial value differs between disciplines; while in some, such as the pharmaceutical sector, IP regulations have large economic implications, in others, such as the automotive industry, IP policy is not necessarily a restriction to use the protected property in manufacturing. According to a top manager, although IP policies may apply differently in different sectors, the key question is what drives the University in its IP policy; to generate as much income as possible, or to promote as much quality research as possible. Whether these aims exclude each other or not is debateable. Another key question is raised: “How universities should not only be concerned about IP, but the social responsibility of IP”. This means to what extent universities foresee the social impact of the IP they generate and how do they take this into account in their IP commercialisation decisions.

In relation to the commercial exploitation of IP by universities, some criticism from the universities in Germany can be reported concerning the demand from politicians to generate income by patenting and licensing. All three universities evaluated expressed this to be unlikely. In their opinion patenting requires an enormous amount of preparation and fees to be paid for the patent certificate, which can hardly be recuperated.
4.3.3 COHERENCE BETWEEN LABOUR MARKET AND CURRICULA

The aim of being responsive to the labour market’s needs is frequently declared by universities’ leaders. Observed institutional mechanisms to target that aim are related to: presence on committees for curricula design, promotion of students’ interaction and experimentation of the world of work through internships and short enterprise-led courses, jointly offering study programmes and by involving representatives from enterprises in lectures. Some of these are explicit institutional policies, while others may be isolated experiences.

Regarding participation of enterprises in curricula design, few examples are present in the institutional reports; this may be due to the fact that collaboration in this respect may be decentralised processes whose results are usually less visible than in other types of UEPs. The Utrecht U. of Applied Sciences presents an outstanding case, which exemplifies a national-level policy mentioned in the governmental part.

**Utrecht U. of Applied Sciences**

The Dutch Universities of Applied Sciences set up a national structure to ensure the connection between their study programmes and the labour market’s demands. For each programme, at a national level a professional profile and professional qualifications are formulated under the responsibility of the world of work. In a reasonably future-oriented manner, the professional profile formulated must indicate:

- essence and central activities of the profession (or professional field)
- tasks and actions generally applicable in the profession
- extent of the complexity, communication, responsibilities and personal involvement connected to the profession

This professional profile forms the basis of the programme profile to be produced under the responsibility of the University (or Universities) of Applied Sciences with (national, uniform) programme qualifications. The programme profile describes the qualifications that a graduate will be expected to have. Some 70% of these so-called programme qualifications are nationally uniform; they apply to all Universities of Applied Sciences that offer the programme in question. The other 30% can be filled in (profiled) by the University of Applied Sciences and, subsequently, by the student in question (electives, etc.). This programme profile is elaborated on in the curriculum and attainment targets developed under the responsibility of the university.
Every group of Bachelor’s programmes in a broad field has a field committee from the world of work that represents the professional field. The field committee provides information on relevant trends in the profession in order to improve and update the content of the programmes. Course programmes are discussed with supervisory boards, with field committees and in regional networks and aligned with the regional labour market.

In relation to policies which promote consistency between labour market demands and curricula through the students’ contact with the world of work, most universities foster or require the development of internships to complete study programmes. For example, at the U. of the Salento, the Scuola Superiore ISUFI (which selects young talented students to follow learning paths- either before, after or in parallel with their main degree programs- in specific disciplines) emphasizes in its education and research programs a strong liaison with external bodies, firms and other actors of the socio-economic system. This is done through internships, scholarships, PhDs’ thesis and continuous learning activities organized for local companies’ staff. Also in Italy, an experiment from the Politecnico di Torino shows UEPs in which short courses are offered jointly with an enterprise.

**Politecnico di Torino**

In the context of a large, long-running partnership agreement, the Fiat-founded Italian laboratory for road safety has created the so called Road School. It is a driving course addressing students of the Politecnico to learn about safe driving and car handling. Lessons are provided by Fiat engineers, professional drivers and university lecturers. Students attending these courses receive credit points as in other curricular exams. The Road School project is part of a wider Corporate Social Responsibility programme of the car company that is intended to foster road security among young drivers by different initiatives.

Other means of promoting consistency between labour market demands and curricula is through targeted financing for endowed chair positions which promote research and teaching in special fields of interest. At the Politecnico di Torino corporate sponsoring of chairs is common. 11 enterprises contribute with 10 M€ for professorships, researcher positions and scholarships.

**Politecnico di Torino**

Enterprises interested in having a professor or researcher at the Politecnico who focuses on a certain field of study sign an agreement with the Politecnico in which they undertake to sponsor the position for ten years and the Politecnico on the other hand commits to hire the professor/researcher with a
permanent contract and bear the costs of his/her position from the eleventh year on.

This kind of agreement implies that the Politecnico has to be able to predict today whether it will have the resources to deliver on the commitment entered into or not in ten years time and that it has to be careful not to lose sight of those faculties and departments that do not get any professorship or researcher sponsored.

The U. of Kassel currently has ten endowed chairs which represent over 9 M€. These are funded by enterprises, private banks, associations and foundations. Their disciplinary range is broad and includes urban planning, ecological agricultural sciences, personnel and change management and informatics. Their duration and strategic approach also vary.

### U. of Kassel

Generally speaking the university has three kinds of endowed chairs. The first kind is the introduction chair in which the chairs become regular institutions of the university and from the end of the third party funding the chairs will be in the regular budget. It is a strategic instrument to modify the structure of an institute or department. The second kind is the endowed chair funded for a period of middle range. And the last kind is the endowed chairs which are created for special interests for a limited period of time.

At the Technische U. Darmstadt an endowed chair offering support in technology transfer activities has been running for several years.

### Technische U. Darmstadt

Interestingly, at the Technical U. of Darmstadt, in 2000 an endowed chair was created for a limited period aiming to foster technology based knowledge transfer projects. It is situated at the department of Business Administration, Economics and Law. It is specialised in seed activities and helps people with ideas to bring them to the market. In 2007 about 50 consultations were made. The chair is partly financed by the German Ministry of Economics and Technology (formerly German Ministry of Economics and Innovation).

The current chair holder has been working in the start-up consultation business for the last 40 years and has a consulting enterprise for the transfer of technology in large enterprises.

Seminars and lectures are not mandatory in the curricula of any faculty. Either
are they regarded as required elective or free electives. Nevertheless about 60 to 80 students from all kinds of disciplinary backgrounds attend the courses per semester.

The U. of Warwick presents an interesting case of an endowed chair which has had considerable impact on the responsiveness in teaching and research in relation to the market’s needs.

**U. of Warwick**

A US-based pharmaceutical company interested in investing to increase the profile of sleep research and sleep education in Europe proposed that the U. of Warwick to create a chair position with that aim. The company provides a 2.3 M€ endowment for the creation of a research group integrating sleep and cardiovascular epidemiology. The research has had a considerable potential impact on training and social policies issues. For instance, at the Warwick Medical School, students now have the possibility of taking a 30-hour module dedicated to Sleep Medicine, increasing therefore, the potential critical mass of specialists in this area. Also, important collaborations in research and joint teaching programs with Harvard University were developed.

Sleep research applications include molecules promoting wakefulness which are relevant for specialists at NASA space shuttles and for the armed forces. A new crucial area of application is shift work.

At Poznan U. of Economics, representatives from the business community offer lectures to students which combine theory and the practice of business activities.

**Poznan U. of Economics**

PUE is engaged in cooperation with the business community offering unique (in Poland) thematic blocks for students carried out by specialists from the world of business, executives and management of leading Polish companies and enterprises and professors from foreign universities. The core lecturers from the business community are management members from companies and enterprises belonging to the University of Economics’ Partner Club. The seminars offered by them combine theory and the practice of business activities. The majority of seminars are offered in the form of project-based work, case studies analyses and workshops.

At the Cologne U. of Applied Sciences, for example, a new master programme in cooperation with German Rail (“Die Bahn”, formerly “Deutsche Bahn”) road is being developed. The master in transportation will help the company to compensate for
the lack of engineers for the specific requirement to keep the maintenance of trains. This includes rail, signalling and other important engineering tasks.

Regarding students’ direct relationships with enterprises, at the same institution, each student has to spend 22-26 weeks on a placement in an enterprise. Another aspect of collaboration with enterprises is the development of bachelor theses. Sometimes enterprises present topics sometimes students or professors approach enterprises with a project. It is not unlikely that students start working in the same enterprise after graduation. An additional UEPs initiative is designed to attract future women students in technology.

Cologne U. of Applied Sciences

The programme women in technology FIT (“Frauen in Technik”) which is designed to attract future female students and is organised together with a local automotive company. While still in school they can participate in an introductory course which lasts two weeks: they spend one week at the FHK having lectures and getting insight into the practical side of the work. The second week they spend at the company working on a project.

4.3.4 ACADEMICS’ EXTERNAL INCOME AND OTHER INCENTIVES TO ACADEMICS

Similarly to the national level, at the institutional level there is not much information on the regulations on academics’ external income from UEPs. Cases observed indicate restrictions in the maximum amounts in individual contracts (in this case the policy was cancelled) and in the overall external income which academics receive. It is also presented the situation where the legal impossibility of having more than one paid job provides a disincentive to develop UEPs.

U. of Bocconi

Until 2004 an internal rule prevented Bocconi from signing contracts for more than 30 million Italian liras (about 15,000€) for customised research in order to diversify the private source of income and to remain as independent as possible. That rule has been now cancelled but the fear of mixing research with private advice to enterprises remains strong.

At the Valencia U. of Technology, conditions for academics to develop UEPs from which they can profit are quite favourable in terms of flexibility and income regulations. The only limitation in their income derives from a national regulation.
Valencia U. of Technology (UPV)

Academic staff at the UPV in Spain are entitled to develop research activities through the university receiving additional income from these, after being approved by the central administration. This gives flexibility to academics to develop additional activities, including research contracts and collaborations with enterprises.

Although academics have to teach, they do have a substantial degree of autonomy in relation to their contracts and expenses of R&D activities. Apart from the income limit mentioned above, generally they have flexibility but not pressure to develop externally funded activities, including those with enterprises. This is probably one of the key drivers to enhance academics’ interest in these activities.

Regulations at Adam Mickiewicz U. do not provide incentives for academics to be engaged in UEPs, a situation which is worsened when other contextual variables are considered. For this reason, academics are able to use opportunities provided by the AMU Foundation in their contacts and contracts with the industry.

Adam Mickiewicz U. (AMU)

There are no financial or non-financial ways to promote the engagement of AMU faculty in closer relationships with the business world. The number of staff involved in partnerships is very limited: up to 200 out of 2,800 (The final consequence of both aspects: small contracts, and even smaller remuneration, is that faculty members are not interested in partnerships and are not seeking them).

Until the introduction of the new law on higher education in 2005 (with a transition period until October 2006) academics were able to combine parallel teaching in an unlimited number of institutions and running private companies. Today, junior academics have no limitations in parallel employment (but they are not sought by the private sector either) and senior academics are legally able to hold two jobs in the university sector (public and private), or to have one job and to run a company. In all cases they are required to notify their rector.

4.3.5 OTHER SPECIFIC INITIATIVES TO DEVELOP/STRENGTHEN LINKAGES WITH COMPANIES

Besides the above mentioned policies affecting partnerships between universities and enterprises, in the 18 cases, several other initiatives to develop or strengthen linkages between both actors are seen. These initiatives do not necessarily partner-
ships promote as such, but affect the overall relationships between universities and enterprises, which do affect the disposition to partnering and the collaboration culture. Also, these initiatives are less connected with specific research and teaching activities and are more transversal, including linkages in managerial and financial aspects. The following types of initiatives standout: participation of enterprises in institutional governance boards and enterprises loyalty initiatives.

**Participation of enterprises in institutional governance boards**

In very different contexts, there are means by which enterprises have some participation or indirect incidence in the university governance bodies. While at **Utrecht U. of Applied Sciences** they have possibilities of having seats in supervisory or advisory bodies, at **Poznan U. of Technology**, they play an important role in a special council designed to foster collaboration between the university and the economy. In the case of **Bocconi U.**, the private sector in general has a fundamental role in the university’s governance structure.

It is necessary to differentiate the involvement of enterprises in governing boards due to ownership, and that due to a special interest in obtaining an enterprise perspective on the university’s key decisions.

While it is debatable whether this type of interaction between university and enterprise represents a partnership as such or not, it is clear that it is an interaction with a high potential impact due to its effect on top-level decisions.

**Utrecht U. of Applied Sciences**

Representatives from the world of work do not formally form part of the executive board of a hogeschool. However, they may have seats in the supervisory boards and advisory councils. In addition, many managers in universities of applied sciences originate from organisations, institutions, not-for profit organisations and local authorities.

**Poznan U. of Technology (PUT)**

In 2007 PUT organized its “PUT Council”, consisting of top representatives of large enterprises (and business associations) cooperating with PUT. The Council is headed by the vice-chairman of the board of the HCP Factory. Its goal is to promote various forms of partnerships between PUT and the local and regional economy. The large enterprises represented in the Council include various companies from diverse sectors (e.g. Poznan water-supply company, highway construction, Polish-Irish banking company, pharmaceuticals, electrical supplies), as well as the President of Poznan and regional authorities.
Bocconi U.

Bocconi’s decision-making structure is based on different governance bodies. Leadership and management functions are carried out mostly by members of the faculty. The university is governed by a “university board of directors”, the rector, the faculty council, and several department councils. The board appoints a chief executive. The board’s secretary serves as general manager of the university.

The board of directors provides the general guidelines for university activities and is responsible for all aspects of administration and financial affairs. The board is composed of 19 members, nominated by the two foundations which either have created the university (“The Bocconi Family Foundation”) or are actually supporting and supervising its activities (“The Friends of Bocconi University”). This latter foundation has the right to nominate the president and nine members (one being a student), then there is the rector, three members nominated by the Milan Chamber of commerce, five members nominated by the Italian ministry of university and scientific research, the Italian ministry of industry, the Milan provincial government, the Milan city council and the Lombardy province savings bank.

A similar type of interaction, but in the other direction has also been observed: financial participation of universities in companies. While above cases are described where enterprises participate in the governing boards of universities, there are some cases where universities participate in the governing bodies of enterprises by having share-holdings. This is related to the previously discussed issue of the financial participation in spin-offs, but also applies to companies which were not necessarily set up to exploit university research results. The U. of Kassel, for example, has shares in different enterprises which are not spin-offs. It fully owns the Kassel University Press, a 100% owned business, has 50% of UNIKIMS business administration programme, 50% of GINO society for innovation in northern Hesse and has shares in other enterprises. Overall income for 2006 was 367,000 €.

Enterprises loyalty initiatives

Some universities have special programmes to strengthen the linkages with enterprises and to give special treatment to their most important partners. These programmes reflect an institutional commitment with the development of UEPs. At least two of these programmes are observed in the studied cases; one at Bocconi U. and one at the Valencia U. of Technology.

Bocconi’s “Associated Company Programme” offers enterprises attending it preferential treatment. This program lays out the conditions and possibilities of a tight
partnership between the Career Service and firms. The objective is offering the best professional fit to graduates, while at the same time being offered the best possible answers to recruiting needs. The program offers customized assistance for searching through the profiles of students and graduates by putting emphasis on the company’s specific needs.

The “CPI Business Circle, UPV Club for Innovation” at the Valencia U. of Technology is a customer loyalty plan which aims to maintain and increase the interaction mainly with enterprises which are already customers and partners of the university. This initiative is led at the central level and developed jointly with the foundation that runs the University’s science park and the technology transfer office. The University’s Life-Long Learning Centre, Institute for the Creation and Development of Enterprises and Integrated Employment Service (service for graduates’ recruitment) also take part. Its main scope of action is regional enterprises which may collaborate with the university not only in research but also in teaching related activities. The university selects and invites a range of enterprises including those which standout in their current agreements and collaboration or have considerable potential, usual employers of the University graduates, related start-ups and members of association of local enterprises.

Within the framework of the business circle a range of activities are developed and a variety of services offered exclusively to its partners. These include sectorial enterprises meetings, an e-bulletin and a one-stop-shop for enterprise partners seeking services at the University. Also, enterprise members of the Business Circle are entitled to receive 18 hours free consultancy from the university.

European universities engage with enterprises in further scopes of action, beyond their teaching and research activities and their governance models. For example, at the U. of Warwick a close interaction for offering non-research related services to enterprises and for developing cultural, social and sports activities has been seen. Enterprises contribute to the university income by requesting a range of services, such as renting of facilities. 31% of the institutional budget comes from ‘other operating income’, which excludes fees, research grants and contracts and consists of income obtained by offering a variety of services to external customers: individuals and institutions, including private companies, government departments and agencies, local government and other universities. These services consist of consultancies, student residences, catering, retailing, conferences, and management training centres. These income streams are important not only in terms of funding, but also because of their impact on the institutional culture reflected in an open environment closely related to the surrounding community. The institutional approach to obtaining more income generated from its own activities was strengthened as a
response to a decline in public funds during the 1980s. Currently, increasing income from collaboration with industry and interaction with trusts, foundations, and individuals is part of the university’s strategy.

Also, the U. of Warwick has different types of associations with around 250 schools across the region, and strong links with local Further Education Colleges. Moreover, regarding cultural and social impact activities, the Warwick Arts Centre has more than 2,000 different events and attracts around 280,000 visitors a year. In addition, there are interesting partnerships for developing and having common access to sports facilities: through co-funding, local clubs may use facilities based at the University campus. Furthermore, university students undertake extensive voluntary work with local schools and community groups across the region.

4.4 INSTITUTIONAL SUPPORT STRUCTURES FOR UNIVERSITY-ENTERPRISE PARTNERSHIPS

Institutional support structures have been identified as key policy instruments to foster UEPs and related activities. Also, institutional governance regarding UEPs is very much reflected in and related to the design of support structures. Support structures refer to formal entities providing assistance in one or more aspects related to the development of UEPs. Such assistance may be offered on a voluntary or mandatory basis to academics, students, graduates and representatives from enterprises or other associations, or the community as a whole. Support structures provide assistance in issues such as entrepreneurship promotion, creation of spin-offs, management of intellectual property rights, external contracts and agreements management, recruitment, etc.

Support structures perform different functions or processes in order to offer such assistance. Different institutions organise, manage and govern the supply of these functions in different ways, leading to a variety of models. In order to allow comparability, in this report the focus has been put on support functions, which are offered by certain support structures or entities.

This section explains the organisation of entities and functions at the institutional level to support UEPs. Although the organisational structure of UEPs support is related to the institutional policies examined previously and to the institutional culture assessed next, they particularly refer to who does what and how to support the implementation of UEPs; they are specific actions and clear organisational structures put in place at the institutional level for fostering UEPs.

As in the case of policies and regulations affecting UEPs, in some cases, ‘institutional’ support structures are not only institutional. There are cases of support structures and functions developed jointly by the universities and other individuals or groups
of stakeholders, for instance, between the universities and the local government, or the universities and an enterprise, or more complex mixes. It should be acknowledged that there are also important support structures for UEPs outside universities. Regional governmental agencies and enterprise associations also offer support to UEPs. However, as far as observed in the 18 institutions studied, these tend to be more in the direction of policies and funding than in practical support structures for the implementation of UEPs. These situations are observed frequently in the Netherlands and the UK, where regional development agencies (or similar entities) and UEPs-related policies at that level are advanced and networks between regional stakeholders are well developed. The analysis of support structures for UEPs outside universities is beyond the scope of this project. In this section the organisation of internal institutional support structures is analysed.

Institutional-level support structures and services to promote UEPs have been considered as: any institutional (central, faculty, department or other level) structure (organized entity) or service (offered by entities dealing with other main responsibilities) offered to academics, administrative staff, enterprises, graduates or students to promote some kind of UEPs or to facilitate its development. These structures and services have been organised according to the specific functions they develop. The choice of analysing them according to their functions has been taken since it is seen that similar agencies with the same label (e.g. technology transfer offices; student recruitment offices) in different universities actually provide different services. Therefore, the functions of the support structures and services is the first variable observed, analysing then, how these functions are delivered; i.e. how are they organised.

It is interesting to note when analysing UEPs institutional support structures and services, that although their general main aim would be to support UEPs, it seems that in cases with unfavourable institutional conditions and strong bureaucracy, the most effective ‘support’ is the possibility to develop UEPs at the boundary of institutions; i.e. by creating external self-governing bodies which allow the interested institutional actors to develop UEPs without being exposed to the adverse institutional conditions. This is seen in Polish cases and to a much lesser extent in some Italian and Spanish ones. In Poland, the situation is more dramatic since this ‘externalisation’ of functions seems to be the sole way to actually realize UEPs (mostly in research), whereas in some Italian and Spanish cases, this seems to be an option to make things easier, rather than the only possible way to do it.

Support structures perform functions which tend to be more related either to research activities (e.g. technology transfer offices) or to teaching (e.g. career services); however, this distinction is not strict since some functions affect both types of activities and since as mentioned earlier, some types of UEPs involve different types of activities.
4.4.1 Administration of Funds from Enterprises

External research funds can be broadly categorised by competitive funds or contract funds. Research funds coming from enterprises usually fit the latter category; however competitive funds may be obtained from governments by collaborating with enterprises as fostered by specific programmes.

Administration of funding from enterprises basically refers to dealing with all legal matters for the contract or joint grant including agreements of services provision, dealing with income and administrative expense procedures and developing financial and accounting reports. However, other functions such as (i) identification and dissemination of funding opportunities; (ii) management of technological demand, being an interface between organisations seeking technological partners and university partners; and (iii) protection and commercialisation of research results, may be offered by the same entity administrating funding from enterprises. This entity may be a Technology Transfer Office (TTO) or Industrial Liaison Office (ILO) or similar.

In the 18 studied universities, the organisation of the above mentioned functions varies considerably. The extent to which the function of administrating funds from enterprises is centralised/decentralised and developed solely or jointly with other functions determines important governance aspects of the relationships between the university and enterprises.

When assessing the administration of the function (i) administrating external funding, in relation to the co-administration of the function (ii) protecting and exploiting the university’s IP (including or not support for spin-off companies), the following situations are seen:

- **Central level entities in charge of both functions jointly, including support to spin-offs.** At the U. of Maastricht, the Centre for Contract Research is in charge of all these functions. It provides support for the acquisition and management of research contracts, advice in the area of subsidies, business operations, legal matters, intellectual property rights and spin-offs, finance, tax and administration. Also, it is the motor in terms of initiating, developing and monitoring large-scale innovation projects, both at a regional and national level. Similarly, the CTT of the U. of Santiago de Compostela, carries out all these functions; however within the CTT there is a clear administrative division: the Division of Research and Technology fulfils the first function while the Division of Entrepreneurship and Knowledge Transfer, the second with a strong emphasis on the creation of spin-offs.

- **Central level entities in charge of both functions jointly, excluding support to spin-offs.** At the Valencia U. of Technology, the TTO manages both functions,
except for the support to spin-offs which is the responsibility of another entity. This centralised approach allows the assessments of results at a central level and offers both, enterprises and university’s researchers, standard clear mechanisms. On the other hand it may be difficult to maintain a detailed overview of the IP potential.

- **Central level entities in charge of both functions separately.** The U. of Warwick has two different support structures: the TTO, Warwick Ventures, an independent department dealing with the protection and exploitation of IP (including support for spin-off companies) and the Research Support Services Office, which supports the University's research community regarding their externally funded research (identification of funding opportunities, contract negotiation, costing and pricing, proposal submission and award acceptance, and financial management). This approach seems effective in allowing considerable specialisation, especially regarding IP protection and exploitation, however it also presents some challenges to the coordination and interaction between the two bodies.

- **Decentralised entities in charge of both functions jointly.** The U. of Twente structure for knowledge transfer (KT) and knowledge valorisation is not centrally organised. Each research institute has its own structure for KT and has a commercial director who looks after the business part of the Institute. Three research institutes have their own Business Accelerator (persons who fulfil, for a certain (technological) domain, scouting and screening activities, patent strategies, preparing business start ups, fund raising and similar activities)

- **Fully decentralised administration of external resources and centralised IP management.** The U. of the Salento has a mixed approach. Individual academics, who enjoy a high level of autonomy from the university’s central administration as far as testing and research activities are concerned, directly manage their contracts. This allows a more flexible, less bureaucratic and thus faster and easier management of joint research projects; however it limits central coordination and availability of basic information, such as the number of projects, the staff involved, the costs and the revenues obtained. IP management, on the other hand has a radically different approach. It is managed by the Industrial Liaison Office, a limited liability company- independent legal body owned by the University (50%) and by the local industrial unions (50%). It is the first office of this kind to constitute its own legal body in Italy. It was designed to link the needs of local enterprises with academic output and to encourage modernization of local enterprises by supporting both technological transfer from university’s labs into the businesses and participation in regional, national and European programmes that promote and co-finance innovation initiatives.

- **Decentralised administration of external resources.** At Poznan U. of Technology, for example, the almost complete decentralization of UEPs is also reflected
in the management of external resources; contracts are signed at the level of departments and chairs (rather than at the central level of the rectorate). Financial decentralization was introduced in 1999 with the explicit intention to leave decisions and, especially, funding to those academic units which want to get engaged in research for the enterprises.

The ways of administrating funding from enterprises determine key aspects of UEPs governance, such as: who are the specific counterparts, which are the collaboration terms, how the communication between partners takes place and what types of partnerships are more or less enhanced. Certainly, there is no one size fits all recipe and many variables related to the institutional and to the potential or existing enterprise partners need to be considered when assessing these models. Also, the full picture, including the structures for fulfilling the other support functions needs to be considered as a whole.

4.4.2 PROTECTION AND COMMERCIALISATION OF RESEARCH RESULTS: PATENTING AND LICENSING

In the policy section of this report, intellectual property policies at the national and institutional levels were analysed. In this section, the organisational structures to implement institutional policies and to offer support in the process of protecting and commercialising research results are discussed.

Some structures for supporting the function of protecting and exploiting the university’s IP were described above in relation to the co-management of the function administrating external funding. But the organisation of the structures to support IP management are extremely varied; they also may be co-managed with other functions such as the promotion of spin-offs, they may be in charge of mixed entities in which external partners to the university participate and may be decentralised within the university’s structures. The most common situation, though, is to be managed by a central-level administered entity, usually in charge of other functions too: technology transfer offices.

The Politecnico di Torino participates in a joint large-scale initiative which develops technology transfer.

**Politecnico di Torino and Torino Wireless Foundation**

Torino Wireless Foundation was established in 2002, set up to promote the realisation within the Region, an innovative ICT technological district. The Foundation constitutes an ICT District development management and animation body. The final aim is to modify regional GDP by increasing its technological component.
The Foundation is responsible for several activities which include IP valorisation and enterprise acceleration.

The U. of Maastricht also presents an interesting case in which the management of IP is carried out through UEPs as such. BioMedbooster is a “valorization company” set up by three partners: the University, a university hospital and Industry Bank. It aims to create sufficient critical mass to utilise knowledge successfully and to accumulate the knowledge and capital needed to develop findings into products and spin-offs. Activities include identifying, analysing, acquiring, developing, expanding, managing and utilising knowledge and intellectual property rights in the field of life sciences, biotechnology, medical technology and other related areas.

4.4.3 CREATION OF SPIN OFFS

Fostering the creation of spin-offs and promoting an entrepreneurial culture have been identified as two important and different functions performed by institutional support structures. They are presented together given that noticeable initiatives observed in the 18 cases develop both of them jointly.

The creation of spin-offs is encouraged and supported through different specific functions, which, when offered, are presented with a variety of schemes and emphasis on different functions. The main support functions observed are:

- Business incubator support: advice and training on the development of business plans, assessment of their feasibility, implementation, etc.
- Business incubator facilities: physical space and basic services (internet, telephone) for spin-off companies.
- Fund-raising and funding for spin-offs: Allocation of institutional funds as seed capital and support in the process of raising funds from external investors.
- Institutional financial participation of the institution in spin-offs.

Not all of these services are offered in all institutions which create spin-offs. While advice and training is usually present, institutional funding is not always available, and the facilities offered vary in type and financial conditions (paying for them or not).

Besides these services, another crucial one is the following up of spin-offs and the generation of relevant statistics. Most institutions offering these services for spin-offs

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7 “A spin-off is a corporate action that occurs when a company distributes part of its assets to form a new publicly traded company. When a spin-off occurs, stockholders of the parent company receive shares of the new company in the form of a stock dividend”.
offs realise follow-ups and have some sort of statistics; however it seems that much effort needs to be put into this in order to refine the information and make it useful for those involved. For example, further data on spin-offs’ growth, survival, turnover and results may allow more efficient institutional policies and potential spin-off creators’ decisions.

This set of functions is managed by entities having varied levels of exclusivity in the support of spin-offs: by an institutional entity specifically in charge of supporting spin-offs, by an institutional entity in charge of a broader range of responsibilities, or by a group of entities with complementary roles. To increase variety, these services may be offered by institutions legally and financially within the university or outside of it.

At least five models of internalisation/externalisation of the main entities in charge of promoting the creation and supporting spin-offs are seen:

1. A first model would be for example the case of the U. of the Salento, where the support to spin-offs is offered by a central university office for business relations which besides supporting spin-offs, manages internships and coordinates job recruitment activities. The Technical U. of Darmstadt also offers support from the central administration structure. The department of research is in charge of the collaborative research centres, financing of research, promotion of young researchers, strategic alliances, awards in science and part of the knowledge and technology transfer. It also coordinates activities with the business incubator TIZ and other adjoined research centres. Besides this central unit, each faculty and professor is responsible for managing their individual research projects.

2. A second model of internationalisation/externalisation may be exemplified by the case of the U. of Santiago de Compostela. UNIEMPRENDE Programme which promotes the entrepreneurial culture in the university community particularly focusing on the creation of spin-offs, is based at the Innovation and Technology Transfer Centre, which formally depends on the Vice-rector of Research and Innovation. Although it has a strong formal dependency on central administration, the Programme is led with considerable self-governance due to the institutional backing and trust of its director. Also, some specific instruments used in the Programme are supported in external legal bodies. Likewise, at the Valencia U. of Technology, the Institute for the Creation and Development of Enterprises (IDEAS) focused on providing advice and training for the creation and development of innovative, technology-base and spin-off enterprises, accounts to the central administration and collaborates with other institutional related entities, having a certain degree of autonomy with 60% of its budget coming from external sources. Similarly, support to
spin-offs is provided at the **U. of Warwick** by an entity reporting to the central administration but having a good degree of autonomy. This case shows a slight tendency to having a more external governance structure. Warwick Ventures, the University Technology Transfer Office in charge of managing the university’s intellectual property portfolio, including the creation of spin-offs, is an independent department. In the future it may be steered by a board with some external members but not turned into a separate company, as suggested in an internal review. This would probably lead to a more external type of structure, in administrative and financial terms.

3. A third model represents a clearer externalization of the function and may be observed in two Dutch cases which have been studied. At the **U. of Maastricht** and the **U. of Twente**, support to spin-offs is delivered through holdings: legally separate bodies set up to undertake commercial dealings stemming from the university. Holdings commercially exploit the knowledge, products and services of the university, including the promotion and management of spin-off companies in which the universities are shareholders and the management of IP, support entrepreneurial activities and entering into joint ventures with private parties. Similarly, the business incubator at the **U. of Kassel**, is meant to create a direct chain from basic research at the university via applied research to the processing of the product; i.e. offering not only facilities but support in the creation of spin-offs. The incubator is administered by UniKasselTransfer, the limited liability company in charge of the transfer of knowledge of the university.

4. A different model of externalisation is observed in the case of **Adam Mickiewicz U. (AMU)**, where AMU Foundation, a non-profit organization, legally independent from the university realises much of the relationships with enterprises and their creation. Its links with the university are through its employees – who are also employed at AMU – its chairman of the Board (AMU rector) and board members, and the AMU name. However, the financial impact of the Foundation on the university as an institution is marginal.

5. Finally, a distinct model of externalisation of spin-off support management would be the case of the **Politecnico di Torino**, which is a key stakeholder in a non-profit consortium: I3P, the Innovative Enterprise Incubator of the Politecnico di Torino. Other stakeholders of the consortium are local, provincial and regional governmental bodies and the Torino Chamber of Commerce while its sponsors include several private companies and associations. I3P aims to promote and support enterprise creation across the territory and provides equipped premises to newly-established companies developing knowledge-based projects. The following table summarises these and other cases regarding the externalisation of support and management of spin-off companies and in relation to the exclusivity of their functions.
Table 1. Type of units in charge of managing and supporting spin off companies by level of externalisation of the university and exclusivity of functions.

<table>
<thead>
<tr>
<th>Type of Units</th>
<th>Offering Other Services Besides IP Management</th>
<th>Dedicated to IP Management Including Support to Spin-Offs</th>
<th>Dedicated Mainly to Supporting Spin-Offs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Within Central University Services</strong></td>
<td>U. of the Salento, T. U. of Darmstadt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accounting to the Central Administration but Having Certain Autonomy</strong></td>
<td></td>
<td>U. of Warwick</td>
<td>U. of Santiago de Compostela, Valencia U. of Technology</td>
</tr>
<tr>
<td><strong>Separate Units Set Up Outside of the University (E.g. as Limited Liability Company) Owned by the University</strong></td>
<td>U. of Kassel, U. of Maastricht, U. of Twente</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Legally Independent Unit Not Reverting Financially to the University</strong></td>
<td>Adam Mickiewicz U.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Delivery of Support Through Consortiums with Various Stakeholders</strong></td>
<td></td>
<td></td>
<td>Politecnico di Torino</td>
</tr>
</tbody>
</table>

The **U. of Maastricht** exemplifies a model of approaching the commercialising of intellectual property rights at universities which, to some extent, is expanding in other European universities.

**U. of Maastricht (UM)**

The UM Holding, established in 1992, is a limited liability company, fully owned by the UM. Its aims are to: Manage the participations and companies in which the Maastricht University has interests and to support such companies; Manage the subholding UniVenture BV, in which participations in spin-offs and start-ups and non-R&D-related commercial activities have been lodged; Provides services in the fields of personnel management, financial administration, and legal and tax matters to the UM Holding companies; Furthers interests on behalf of the UM in commercial settings. It serves 20 companies with different natures.
The university as a shareholder has given the UM Holding the explicit “task” to provide its own means. Apart from share capital, any claim for funding by the UM will be rejected. The profits of the UM Holding are invested in the university (e.g. for scholarship programs). The main decision-making body of the UM Holding is the general meeting of shareholder(s), i.e. the University of Maastricht. The company also has a Board of Commissioners whose members are not from the UM but from the business community, and one of the Board members is the Director of the UM Holding.

Regarding institutional support for the creation of spin-off companies, two cases standout, the **U. of Santiago de Compostela** and the **U. of Twente**. Both institutions offer comprehensive advice and support in the different stages and processes of creating a company. Particularly noticeable is the complex and widespread financial support systems at Santiago de Compostela which benefits other regional and Spanish universities.

**U. of Twente**

The Temporary Entrepreneurial Positions programme (TOP) started in the early 80s. The objective of TOP is to encourage graduates of the university as well staff members of the university, graduates from other higher education institutions and people from industry to start their own spin-off company.

Prerequisites for entering the TOP programme are having a business idea that matches the interest of staff-members in one of the research-groups of the university and having a consistent business plan. For the sum of 2,500 €, the TOP programme offers an interest-free personal loan of 15,500 € (if necessary) to be paid back in 4 years starting the second year, office space, and supervision from a business mentor and a technical mentor from one of the UT’s research groups. TOP also provides advice and training in preparing a business plan and elaborating management, marketing, and financing strategies. The TOP program is carried out by Nikos (the Dutch Institute for Knowledge Intensive Entrepreneurship) which is part of the Faculty of Management and Governance.

On average, each year there are about 60 people interested in the program. This leads to about 120 meetings (first and follow-up meetings) with entrepreneurs before they are ready to present their business plan to the TOP Commission. On average some 25 people each year meet with the Commission and about 20 are granted a TOP place. The survival rate of TOP spin-off companies is quite high (75%). It is seen as a very effective program for the region that creates on average 100 new jobs per year.
UNIEMPRENDE has as a main objective to increase the entrepreneurial culture among the university community giving special attention to R&D results that can be turned into a company. Its specific objectives include the creation of support structures and services for entrepreneurs, the diffusion of the entrepreneurial culture, the provision of information and support services for entrepreneurs and of support infrastructures: incubator facilities and financial support.

UNIEMPRENDE brings together different actors (universities, national and regional governments, enterprises and financial entities from Spain and Portugal), programmes and networks. Its main pillars are: 1) the financial structures, 2) the Business Ideas Program and 3) the incubator.

Regarding the financial structures, UNIEMPRENDE has designed several financial structures that cover new technology-based companies’ needs at seed and start-up stages.

- Venture capital societies: UNIRISCO GALICIA and UNINVEST.

UNIRISCO is a venture capital society run by USC that started in 2000 to support financially at seed and start-up stages the creation of spin-offs that come from the three Galician universities and the regional centres of the CSIC. The shareholders of the society are the three Galician universities, several Galician and Portuguese banks, and companies. UNIRISCO is a separate entity from the university.

UNINVEST is also a venture capital society initiated by the director of UNIEMPRENDE that started in 2005 to support spin-offs derived from Spanish universities. As in the case of UNIRISCO, UNINVEST is a separate entity from the university.

- UNIBAN (University Business Angels Network). UNIBAN is the first Business Angel Network promoted by a Spanish public university. The Network acts as a bridge between academic entrepreneurs looking for funding and private investors willing to invest their money and contribute with their know-how to good ideas that can turn into a technology-based company.

- Unimicro-C (micro-credits) and Uniguarantees. Both are financial mechanisms offered by banks. The Program acts as an intermediary between the entrepreneur and the banks. This financial mechanism is mostly used in projects related to the social field.
As far as facilities for spin-offs is concerned, in some cases they are provided by the same entity offering managerial and financial advice and support (e.g. U. of Kassel), while in others, facilities are dealt with separately. In some universities where science or technology parks have been developed, facilities for spin-off are offered there, sharing them with non-spin-off companies (e.g. U. of Warwick, Valencia U. of Technology). In other similar cases, when universities have large comprehensive research centres, this support is provided in those facilities (e.g. U. of Seville).

**U. of Kassel**

In 2006 the Business Incubator Kassel was opened beside the main campus, co-financed by ten enterprises and the university with a starting capital of 200,000 €. As support and contact to the local businesses evolved, an exclusive council was established. The city of Kassel cooperates in the renovation of an old factory building to offer more incubation space.

Also, recently UniKasselTransfer obtained funding from the German start-up from science competition EXIST from the ministry of economy and technology. The university will get 80,000 € for the coming three years to enlarge the support schemes.

Differently, the Technische U. Darmstadt collaborates with another university, city and regional governments, two chambers of commerce and two local banks in the business incubator TIZ. Almost 100 enterprises of different sizes are located in the TIZ with more than 85% of them being involved in some kind of software and ICT services. The Utrecht U. of Applied Sciences through its incubator CUBE offers infrastructural facilities (office space, computers, etc.), in this case, to students and staff that wish to start up their own company. 10 companies are housed in this facility.

### 4.4.4 PROMOTION OF ENTREPRENEURIAL CULTURE

Most of the analysed universities have some sort of programmes or entities for the promotion of an entrepreneurial culture. Some of them target mainly students and graduates; others, researchers and some, the whole university community and even beyond it. In some cases, the promotion of entrepreneurial culture is developed by the same entity in charge of supporting spin-off’s as part of the training while in others is done by a different body. There is also variety regarding the disciplinary focus of the programmes; i.e. for all disciplines or targeting some in particular.

As explained in the above section of support to spin-offs, the U. of Santiago de Compostela through its programme UNIEMPRENDE promotes the entrepreneurial culture among the university community particularly focusing on the creation of spin-
offs. In addition to the various training and financial instruments for promoting spin-offs, UNIEMPRENDE fosters an entrepreneurial culture through several other components of the programme: Uniemprende Business School, Competitions of Managerial Ideas/Projects and Woman Emprende. UNIEMPRENDE offers seminars and workshops for academic staff and students/graduates and training courses for technical staff from Spanish universities’ technology transfer offices.

The **U. of Twente** presents a case in which entrepreneurship is fostered by a specific and specialised institute designed with this aim and also, by an active Student Union.

**U. of Twente**

NIKOS (Dutch Institute for Knowledge Intensive Entrepreneurship) was established in November 2001 as part of the Faculty of Management and Government to carry out teaching, research and consultancy on the topic of knowledge-intensive entrepreneurship. There have been entrepreneurship programmes for students since the mid 80s. Since the end of the 1990s a minor programme (20 ECTS) on Entrepreneurship is offered by Nikos to students. The programme consists of the following courses: market-oriented entrepreneurship, financial management, business law, writing a business plan and managing an SME. NIKOS also manages the TOP programme, which supports the creation of spin-off companies and was described above.

In addition, stimulating entrepreneurship among students is a goal of the Student Union. The Student Union’s taskforce USE (University Student Enterprises) encourages and supports the university’s 100+ student-run enterprises in a variety of ways. Students are offered office space and courses in entrepreneurial skills. The USE also organises networking activities that involve businesses (e.g. a Student Entrepreneurs Day). In 2006, the Student Knowledge Portal (www.studentenkennisportal.nl) of the Student Union was opened to offer Twente-based SMEs the opportunity to submit knowledge and research questions to student organizations, entrepreneurs and practical placement coordinators.

The case of the **U. of Maastricht** also has a specialised instrument to foster entrepreneurship, particularly among students.

**U. of Maastricht**

The SME Portal facilitates knowledge transfer between the university and SME entrepreneurs in the (Eu)region. The SME Portal gives local entrepreneurs access to the knowledge of UM and aims to contribute to the economic development of the region. The SME Portal has to a large extent an educational fo-
cus. Its main activities include training in entrepreneurship for students and allowing students to get acquainted with SMEs at an early stage.

The main activities of the SME Portal are: research or internship assignments carried out by university students, training programmes in entrepreneurship, and entrepreneur lectures.

At the Valencia U. of Technology, the Institute for the Creation and Development of Enterprises (IDEAS), besides supporting the creation of spin-offs, develops entrepreneurship culture by offering workshops for entrepreneurs for personal development, directive development and enterprise management.

Other initiatives for fostering entrepreneurship among students are not developed in the framework of an institutional support structure. This is the case of certain departments at Technische Universität Darmstadt.

Technische Universität Darmstadt

Some engineering departments have a one week’s special training to raise awareness and initiate the entrepreneurial spirit of students. This is developed during the first semester of studies. Classes are stopped for one week and students are put together in teams of five with different tasks to fulfil. They play roles: one is made CEO, one has to develop a business plan, and another is responsible for research and another one for marketing. They are given a project and one week to present a solution. For example, in the department of mechanical engineering all 28 professors assist the students in their project during the week. On the last day all teams have to give a presentation and a ‘jury’ inspects all material put together by the team. The best team is able to construct the planned machine according to their plans.

4.4.5 FURTHER TRAINING TO ENTERPRISES’ EMPLOYEES

Most of the universities studied offer further training courses for enterprises; however, the governance structures to offer these services vary in many aspects. A set of variables differentiates the governance and management structures of these services between universities:

- The level of centralisation with which training courses are offered; i.e. organised, designed, delivered and managed by central-level entities or by departments, faculties or individual staff. For example, the U. of Seville shifted its approach in 2007, from being fully decentralised in its offer; i.e. managed and delivered directly by departments, to being coordinated at the central level. The newly created LLL centre integrates training activities which were de-
veloped before but managed separately. The **U. of Utrecht** exemplifies a case where although training supply to enterprises has a decentralised management, it is an important activity within the university.

- **The tasks of organising, designing, delivering and managing training courses may be shared between central and decentralised entities.** For instance, at the **Technische U. Darmstadt**, the International Institute in Lifelong Learning acts as a linking point between enterprises requesting services and the department or person in charge of the topic.

- **Intensity and relevance of training for enterprises in university activities.** This activity may be a key activity or a marginal one in terms of the overall institutional activity. At the **Valencia U. of Technology**, it is a strategic activity. The centrally managed Lifelong Learning Centre annually offers 1,600 courses to 45,000 students having a turnover of 8.5 M€. The Centre represents an important linking point to develop UEPs and to develop large scale international collaboration (currently is managing the whole vocational training system of Colombia). As mentioned earlier, the U. of Bocconi also has intense training activity for enterprises offered by the School of Business Administration (SBA). The governance structure of SBA is similar to the governance of other schools, differently from the situation at the **Valencia U. of Technology**.

- **The extent to which further training centres are managed by the university only or with external partners.** In most cases, the management and delivery of training programmes for enterprises is done by the university. However, there are exceptions, such as the case of the **U. of Kassel**. The University offers FE and LLL by two means; directly by departments and by Uni Kassel International Management School (UNIKIMS). UNIKIMS is a UEP which has the **U. of Kassel**, three enterprises and the chamber of commerce Kassel as partners. UNIKIMS was set up to offer further education courses for enterprises and integrated programmes for the development of competences. The enterprises participate in UNIKIMS’ council helping to keep the offers and demand harmonious.

- **The types of clients attended (mainly in central-level entities); i.e. enterprises’ exclusivity regarding the services offered.** In some cases, such as at the Warwick Manufacturing Group (WMG) at the **U. of Warwick**, training courses are designed and offered mainly to enterprises, ranging from local SMEs to large multinationals. However, training courses do not particularly target individuals interested in FE. Although enterprises may contract courses designed according to their own requirements, when courses are also offered to individuals, enterprise employees may take standard courses as well. This is the case at the **Valencia U. of Technology**. Differently, at the Cologne U. of

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8 Nevertheless, the WMG does offer PhD courses jointly with a University Department which targets individuals.
Applied Sciences, together with offering training courses open to the public, it also offers bachelorships which are for a certain period exclusive to employees of the partner enterprise.

**Cologne U. of Applied Sciences (FHK)**

The FHK set up two bachelor programmes offered on special contract with enterprises, also known as cooperative university. Examples are the bachelorship in credit services set up for the Sparkasse, a local bank. The bachelorship in insurance management is set up for the Zurich Group Germany. Both bachelorships were/are exclusive to the partner’s employees. The partner of the FHK selects the people after pre-set conditions agreed upon by both. The FHK is responsible for the academic quality of the programme and awards the certificate. This also includes an agreement that at least 60 percent of teaching is done by professors. The contracts are limited to a certain number of years. After the contract runs out it is attractive for the FHK to keep the programme up and open it to the wider public respectively people employed in the sector.

- **The range of courses offered.** Overall the range is broad, varying from one-day courses to master programmes. Types of courses and training offered to enterprises include activities with the following names: seminars awarded with certificates, master, expert, complementary training, university specialist, professional specialist and postgraduate specialisation.

Not much information is available regarding the possible overlapping of courses (especially at the master level) offered as further education in relation to official degrees offered by universities. At least at the Valencia U. of Technology, this is an issue of concern which is dealt with by having a standard process for presenting and approving new study programmes offered at the LLL centre by the central administration. Programmes are usually backed by academics based in departments, which to some extent avoids possible conflicts of interest.

- **The extent to which courses are demand-driven.** In many case studies the supply of demand-driven courses is highlighted as an important aspect. The drive from enterprises comprises the development of new programmes designed explicitly to meet the enterprises’ needs, to adapt standard programmes to their particular requirements, and to offer certain programmes exclusively for their employees. Institutions which offer demand-driven training courses to enterprises include: Cologne U. of Applied Sciences, Technische U. Darmstadt, Valencia U. of Technology, U. of Seville, Politecnico di Torino (through COREP consortium), Bocconi U., Utrecht U. of Applied Sciences, and U. of Warwick.
Institutions regularly carry out tailor-made education programmes for individual companies or institutions. They offer such tailor-made programmes at both Bachelor and post-Bachelor level. These are organised as demand-driven programmes within the standards applicable at programme level (for large companies or a certain sector, for example). While such programmes are primarily so-called post-initial programmes or courses, they also may be Bachelor programmes, such as programmes for the education and healthcare sectors. Short courses targeted at professionals are a very important part of the HU training offerings.

- **The exclusivity of training services in central-level structures**; i.e.: the offer of other services apart from training courses by the same entity. For example, at the U. of Seville, the newly created LLL centre is also in charge of organising internships for students; at the Valencia U. of Technology, the LLL centre also supports the realisation of special events at the university, providing logistics, marketing and organisational support.

- **Disciplinary focus of training programmes**. Evidently, this may be related to the university’s areas of expertise, but it may be also shaped by enterprises and other customer’s needs or other market characteristics. At the Valencia U. of Technology, further training programmes focus on ICTs and management-oriented topics.

- **Financial returns to universities from training offered to enterprises**. Very limited information is available on this topic, while it may be an important incentive for universities to offer this kind of services. At the Valencia U. of Technology, fees charged by the LLL centre are considerably higher than those charged by the University for the regular undergraduate and graduate programs. The annual turnover from all services offered at the LLL centre reaches 8.5 M€.

### 4.4.6 CAREER SERVICE FOR GRADUATES AND STUDENTS

As with other support structures, the organisation of career services for graduates and students takes various forms, which in this case is reflected in the specific type of functions developed, the modes for linking students with enterprises, the relationships with other institutional support entities and the institutional relevance of this type of service. Cases with comprehensive and successful career services are described next.

**Bocconi U.**

The Bocconi University’s Career Service offers a lot of services aimed at improving relationships between employers and University to facilitate the re-
cruitment process. Among these services, some are focused on helping stu-
dents to get information about opportunities in the job market and some
are addressed at employers who wish to get in touch with the university's
students and graduates in order to present their company, facilitate their re-
cruitment selections or activate internships:

- The “Jobgate” service allows firms to post internship and placement adverti-
sements on the Career Centre’s website, so that students, and undergraduate
and graduate alumni of the Bocconi University can access them.

- The Internship Office makes sure that the educational project is sound. It also
assists the intern and the firm in preparing all the documentation (convension
and educational project) necessary for formalization of the internship,
based on the norms regulating the internship.

- Periodically publishing a CV Book allows the recruiters to scan and access
new graduates and Master holders who fit their corporate skill set. The book
contains a comprehensive table with personal data, academic path, work ex-
periences, and language skills for each candidate.

The “Associated Company Programme” lays out the conditions and possibili-
ties of a close partnership between the Career Service and firms. Enterprises
attending it get preferential treatment. The program offers customized assis-
tance for searching through the profiles of students, graduates and Master’s
graduates, by putting an emphasis on the company’s specific needs. Associat-
ed Companies also gain from other several services such as: the arrangement
of small-group interviews with students and graduates, the possibility of gi-
ving a presentation of the company at the University to illustrate career paths
for potential candidates and higher visibility on the Career Service’s website
and newsletter with a direct link to their company site.

In the academic year 2006-2007 there were more the 40 enterprises associa-
ted to the programme covering different sectors from banks and assurance
companies to consultants groups or producing companies as Coca-Cola, Fiat,
Siemens and Whirpool.

The Integrated Employment Service (SIE) of the **Valencia U. of Technology** de-
velops a range of activities aiming basically to improve the UPV students and
graduates’ employability and their on-site training. The SIE acts as intermediary
between enterprises and students to support the latter ones in getting intern-
ships and job placements giving special importance to postgraduates. To fulfil
this task the SIE develops employment fairs and workshops, provides students
with guidance and training for employment, tracks the career and job placement of graduates through its Employment and Training Observatory and manages students’ and enterprises’ databases to connect them appropriately. The SIE also collaborates directly with some private companies and public organizations in specific initiatives. For example, it manages the awards UPV- Bancaja (a regional savings bank) to develop the required projects for finalizing undergraduate programs in enterprises.

There are other specific initiatives contributing to the employability of students and graduates. For example, at the U. of Warwick, Unitemps, a student led employment agency owned by the University, offers students temporary jobs both on campus and in the local area. Databases made available to graduates and enterprises are frequent tools in career services. The University of the Salento has developed the contact database Banca Laureati, aiming to connect available jobs and job-seekers by publishing demanded profiles on the one hand and resumes transparent to enterprises during their recruitment operations on the other.

4.5 LARGE SCALE SUPPORT INFRASTRUCTURE

There is an important group of initiatives which have a large scale in terms of investment, types of activities developed, stakeholders involved and duration over time. They usually have several objectives, one of the main ones being, to support the interaction between the university and the enterprise world. For the purposes of this report, they are regarded as large-scale support infrastructure (LSSI). By this term we refer to initiatives in which: the university is directly and strongly involved; the institutional involvement is reflected in several ways, usually including substantial financial investment and considerable implication of university human resources; the range of aims and activities is broad, the performance of research and knowledge exchange with the productive sector being at its core; and the number and type of stakeholders involved is also wide, usually comprising actors from governments and enterprises. In most of the observed cases, LSSI take the form of science and technology parks.

LSSI relate and to a great extent reflect several of the aspects mentioned earlier on this report:

· Governmental policies to support UEPs. In the majority of LSSI seen in this project, which are described below, governmental agencies, particularly regional ones, play a key role. Although LSSI are framed in the university setting, given their innovation-knowledge exchange focus, they target regional development aims and are thus attractive poles for governmental interaction. Public resources are noticed in the form of land concession, investment
funding for construction and even current contributions for developing its core activities. Other noticeable governmental interventions affecting the development of LSSI are intellectual property rights regulations and fiscal policies for enterprises’ investment in R&D.

· **Institutional policies to support UEPs.** It has been seen that LSSI play an important role in terms of institutional policies, not only by implementing them but by being flagships of the university approach towards innovation. Policies related to regulations on academics’ additional income from external sources particularly affect research activities developed in the framework of LSSI. As with other support structures, but in this case even more drastically, LSSI with similar names and aims actually differ considerably in the activities developed. The analysis of LSSI governance is crucial for assessing the real institutional implication in such initiatives.

· **Contextual variables.** The feasibility and success of LSSI depend to a great extent on the regional industrial environment, on the governmental impetus towards these initiatives and on the general higher education culture in regard to this sector’s relationship with the industrial one. In this sense, it is seen that the contextual aspects play a more important role in the development of these initiatives than in the previously mentioned ones.

· **Support structures.** In all cases LSSI seen represent a partnership between university and enterprises (and also with governmental agencies being a good manifestation of triple helix interaction), and also represent structures to support the development of UEPs. LSSI are partnerships as such since they are joint initiatives with shared aims, and usually funding and governance responsibilities. They too are support structures as they promote further interaction by offering assistance in technology transfer/knowledge exchange, in fostering entrepreneurship, in providing advanced facilities for joint research and basic office facilities for newly-created spin-off companies, and in some cases in coordinating loyalty customer-type programmes for strengthening links with enterprises.

The observed LSSI are developed with diverse mixes of the following variables:

- Activities developed and services provided, including UEPs support functions:
  - IP protection
  - Creation of spin-offs
  - Housing of equipment, available for university and external users
  - Housing of mixed/joint research institutes
  - Housing of spin-off companies
  - Housing of non-spin-off companies
- Funding entities:
  - Universities (one or more)
  - Enterprises and their associations
  - Governmental agencies
  - Private investors

- Partners (involved in the legal entities and governing bodies, in the funding of the LSSI and in the development of the activities):
  - University (one or more), institutionally and on an individual basis their academic and administrative staff, students and graduates
  - Enterprises and their associations
  - City, provincial, regional, national authorities
  - Other publicly-funded agencies
  - NGOs and other institutions
  - Private investors

- Regional embeddedness: related to the partners involved; degree to which the initiative may be regarded as a regional instrument for fostering innovation in a certain geographical area

- Legal status: modes in which university and other stakeholders participates legally, financially and administratively vary, the form of a foundation being a common one

- Thematic focus: varying from science and technology to focusing on a specific area or discipline

- Types of enterprises involved: some target more SMEs and spin-off’s while others also deal with partnerships with large companies

- Magnitude of the LSSI

In this section LSSI in the form of science and technology parks have been included. In several cases these include structures such as large research centres or business incubators. Given the numerous characteristics in terms of activities and governance practices which shape LSSIs, in the following discussion outstanding aspects of the observed LSSI are presented. These are related to the functions performed and also to their governance schemes which in many cases show interesting regional multi-institutional collaborations.

In terms of the **breadth of functions**, the observed LSSI range from comprehensive research facilities co-located for usage of university and external users, as is the
case of CITIUS at the **U. of Seville**, to umbrella organisations giving a common frame to diverse innovation-related activities developed by various universities and enterprises, such as Kennispark, at the **U. of Twente**. The **Politecnico di Torino** has recently started to carry out the creation of the new “Polis Campus” or “Cittadella Politecnica”, also a multi-purpose large scale infrastructure. It is a modern complex on a former industrial area of 170,000 sq m with new spaces for study rooms, laboratories, canteens, gardens, sport facilities that will optimise the quality of teaching and improve the learning environment for students. It intends to strengthen the role of the Politecnico as an attractor for major investments in research by national and multinational companies.

### U. of Seville

In 2004 the Centre of Investigation, Technology, and Innovation (CITIUS) brought together the university’s research infrastructure and equipment in one large-scale facility. Research instruments have an estimated value of 24 M€. CITIUS aims to promote multi-disciplinary research and to encourage knowledge transfer between academic groups and businesses in Andalusia. CITIUS’s services are used by three groups: 1) Technology-based businesses housed within the CITIUS building; 2) External businesses which use CITIUS resources either by contracting its services or by working in collaboration with CITIUS’s research groups; and 3) more than 80 university research groups. In 2007, CITIUS’s revenues surpassed 300,000 €, of which 30% came from more than 30 external enterprises.

### U. of Twente

Kennispark Twente (‘Knowledge Park Twente’) is the external interface of the knowledge transfer and commercialization (or ‘valorisation’) activities of the **U. of Twente**. Kennispark is a collection of a large number of heterogeneous valorisation projects and at the same time it is the private foundation that runs these projects. The projects range from initiatives designed to commercialise academic knowledge to schemes aimed at encouraging innovation in the existing business community. Kennispark’s agenda encompasses, among others, incubators, business development, patent policy, start-up support, financing, facility sharing and coaching.

The Kennispark projects involve the **U. of Twente** (sometimes also the University of Applied Sciences also located in Enschede), public authorities (City of Enschede, Provincial government, Regional Development Agency, national ministries) as well as private partners (industry, as well as associations of businesses, intermediate organisations, banks, venture capitalists) in various constellations.
Overall, Kennispark involves a 160ha area where 330 companies are based providing 5100 jobs in the commercial sector. Financially, Kennispark Foundation does not directly receive the benefits of such activity, but it is rather reflected in the various projects undertaken through Kennispark.

Regarding the governance models, these large scale support infrastructures require a legal scheme which allows them to develop the range of activities entailed by them and which allows representativeness from the main agents involved. The form of private foundation is frequently observed as a solution to these requirements. The above mentioned Kennispark Foundation has a Board of Trustees made up of three members (one representing the university, one the city of Enschede, plus an independent member). The Board only approves the budget of the Kennispark Foundation, while all major policy decisions are approved by a Steering Committee. This is composed of the vice governor of the Province of Overijssel, the alderman of the City of Enschede and the vice-chairman of the university.

Similarly, the City of Innovation at the Valencia U. of Technology and the U. of Warwick Science Park are led by governing bodies integrated by representatives of the university and external institutions.

**Valencia U. of Technology**

The City of Innovation (CPI) represents a major university policy which aims to be an instrument for the generation of knowledge and the transfer of knowledge for its capitalisation. It is a 140.000 sq m science park organised to host over 20 research institutes and enterprises and over 1,500 researchers. The construction of the science park has been funded through competitive public funds and through the university’s ordinary budget. The sources of external funding are: the European Regional Development Fund, the former Central Ministry for Education and Science and the regional government. The university’s own funding has been partly available due to its policy that the majority of income generated through R&D activities is directed to R&D activities.

The CPI is managed by Innova Foundation, constituted in equal parts by the university and the Valencian Enterprise Confederation (CEV). Its Board of Trustees represents the park’s government and administration body. It is chaired by the CEV’s president and composed of 25 members who are representatives of the UPV and the CEV as well as by individual members appointed by both institutions.

Although the overall management of the park is run by Innova Foundation,
new initiatives are led by the vice-rector for Economic Coordination and Planning. This facilitates the coordination with other institutional entities dealing with research, technology transfer and UEPs. For example, within the CPI activities the university has established the “Business Circle”, a customer loyalty plan. It aims to maintain and increase the interaction mainly with enterprises which are already customers and partners of the university. To that end, it presents an integrated set of institutional entities to partner with the selected enterprises. The entities include the technology transfer office, the lifelong learning centre, the institute to foster entrepreneurship and spin-offs and the graduate recruitment service.

U. of Warwick

The U. of Warwick Science Park is a joint venture between public and private partners. Its shareholders are the University of Warwick, the local councils and the West Midlands Enterprise Board, an economic development consultancy. Funding for businesses is provided by public authorities as well as by private companies. In terms of governance, the University holds the chair of the Board of Directors, which is composed of representatives from the City, the County and the West Midlands Enterprise Board together with some external members.

The Science Park was created in 1984 and currently has four sites in the West Midlands, including its major base adjoining the University campus with almost 400,000 sq ft of space in which 144 companies are based. The Science Park interacts with a network of venture capitalists, companies supporting the initial management of spin-offs, student and graduate placements and a range of programs promoting entrepreneurship through funding and support.

However, the fact of having a similar legal formation, does not necessarily imply a similar practical involvement in the partnership. At Adam Mickiewicz U., the Science and Technology Park is run by a Foundation, but the University's institutional participation is limited. Its faculty though, is involved, as the university's academics are those who develop research at the Science and Technology Park.

Adam Mickiewicz U. (AMU)

Poznan Science and Technology Park was opened on the decision of the Board of the AMU Foundation in 1995. It involved the Faculties of Chemistry, Physics and History in research. Although the AMU Foundation started as a strictly AMU-supporting institution, today it is a powerful, independent institution
The assessed large-scale support infrastructures also vary in terms of their disciplinary focus. For example, the U. of Maastricht is recently developing a Science Park in the area of life sciences based in Randwijck. The U. of the Salento at Lecce is a founding member of Micro and Nanotechnology District Dhitech, a joint initiative of the university, the National Research Council and private companies. Similarly, the Politecnico di Torino is a key member of Torino Wireless, a technological district. The other initiatives presented in this section develop their activities in various research areas.

**U. of the Salento**

The Micro and Nanotechnology District Dhitech was founded in 2006 aiming to be the setting for a large number of joint public-private research projects, advanced education programmes and the principal centre of technology transfer in the region. Dhitech focuses on nanotechnology related materials and applications and on e-business management. This initiative aims to integrate research and education activities. It intends to develop a centre for post graduate high-tech education attracting young researchers from all over the Mediterranean.

From a governance perspective, a limited liability consortium company, Dhitech Scarl, was founded with the goal of opening the micro and nanotechnology district. Its shareholders are the U. of the Salento with 42%, the National Research Council with 21% and the rest held by private companies. The District is directed by the consortium-company which is organized as follows: an Associate Assembly in which representatives of all associate bodies and companies participate: U. of the Salento, National Research Council and pri-
vate companies; a Board of Directors consisting of eleven members representing all stakeholders, the President, a steering committee, a director (from the university), and a statutory board.

**Politecnico di Torino**

The Technological District Torino Wireless was established in 2002 to promote an innovative ICT technological district within the Region. The District involves Piedmont’s universities, public and private research centres and institutes, local bodies and institutions as well as several companies.

The Torino Foundation is the coordinating body of the Technological District. It works out the strategic guidelines of the District and fosters synergies among the different players in development, granting coherence and integration to the ICT development policies of the local area. The Foundation is responsible for: fostering R&D and in particular applied research initiatives in the District, managing intellectual property valorisation, supporting enterprise acceleration to create and develop ICT companies, promoting innovative financial instruments to sustain the development of the quality and dimension of companies, encouraging networking as leverage to reinforce small and medium enterprises and managing internationalization, training and attraction of competences in order to generate new opportunities for companies and research.

Torino Wireless Foundation’s governing bodies are: the Board of Directors, which makes fundamental decisions and selects the Foundation’s initiatives, the Chairman and vice chairman, the Board of Statutory Auditors and the Ordinary General Meeting of the Contributors. The Foundation’s staff is composed of 38 people: 17 employees and 21 collaborators, with 11 “secondments” from another institutional initiative, the Istituto Superiore Mario Boella (ISMB).

In the first five years of its existence the Foundation has attracted €117 M: 27% from public investors and 73% from private investors.

Concerning the regional connotation of the large-scale support structures, given the magnitude of the initiatives and their aims, in most cases there is at least one governmental partner from the city or region-level. In several cases there is more than one governmental partner and also various private ones. However, regarding educational institutions involved, collaboration between them is less frequent. In the next case, the *Utrecht U. of Applied Sciences* works in partnership with another university in the Utrecht Science Park initiative. This interaction has been strongly fostered by regional public funds aimed at this purpose.
The Science Park Utrecht is a regional public-private partnership. The different Chambers of Commerce, city and province of Utrecht, regional SMEs, Utrecht U. of Applied Sciences, Utrecht University and the University Medical Center Utrecht signed an agreement in 2006 for the creation of the Science Park Utrecht.

An important project in this Science Park is the Center for Entrepreneurship and Innovation. This centre is the main link that the Utrecht U. of Applied Sciences has with the Science Park. It functions as a broker and information source for newly established firms as well as students and research staff that wish to start a company.

It is noteworthy that regional agencies may promote collaboration between universities for UEPs–related activities through other means. For example, the Region of Hesse, in Germany, has put in place a number of initiatives in which the University of Kassel and the Technische U. Darmstadt participate. These include:

1. The Hesse Forum of Science–Economy, an association of the government of Hesse, the association of Hessian enterprises, the Hessian consortium of industry and commerce and the presidents of all Hessian universities and universities of applied sciences. The forum organises the dialogue between the partners, R&D, teaching and university studies being the general focus of interest.

2. TechnologyTransferNetwork Hesse, set up to promote the efficient transfer of technological knowledge between partners from universities and universities of applied sciences and enterprises.


4. Science4Life, an independent initiative offering assistance to founders of start-up companies and young entrepreneurs in the fields of life sciences and chemistry. It is sponsored by the government of Hesse and a pharmaceutical company, and is supported by more than 100 other companies, institutions, and non-profit organisations.

An interesting issue presented by analysing LSSI is the degree of embeddedness of this type of infrastructure in relation to the university’s core activities. While in some cases they are at the borders of the institutional scope of action, especially given the sharing of responsibility with other actors, in others, they are at the core of institutional policy. These differences may be related to the actual governance schemes; however the approach taken by the university in terms of involving academics on a formal basis, and of relating the LSSI activities to other UEPs activities developed within the institution is crucial in determining its sense of ownership.
5. University-enterprise partnerships: Ten cases of good practices

The GOODUEP project analyses university-enterprise partnerships, in particular their governance and policies at three levels: national, institutional and partnership level. In this chapter the results from the partnership level are presented. The methodology used to assess good practices in governance and policy for UEPs at the partnership level is the following: 10 partnership cases have been selected out of the several partnerships observed in the 18 institutional cases studies. These cases were selected as they presented good practices in their organisation schemes for interaction between the different partners and in their specific results or outcomes. Also, the selection was developed aiming to have a diverse set of cases in terms of the type and scope of the partnership as well as in terms of the national and institutional contexts in which they are developed. The 10 cases were analysed in depth through fieldwork and interviews with the main coordinators of the partnerships. This work was reported on individual reports based on a common analytical framework. The analytical framework applied includes these features: general aspects of the partnership, national and institutional contextual variables, governance models and policies for UEPs and key aspects leading to the partnership’s excellence. The following analysis is based on the 10 reports developed by international teams for each of the good UEPs selected cases.

Concept of university-enterprise partnership

In the mapping of UEPs in the 18 universities we adopted an open definition of UEPs as any joint activity involving universities and enterprises. In order to select our case studies of good practices we have adopted a more restrictive point of view. In the analyses of good practices of specific partnerships, a university-enterprise partnership is regarded as:

A partnership between the university (or a university unit such as a particular department or research institute), an industrial partner (or some other private entity such as a foundation), and, in most cases, a government partner (national, regional, municipal).9

The partnership is based on a formal agreement between the partners about the goals, funding, management and governance of the partnership in terms of each

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partner’s responsibilities and contributions. The activities of the UEPs focus on the manipulation (co-production, sharing, dissemination, valorisation, and commercialization) of academic knowledge.

As presented in the previous chapters, European universities interact with private actors in a wide variety of forms, developing different activities in a range of formal and informal settings. For this in-depth analysis, a distinction is made between UEPs and specific contracted research or teaching activities carried out by a public institution for a private client. In contracted research, for example, the research institute (or the body developing research) supplies a clearly defined service for payment. In principle, the private partner’s payment is at least cost-covering. In this more restricted vision of UEPs, the partners’ relation goes beyond the simple contract of research or teaching-related services and usually involves the co-development of such actions and a more robust framework for interaction. This framework for collaboration may be in the form of a long-term agreement, the creation of a specific legal entity to backup the activities such as a foundation and/or the establishment of a joint governing body or model for co-directing the activities developed in partnership.

**Partners and arguments for partnering**

Under these premises, UEPs’ partners and stakeholders present distinct arguments for being involved in the partnerships, depending on the perspective taken. From the main types of partners’ perspectives the literature mentions a large number of arguments for UEPs, which may be summarized as follows:

**From the government**

- more/better utilization of knowledge for public objectives;
- encouraging and facilitating more and better utilization of knowledge by companies, partly because of the growth in the importance of knowledge;
- strengthening of the competitive position in relation to foreign knowledge institutes.

**From enterprises**

- tailor-made knowledge, better and faster access to knowledge;
- lower cost per innovation as a result of access to (expensive) research facilities;
- possibilities of co-controlling/determining the development of knowledge.

**From universities**

- more interaction with the demand for knowledge;
- source of new research, new (interdisciplinary) partnership and new publications;
· opening up new markets;
· better access to companies;
· career perspectives for employees.

The set of reasons for partnering or for fostering partnerships leads to an ample set of activities developed in the context of the partnerships and therefore, of results. Overall, the partnership may produce various forms of synergy, such as better utilization of knowledge, more innovation in the business sector and, as a result, the strengthening of a region’s competitive position.

**Outputs of UEPs**

In this analysis of good practices in and for UEPs, its outputs have been considered from the perspective of the value and benefits that they imply for the different partners. That is, what kind of outputs and interactions the partners value the most. This is related to the university motivations behind UEPs mentioned above.

According to the type of partnerships analysed, the extent to which the partners in the UEPs value the following outputs/forms of interaction was asked:\(^\text{10}\):

1. Intellectual property (IP) revenues: Patents applied, awarded, licensing income
2. Project/research funding from the private partner (# of contracts; turnover)
3. Joint appointments and staff mobility between university and private sector
4. Spin-offs
5. Co-publications
6. Opportunities for students (training, internships, thesis work)
7. Guest lectures
8. Sharing facilities
9. Awareness of each others’ needs, demands and strengths

**Analysis of good practices**

The 10 selected cases are analysed transversally according to key topics, related to their governance and policies. The governance of UEPs can be defined first of all (but not exclusively) in terms of responsibility sharing between the private and public partners involved in the UEPs. The question then is: To what degree are responsibilities shared in the various functions/areas of UEPs?

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\(^\text{10}\) The template for analyzing the 10 cases is in Annex 3.
Although it has been suggested in the literature that the most intensive form of partnership occurs when it has been decided to interweave each of the functions\textsuperscript{11}, in the applied analytical framework this hypothesis is not necessarily assumed. Some GOODUEP cases suggest that intense partnerships may be reached without a strong interweaving of functions. The table is used here to organise the analysis of functions and governance models.

In addition, several qualitative indicators have been used to identify and analyse the governance models and the relevance of the national, institutional and partnership-level policies and practices affecting the 10 UEPs. These indicators include policies on human resources management, intellectual property rights, staff mobility, financial decentralisation and on other issues potentially affecting the development of UEPs.

5.1 SELECTED CASES OF GOOD PRACTICES

The 10 cases selected and the universities and countries in which they are developed are the following:

1. Institute of Materials Technology – Polymer and Recycling Technology IMT Kassel, Germany
2. Integrated and Dual Study Programmes (Corporate University) Cologne, Germany
3. Instituto de Biomecánica de Valencia (Valencia Institute of Biomechanics) Valencia, Spain
4. UNIEMPRENDE Programme, financial structures: UNIRISCO Santiago de Compostela, Spain
5. Istituto Superiore Mario Boella (ISMB) Torino, Italy
6. University of Maastricht Holding Maastricht, the Netherlands

\textsuperscript{11} Interweavement would mean for instance:
– both partners contribute to the funding;
– the UEPs-program is drawn up in partnership;
– the joined partners participate in the management of the UEPs;
– the UEPs’s work is conducted by staff from the University and the private partner;
– control and supervision are a joint responsibility.
7. Kennispark
Twente, the Netherlands

8. Adam Mickiewicz University Foundation Technology Park
Poznan, Poland

9. Logistics Institute
Kingston upon Hull, United Kingdom

10. University of Hertfordshire and Heales Medical Ltd.
Hertfordshire, United Kingdom

The following fiches summarise key aspects of the ten partnerships analysed.
5.1.1 INSTITUTE OF MATERIALS TECHNOLOGY – POLYMER AND RECYCLING TECHNOLOGY, IMT

University: University of Kassel (UK)

Type of UEPs: ‘Entrepreneurial’ Professorship/Institute

Stakeholders involved: University of Kassel, Institute of Materials Technology of the University of Kassel, Association Innovation Centre for Polymer and Recycling Technology (about 20 SMEs, mainly founding enterprise of the formerly endowed chair) and partners from enterprises, institutes, universities etc. varying by project.

Main activities and outcomes: The guiding principle of the institute for UEPs is innovation. The Institute does not undertake contract work without innovative potential; therefore, except for service contracts, the Institute presents ideas and potential projects are presented to potential partners in advance. Policies vary according to the size of the projects:

- Small projects and also small orders (about 80 annually with a range from 100 € to 10,000 €): undertaken upon the initiative of SME enterprises and responding to concrete needs.
- Medium-size projects (1-2, max 3 annually with duration of up to 1 ½ years worth 60,000 € to 100,000 €): undertaken mostly with a single partner, possibly regional SMEs upon their initiatives, responding to concrete needs.
- Large-size projects (about 3, max. 5 annually with a duration of 1-3 years and a budget between 100,000 € to 1,000,000 € for the whole period), undertaken mostly upon the initiative of a single partner, responding to concrete needs.
- Publicly funded projects (about 5 per year concurrent with a duration of up to 3 years and with annual budgets of about 130,000 € to 140,000) € undertaken with about 5-8 partners each from enterprises, research institutes or other institutes from universities.

Generation and development: The professorship entitled “Polymer and Recycling Technology” was co-founded as an endowed chair by 29 industry and trade companies, all SME from the region, in 1994. The aim was to take stock of and to expand knowledge and expertise in the field of polymer development, processing, analysis and recycling. After five years, the chair became an integral part of the planning and the regular funding of the FHK. The association called Innovation Centre for the Polymer and Recycling Technology (‘Innovationszentrum Kunststoff- und Recycling-technik e.V.’) was established to serve as somewhat of an external board.
Governance structure: The chair holder is supported by the leading engineer supervising the team leaders; the team leaders supervise the individual projects divided into 6 working groups. The total number of staff is about 25; about three quarters of the staff costs are borne by external grants. In addition, various doctoral candidates are funded by scholarships, and various students are active on short-term student work contracts.

Key success factors: Experience of the chair holder/director of the Institute; innovative basic research; close links between of research and teaching; trustful personal relationships between partners; entrepreneurship spirit of the Institute and its staff; substance and work style attractive for enterprises.
5.1.2 INTEGRATED AND DUAL STUDY PROGRAMMES

**University:** Cologne University of Applied Sciences (FHK)

**Type of UEPs:** Corporate University

**Stakeholders involved:** FHK, FHK Institute of Insurance, Zurich Group, German Academy for Insurance, FHK Institute of Economics, Sparkasse (local bank), FHK Institute of Civil Engineering, German Rail, Economic Union Building Industry, German Association of Medium-Sized Building Companies – Working group Rail, Training Centre of the Building Industry in Kerpen.

**Main activities and outcomes:** The bachelor programmes facilitate study parallel to work and are designed to prepare for specialised tasks. Initial professional training on an advanced level is provided in a lifelong learning setting. The required period of study is 3 years as a rule (6 semesters). The weekly schedule of the first year is two days study and three days work and in the second and third year three days of study and two days of work. Study is comprised of 20% class-room teaching, 60% individual study and 20% mentoring and occasional tele-tutoring. Moreover, students have to undertake accompanying projects. In some bachelor programmes, students are awarded two credentials: a vocational certificate from the local chamber of commerce after 2.5 years and a bachelor of the FHK after three years. In additional, a full-time master programme was established tailor-made for management of construction. The partnerships help the universities to enlarge and qualify its personnel capacities for teaching and research.

**Generation and development:** The so-called FHK model of study programmes was initiated in the mid-1990s reflecting the task of University of Applied Sciences to tie their curricula, though academically based, and also their applied research activities more closely to the regional economic needs. Tailor-made study programmes were established, first, for the Sparkasse, and expanded and grew in operating range over the years, as the master programme in rail engineering shows.

**Governance structure:** At the beginning, the partners defined and secured the individual responsibilities and goals (funding, decision-making, processes) of the partners through a contract. The FHK and the enterprises cooperate in curriculum development; the FHK is in charge of the teaching, with part-time teachers from the enterprises, and of quality control. A professor of FHK serves as programme director, and each programme has a board with representatives of the partners; the coordination is rearranged when the initial funding model is terminated.

**Key success factors:** Innovative concept; reputation of the FHK, its institutes and pro-
fessors participating; FHK’s and its professors’ capacity and experience in teaching and research; trustful personal relationships between partners; entrepreneurship spirit by university and its staff; attractiveness of study programmes for enterprises; meeting the needs of enterprises.
5.1.3 VALENCIA INSTITUTE OF BIOMECHANICS, INSTITUTO DE BIOMECÁNICA DE VALENCIA, IBV

University: Valencia University of Technology (UPV)

Type of UEPs: Research Institute

Stakeholders involved: The UPV, the Institute of Small and Medium Sized Enterprises (IMPIVA), a regional governmental agency, and enterprises are represented in the assembly of the IBV. Overall, the IBV’s clients and partners’ portfolio includes SMEs and large companies, business associations, professional associations, user associations, public administrations and other R&D centres.

Main activities and outcomes: The IBV is a technological centre aiming to “promote and undertake scientific research, technological development, technical assessment and training in the area of Biomechanics”. The IBV’s model of activities are related to four phases of knowledge development and include performing basic and applied R&D activities, offering services and applications derived from research, disseminating the created knowledge through training and recently even creating companies based on the technology produced.

In 2008, the IBV had the following performance in terms of activities developed and services provided: 63 projects of technological advice, 3,404 services of inspection and tests, 369 biomechanical assessments, 44 services of people-oriented design, 1,943 students in training, 982 technological applications installed, 840 scientific publications and participation in 12 meetings on biomechanical regulations where 115 norms have been approved.

Generation and development: The IBV activities started in 1976 at the university under the initiative of a small group of people, including its current director. In 1989, the IBV moved its headquarters to a technological centre in the outskirts of Valencia and in 1994 became a non-profit association. These shifts were due to opportunities offered by the Valencia Institute of Small and Medium Sized Enterprises. In 1993 the IBV moved back to the university campus; it is currently based in a 6,000 m² independent building at the 140,000 m² science park.

Governance structure: Legally, the IBV is independent from the UPV, being a non-profit association. It is governed by an assembly and a board, comprising the UPV, the IMPIVA and enterprises.

Key success factors: 1. Legal structure: being a private non-profit association has allowed the IBV to take its own major decisions; 2. Integration of generation and
exchange of knowledge, which allows the IBV to offer a range of services having a comparative advantage over other providers of biomechanical services; 3. Understanding of clients’ needs, having a strategic unit which monitors market development; 4. Application of the same body of knowledge, expertise and equipment to different fields, making an economical use of resources; and 5. Reputation and long-lasting experience in knowledge management.
5.1.4 UNIRISCO (FINANCIAL PROGRAMME OF UNIEMPRENDE)

University: University of Santiago de Compostela (USC)

Type of UEPs: Support Structure

Stakeholders involved: The three Galician universities (Santiago de Compostela, La Coruña, Vigo); four banks (Caixa Galicia, Caixanova, Banco Pastor, Banco Portugués de Investimento) and four Galician enterprises (Inditex – in the textile sector, the construction company Grupo San José, Fundación R -a non-profit body aiming at promoting ICT in Galicia and the Vigo Free Zone Consortium, a mainly state owned institution promoting local development).

Main activities and outcomes: UNIRISCO is the financial pillar of UNIEMPRENDE, a support structure for the creation and development of spin-offs. UNIRISCO is a venture capital company run by USC that started in 2000 to financially support the creation of spin-offs that come from the three Galician universities and the regional centres of the CSIC at seed and start-up stages, particularly in areas where the three universities have a socio-economic impact (life Sciences, environment, new Materials, ICT and biotechnology). This form of participation has the following characteristics: a) the “transferable knowledge” exploited by the spin-off has to be protected (patented or licensed) by the university; b) preferably, the length of participation will vary from 3 to 10 years; and c) the amount invested can range from 30,000€ to 300,000€, with 600,000€ as a maximum. UNIRISCO has financially supported the creation of 22 spin-offs with a total investment of 3 M€; the revenue obtained by USC for selling shares of the companies amounts to 120,000€.

Generation and development: UNIEMPRENDE, and its financial structure UNIRISCO, started in 2000 as the main support structure for UEPs. Encouraged by the rector, it was included as an essential unit in the Strategic Plan of the university. Its main predecessor was the Incubator – included in the USC Strategic Plan (1998-2010) and set up in 1999 to foster academic spin-offs. At that time, the Knowledge Transfer Office (KTO), created in 1989, was the only central unit devoted to knowledge transfer and commercialisation.

Governance structure: UNIRISCO is run by two bodies: the Board of Directors and the Investment Committee. All the partners are represented on the Board that sets the general agenda. The daily management (choosing the projects to be funded; drawing a business plan; monitoring financial aspects etc.) is carried out by the Investment Committee, elected by the Board of Directors, and consisting of experts (scientific and financial ones). The actions executed by the Committee have to be approved periodically by the Board. UNIRISCO is independent from the USC. The USC
holds shares in UNIRISCO through The Management Company for the Interests of the University of Santiago, S.L. (UNIXEST).

**Key success factors:** Leadership and vision of its director; support and commitment from the Galician universities, enterprises and the regional government; trustful relationship and shared responsibilities between UNIRISCO’s governing bodies; a well-established surrounding network (UNIEMPRENDE); thorough pre-selection of projects; attractiveness for academic entrepreneurs.
5.1.5 ISTITUTO SUPERIORE MARIO BOELLA (ISMB)

University: Politecnico di Torino

Type of UEPs: Technology Transfer Centre

Stakeholders involved: The ISMB was founded in 2000 by the private-law foundation Compagnia di San Paolo and the Politecnico di Torino. Since 2001 several other corporations such as Motorola, SKF, STMicroelectronics and Telecom Italia Lab have joined the partnership. The activities of the Institute are carried out mainly with the financial support of Compagnia di San Paolo, the membership fee paid by the four ordinary partners, and additional contributions made by the Ministry of University Education and major public and private, national and European organizations.

Main activities and outcomes: Technology transfer, joint applied research laboratories, spin-offs, higher education programmes, post-graduate and master programmes, exchange of academics and human resources, creation of jobs. The main laboratories are: Antennas and Electromagnetic Compatibility, E-Security, Photonics, Materials and Microsystems, Galileo Satellite Navigation, Networking laboratory, Services and Applications laboratory, Radio Technologies for Multimedia Applications. In partnership with the Politecnico the ISMB runs higher education and post-graduate activities. At present the ISMB processes 20 national research projects, 40 projects in collaboration with industries and 20 projects financed by the European Union.

Generation and development: The ISMB was created for the purpose of allowing researchers from the Politecnico and industrial partners to meet and work together in order to enable industry to take advantage of research results cutting the costs and reducing the times of trials and adjustments. The ISMB employs 250 researchers directly or indirectly and has a budget of 12M€.

Governance structure: The ISMB’s president, who is a former Rector of the Politecnico is mainly responsible for establishing and taking care of the relationships with the member enterprises, the university, the ministries, the local authorities and other potential, non funding external stakeholders. The managing director is responsible for all issues related to the internal functioning of the Institute. In addition ISMB has a Board of Directors, which includes seven representatives of both the university and private entities.

Key success factors: 1) The right combination of two main partners: the Compagnia San Paolo, an important foundation based on Turin with the mission of fostering regional development, and the Politecnico di Torino, a prestigious technological uni-
versity with a strong scientific park. 2) The leadership of the former rector of the Politecnico able to connect different elements in one big project. 3) The research approach which is extremely cooperative with enterprises and the flexible way of managing the ISMB. 4) The permanent financial support of the CSP (supporting the ISBM with 5ME yearly).
5.1.6 UNIVERSITY OF MAASTRICHT HOLDING BV (UM HOLDING)

**University:** Maastricht University (UM)

**Type of UEPs:** Holding company

**Stakeholders involved:** The holding company manages the portfolio of UM spin-off companies. It is fully owned by Maastricht University. Through the companies that the UM Holding controls there is a close interaction with the business sector, national and provincial authorities, the city of Maastricht and the regional development agency and venture capitalists.

**Main activities and outcomes:** The UM Holding is a limited liability company, legally separate from but fully owned by the University. It manages the participations (shares) of UM in its spin-off companies. As such it brings new knowledge to the market and contributes to making UM inventions and scientific discoveries commercially viable. The Holding enables the university to take business risks and undertake commercial activities that a public organisation could not otherwise. It also provides support services, such as personnel management, financial administration, and advice on legal and tax matters to the UM Holding companies. Apart from creating high-quality employment in the university’s region, the university itself also profits from this development through jobs for graduates and future commissions for contract research.

Currently the Holding has 27 companies, with 6 fully owned and 21 with a minority share (including a life sciences incubator). In recent years the Holding’s profits were between 1 and 2 M€. Part of this is reinvested in the companies and part is paid out as dividends to the university, which uses them for scholarships (tuition fee reimbursements) for the top 3% of its students.

**Generation and development:** UM Holding was established in 1992 with the aim of converting university knowledge into economic activity (‘valorisation’). Until 2003 the Holding acted both as a participation company and as the university’s technology transfer office. Today it only handles a share portfolio of research-based companies that have spun out of the university, while other UM units have taken over other aspects of valorisation activities.

**Governance structure:** Day to day management of the Holding is in the hands of the managing director (CEO), assisted by a team of a team of financial, personnel, legal and fiscal part-time staff, hired by the holding, but not paid or seconded by UM. UM, represented by its Executive Board, is the only shareholder and therefore has the ultimate say in strategic issues. There are monthly meetings between the CEO
of the holding and UM. A Board of Supervisors, consisting of three representatives from the business community, has an advisory role. There are quarterly meetings between the management of the holding and this board.

**Key success factors:** A pro-active approach to creating spin-offs in UM; employees of the holding have private sector experience; clear business mindedness and a profit maximization approach. UM allows researchers to work 80% FTE at the university and 40% on their spin-off. UM has a clear conflict of interests policy. Involvement of key regional stakeholders.
5.1.7 **KENNISPARK**

**University:** University of Twente (UT)

**Type of UEPs:** ‘Knowledge’ park

**Stakeholders involved:** UT, the Saxion University of Applied Sciences also in Enschede, public authorities (City of Enschede, Provincial government, Regional Development Agency, national ministries) and private partners (industry, associations of businesses, intermediate organisations, banks and venture capitalists).

**Main activities and outcomes:** external interface of the knowledge transfer and commercialization (or ‘valorisation’) activities of the UT. KP develops large number of heterogeneous valorisation projects such as:

- Area development: attracting businesses to the land area adjacent to the university campus
- Handling specialised technology transfer activities on behalf of the university
- Assisting in facility sharing arrangements between the UT and high-tech businesses
- The Holding Technopolis Twente: a company fully owned by the university to manage shares in companies started on the basis of IP generated in the university
- Coaching/seminars/networking for early stage entrepreneurs and well-established spin-offs
- Some important results of KP are:
  - Spin-offs: 20-30 created each year; 5 in the 2008 Deloitte Technology Fast 50 competition
  - Co-exploitation of specialised laboratory facilities by the university and private businesses
  - Jobs in KP area: 330 companies; 5,100 jobs in total (excluding university)

**Generation and development:** KP was set up around 2002 starting from the basis of the Business and Science Park existing since the 1980s. The early successes persuaded local authorities to participate and further develop the site because of the regional benefits which that could bring. With Kennispark, the key partners aim to further develop the area into a knowledge-intensive region of international stature. KP brings together several actors from the private, higher education and governmental sectors. Its agenda includes incubators, business development, patent policy, start-up support, financing, facility sharing and coaching.
**Governance structure:** Run by the Kennispark Foundation which has a Board of Trustees made up of three members (one representing the university, one the city of Enschede, plus an independent member). All major policy decisions on the collection of projects are approved by a Steering Committee, composed of the vice governor of the Province of Overijssel, the alderman of the City of Enschede and the vice-chairman of the university. Kennispark Foundation as such has no employees. The 10 FTE staff working there are paid by the university, partly out of subsidies provided by the national, regional and local government.

**Key success factors:** Financial commitment from the city, provincial and central governments; close trustful personal relationships between key stakeholders’ representatives; personal and institutional entrepreneurship; attractiveness for enterprises.
5.1.8 ADAM MICKIEWICZ UNIVERSITY FOUNDATION’S SCIENCE AND TECHNOLOGY PARK

University: Adam Mickiewicz University (AMU)

Type of UEPs: Support structure and “science and technology park”

Stakeholders involved: University (AMU), public authorities (city of Poznan, regional of the Wielkopolska region, national authorities), private partners (companies, associations of businesses)

Main activities and outcomes: Research activities in the following disciplines: archaeology, chemistry and chemical technologies, physics and medical physics, acoustics and computing, geology and economics. The park runs a Centre of Innovation Promotion, an Innovation Relay Centre West Poland (IRC). The Centre of Innovation Promotion was involved in the implementation of the Regional Innovation Strategy (RIS) for the Wielkopolska Region and in the distribution of EU funds for RIS objectives in 2004-2006. The park runs its business incubator with renting space of 2,700 m2 which offers conference rooms, reception, basic office equipment, preferential renting rates. The incubator’s tenants include companies active in services such as consulting, cellular phones, accounting, advertising and public relations, finances, computer graphics, teaching English, architecture, translations, and construction; the tenants also include companies from the ITC sector, R&D sector, and commerce sector (50 companies in total).

Generation and development: The AMU Foundation started its operations in 1989/1990 and moved to its new site in 1995; then the preparations and adaptation works started for the Science and Technology Park, the first park in Poland. Currently, the Science Park employs about 300 people, including about 70 from the Foundation itself.

Governance structure: The Foundation management reports to its “board of funders”, chaired by the AMU University Rector. Membership of the board is made up of university representatives, regional companies, and regional governmental bodies. The board collectively, therefore, has supervisory oversight of the Foundation’s funding and its programme of work. Financial benefits arising from the Foundation are in practice re-invested in Foundation developments such as new buildings, although in principle they are available to the University. Intellectual property usually remains with the particular activity: the Foundation acts more like a traditional science park in this respect. Benefits to other actors include supporting regional development by providing good-quality, well-managed facilities.

Key success factors: The identification of the need for a flexible, innovative organi-
sation, related to but separate from the University, by its early promoters in the University; the availability of national and European funds to support its development was essential at that early stage of Poland’s move towards a full market economy; the Foundation’s close connection (organisationally and physically) with a major research University ensured that there was a steady stream of good proposals for the creation of spin-out companies of various sorts, eager to use the Foundation’s facilities and support. The key success factor was probably the creation of a flexible, responsive organisation, separate from the University state-focused bureaucracy, yet still related to the University itself. Also important was the charismatic nature of the founder of the foundation, a former AMU rector in 1988-1990 (prof. Bogdan Marciniec) and his eagerness to found the first Western-style science park in Poland.
5.1.9 HULL LOGISTICS INSTITUTE

University: University of Hull

Type of UEPs: Teaching, research and consultancy organisation; part of the University, but with a distinctive identity.

Stakeholders involved: University of Hull, local firms in logistics industry

Main activities and outcomes: Teaching, research and consultancy in the logistics industry. Masters and doctoral programmes are offered, as well as short courses. Research and consultancy projects are undertaking involving local firms in the industry.

Generation and development: The Institute draws on business and engineering expertise from the relevant University departments to provide research and consultancy support to the logistics industry. The institute began operations in 2005. The initial capital costs were some 7 M€, with annual operating costs of 2.5 M€. This has led to the development of a master’s degree in supply chain management, which is now recruiting internationally; there is also some doctoral work.

It is considered important for the Institute to be branded as part of the Business School and University, as it benefits from their status; the “disinterested” role of the University is considered an asset. Graduates of the Institute are now in influential positions in industry internationally, and there are signs that this is leading to new teaching and consultancy business. The Institute provides incubator units for start-ups in the logistics field, which it is hoped will extend its influence.

Governance structure: Managed as a unit of the Business School, reporting ultimately to the main University academic and governing body. An advisory group, with external membership, advises the Director.

Key success factors: There was initially an identification of the needs of important regional industry that the University was equipped to support because of its existing areas of academic strength. There was a flexible organisational response by the University to creating a new structure to meet these needs. Regional development funding was available to meet start-up costs. New activities were developed (a tailored master’s programme) to extend the partnership’s strength. A realistic business plan was developed to guide development of partnership.
5.1.10 UNIVERSITY OF HERTFORDSHIRE AND HEALES MEDICAL LTD.

**University:** University of Hertfordshire

**Type of UEPs:** Continuing relationship between University and a local firm, with changing tasks, depending on particular needs, and drawing on different resources within the University.

**Stakeholders involved:** University of Hertfordshire, Heales Medical Ltd.

**Main activities and outcomes:** The relationship began with support and development in the firm, and has continued with joint work on stress testing with the university's psychology department which led to the creation of a jointly-owned company to develop new occupational health tools. It has benefitted the psychology department by providing new case study material and experience for academic staff, and by providing placements for students.

**Generation and development:** Initial contact led to a knowledge-transfer partnership, with government funding, opening the way to a continuing relationship based on mutual trust.

**Governance structure:** No special governance arrangements: operated informally, using the university's knowledge transfer unit for support.

**Key success factors:** Geographical proximity and development of mutual trust; good communication between the partners. Benefits arising for both sides, technical improvements for the firm, new teaching and research materials for the University staff. Credibility of the University's expertise (its unbiased nature) was important to the firm. Agreement on IP sharing.
The following table summarizes the main traits of the ten partnerships:

<table>
<thead>
<tr>
<th>Type</th>
<th>Partners</th>
<th>Function</th>
<th>Success factors</th>
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<tbody>
<tr>
<td>IMT (Kassel)</td>
<td>Institute</td>
<td>Applied research</td>
<td>Leadership</td>
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5.2 TRANSVERSAL ANALYSIS OF GOOD PRACTICES AND OTHER VARIABLES AFFECTING GOOD UEPS- KEY VARIABLES FOR SUCCESS

5.2.1 LEADERSHIP IN PARTNERSHIPS

The role of powerful, charismatic, visionary leaders in UEPs studied is critical. This “human factor”, represented by academics and administrators located at the level of the university or close to it, most often both physically and organizationally, is at least as equally important as the legal ambience in which partnerships appear, the availability of infrastructure and university support structures for entrepreneurship, public and private funding, and the overall positive attitude of universities towards partnerships with enterprises in general. Which often, it is more important than other factors.

In many cases studied, the role of individuals (academics and/or administrators) involved is overwhelming, and only their determination, or persistent acting against institutional and administrative obstacles, makes particular partnerships lasting and financially sustainable. As in the case of recent European analyses of academic entrepreneurialism: the bottom-up approach is critical in establishing and running
UEPs, even though the top-down arrangements (e.g. various national and regional forms of supporting entrepreneurialism, or national or regional funding schemes to support university-enterprises partnerships) are very important as well. There is a special need for a unique combination of strong leadership – charismatic individuals, academics or academics turned administrators, wishing to go beyond bureaucratic restrictions in knowledge transfer and in linking academia and the business world, and the availability of seed funding from municipal, regional, national authorities, as well as from the European Commission (e.g. via nationally-distributed EU structural funds or competitive EU programmes).

In several of the cases studied the pattern of the evolution of a successful partnership is structurally similar: a powerful, charismatic rector (or, more often, a former rector), or a high ranking university professor with considerable research achievements, is heavily involved in establishing a viable support structure of cooperation with the network of local and regional private businesses, using at the same time his/her academic status at the university (to make the university enter the partnership) and his/her excellent relations with local and regional authorities (to make them enter the partnership and possibly invest municipal land and/or municipal and regional public funding). At the same time, a powerful university leader ensures good working relationships with the local and regional businesses, especially with core big funders in the region, and enhances the trust between all stakeholders involved.

Examples include a former rector of Poznan University, Poland; who in the 1990s founded the first science and technology park in Poland with the aid of municipalities by the donation of land, with the aid of municipal and regional, and recently especially European Union structural funds. At present he is still running it. Other examples include a former rector of Politecnico di Torino, Italy, who founded the Istituto Superiore Mario Boella (ISMB) wisely assembling the regional needs, the existence of a foundation able to finance a big project and the technological advantages of a prestigious Italian university of technology. This person, with the support of the Foundation Compagnia di San Paolo, gave the initial boost for creating ISMB and he was the Chairman of the Governing body from the beginning. The leadership of one person able to connect different elements in one big project is in this case the spark which explains to a great extent the success of the ISMB.

Similarly outstanding is the case of the visionary leadership of a highly respected professor at the University of Santiago de Compostela, Spain, who is behind the creation of UNIEMPRENDE, a support structure dedicated to increasing entrepreneurial culture at the university, and its financial structure, UNIRISCO, which is already “exported” at a national level throughout Spain and even replicated in Latin
America (in Colombia and Chile). With his networking skills and his strong will to realize the vision, the inventor of Uniemprende presents a strong pull factor driving the UEPs towards success by connecting university to entrepreneurial culture.

Also in Valencia, the Institute of Biomechanics (IBV) was started over 30 years ago by a small group of people led by its director who has guided the expansion and coordinated the participation of the several partners. At Twente University, the Netherlands, the key role in promoting the initiative was also played by its former rector, heavily involved in turning the university into an entrepreneurial organization. In smaller-scale partnerships, as in the case of Kassel, the role of a strong, visionary academic leader is also critical – UEPs there represent a pyramid of 25 researchers, with a highly-respected professor of mechanical engineering at the top, following explicitly at the same time two models: a business model in contracted research for local SMEs, and an academic model in traditional research such as academic publications, conferences, and large-scale national research projects.

Not surprisingly, the vast majority of employees in university support structures come from the university but, at the same time, do not share the same academic culture, more often relying or a more business-related culture of entrepreneurship (and often only heads of these structures, as in the case of AMU Foundation in Poznan or the Institute of Biomechanics in Valencia, remain both inside and outside of the academia). The prestige gained via respectful research achievements is translated into trust in academics’ abilities to solve the technical problems of their enterprise partners on the part of enterprises seeking partnerships. In a similar manner, the partnership with a medical company studied at Hertfordshire University would not occur if the department partner did not have academic credibility in the area in which this company sought a solution to its problem.

To an extent, in most of the partnership cases studied, a related issue appears: a succession problem in UEPs, linked to various levels of individualization and institutionalization of partnerships. Most partnerships with enterprises are long-lasting and based on mutual trust, gained in various previous collaborations. The relationships are with strong individuals, rectors, directors or academics, as well as with units or structures at first formed and then headed by them. Also, outside funding is guaranteed by high academic prestige, or powerful business or political or social connections, as well as high networking skills at local, regional or national levels, of these individuals, founding-fathers of particular partnerships or university support structures for entrepreneurship and UEPs. Former rectors sit on boards in companies which are subsidizing their units or structures for UEPs as they have trustful relationships with the funders and their foundations; or charismatic professors maintain their endowed chairs at universities funded or co-funded by private com-
panies or maintain their board memberships in science parks and in university support structures, inside or outside of academia. How important social networking for UEPs is, is shown by the ISMB case study: The ISBM was supported from the beginning by Torino Wireless, a regional foundation of companies, local authorities, and universities which promote innovation in the region. The role of Torino Wireless is discovering the innovation needs that, when feasible are solved by the ISMB. To some extent Torino Wireless is a provider of clients to the ISMB. Not too surprisingly, the Chair of the Torino Wireless is the former rector of the Politecnico and Chair of the ISMB. Public authorities are not directly involved in the ISMB (although they are part of Torino Wireless) but they have important demands of innovation which are channelled through the ISMB.

Academic linkages with private companies are most often very individual, trustful, and long-lasting. Consequently, from an institutional policy perspective, the question is: what happens to these units, structures, and partnerships when these charismatic individuals, inevitably, retire? This issue explicitly or implicitly reappears in many studies.

In many cases, known also from European studies of academic entrepreneurialism, the conditions feeding UEPs are not easily replicable in the same place, the same academic unit, the same entrepreneurship or UEPs support structure, but with different heads, with other people of different university areas origins, different social networking skills and without the trust of main partners or funders, gained over the years of joint undertakings. In extreme cases, partnerships may phase out altogether after their heads’ retirement, as the structures were formed by charismatic leaders who are not easily substitutable. Fortunately, in other parts of the university new partnerships may appear, or powerful support structures may remain in place owing to new impetus from new individuals and owing to high levels of institutionalization of partnerships already gained, in terms of land already granted by local or regional authorities, sponsors already attached to an organization, infrastructures already built, and finally their staff being heavily involved in trying to maintain the structure as a whole. A (probably unavoidable) high level of individualization of UEPs, their heavy reliance on powerful individuals, is welcome while UEPs are formed, but over time, the level of their institutionalization and formalization may be expected to grow. A financially self-sustainable organization needs to survive the shock of its founder leaving it at some point; otherwise both small- and large-scale partnerships may turn out to be “one-man shows”, vulnerable in financial and organizational terms.

The more institutionalized a UEPs is (as the cases of Kennispark in Enschede, ISMB in Torino, IBV in Valencia, and AMU Foundation in Poznan indicate), the more viable
(and the less vulnerable) it is in the future. In the cases of more individual (academics-led research) partnerships such as partnerships with SMEs via contracted research (as in the cases of the Kassel and Hertfordshire partnerships studied), those partnerships may gradually disappear, but their counterparts may appear in different forms in different parts of the university, upon the retirement of their initiators, as the culture of UEPs, or the culture of academic entrepreneurship, has been already accepted by institutional policies in the respective universities. Linking universities to the world of business may take a variety of forms but each of them, over a period of time, is able to influence the institutional culture of a given academic institution. The role in UEPs of individuals, powerful academics and administrators alike, is critical. In the absence of this specific human factor, no other factors seem to guarantee a long-term success of a partnership; and the case studies show that the number of visionary, charismatic academic or administrative leaders in a university setting is always relatively limited and it is very important for the organization to offer them some flexibility and responsiveness, trying to utilize their energy and creativity, as well as social networking, managerial and fund-seeking skills, within academia or in a structure separate yet still related to it.

5.2.2 PUBLIC AUTHORITIES AND SUBSIDIES, PRIVATE DONORS AND FUNDING

The role of public authorities and public subsidies (especially regional) and the role of private donors, sponsors and partners are crucial for the development of successful UEPs. Partnerships seem to need both public subsidies, especially at the time of their inception, and private donations and/or contracts from their partners. Public funding is most often available to partnerships and university UEPs support structures in their initial stages of operation. Then they become increasingly financially self-reliant; some of them (e.g. the ISMB in Torino) have access to annual multi-million euro donations for running costs from their private partners for many years. Others, like the AMU Foundation in Poland and its science park, or Kennispark at Twente University, received huge support in the beginning, including the title to the ownership of land or the right to use it. The case studies suggest that, in general, successful partnerships with enterprises most often made use of public subsidies, especially regional development funds from regional development agencies.

Access to public funding was a decisive factor in the case of the Hull partnership where regional development funding was available to meet start-up costs; in the AMU Foundation and its science park case, both regional funding and EU structural funds (regionally distributed), as well as the donation of land belonging to the municipality were of critical importance. The Twente University case with its Kennispark (and its predecessor, science and technology park) showed the importance of both public (municipal, regional, and national) funding and the donation of land
belonging to the city, together with financial commitment from the city, provincial and central governments for Kennispark’s start. The initiative was attractive due to its potential economic impact on the region; at the same time, there were funds available for innovation, including those from the 2002-2003 Municipality Master Plan. Important funding from the three levels was received, being crucial for the project’s viability.

On a smaller scale, public funding was instrumental in setting up a University of Hertfordshire partnership with a medium-sized medical company in which a governmental KTP scheme (Knowledge Transfer Partnerships) was used to cover the costs of placing researchers (called Associates) in firms, with specific R&D tasks. Also in the Spanish case of the University of Santiago de Compostela, the UNIEMPRENDE university support structure initially received financial and technical support from the regional government.

The regional involvement in practice means not only public funding for UEPs but also the commitment of governmental structures and authorities, and of regional development agencies to the development of the region via UEPs. The will to boost regional economy via various forms of university support structures for UEPs was clear in the cases of Twente University and Maastricht University where regional authorities have had strong interest in collaborating not only with the university sector but also with the private sector, the other necessary element of partnerships. In the AMU Foundation case in Poland, structural funds invested in both AMU Foundation’s science park and the university itself, have a clear regional dimension. In the Cologne partnership studied, where demand-oriented study programmes where developed (and whose model of combining studying and working became a German benchmark for other Universities of Applied Sciences), the regional demand to develop paid courses in some areas of studies was a determining factor.

In two cases, the fostering of regional development was strongly supported by regional private big business: in case of the Torino’s ISMB, an important national Torino-based bank (INTESA San Paolo) started a foundation and acted together with the Politecnico di Torino, accompanied by several other smaller private partners. In the case of UNIEMPRENDE support structure at the University of Santiago de Compostela, two big Galician enterprises (Inditex and Grupo San José) invested the money needed to start the UNIRISCO company. The role of local SMEs was also important in the Kassel case of academic entrepreneurship as their association used to fund an endowed chair at the university, and currently these SMEs are often still valuable clients in contracted research activities. Ideally, both substantial public and private funding is made available to a partnership, as in the case of University of Santiago de Compostela in which both the support from Galician private enterprises and
from regional development agencies were of critical importance. In the region of Galicia, two big enterprises such as Inditex and Grupo San José invested the amount of money needed to start Unirisco (this amount was insignificant for them but a key element for setting Unirisco). Within, their corporate social responsibility, enterprises joined this project with the aim of fostering local development. Support from the regional government: At a later stage, UNIEMPRENDE has received financial and technical support from the regional government through the regional ministry of Innovation and Industry, the regional ministry of Employment, and the Galician Regional Development Agency (regional ministry of Economy and Finance).

Both public funders (national and regional authorities, regional development agencies) and private donors remain heavily involved in the governance of partnerships, and the relationships between public and private stakeholders and the university representatives in partnerships becomes trustful. Joint steering and supervisory bodies are being formed and the three types of stakeholders usually meet there on a regular basis. Joint steering bodies of UM Holding/BioPartner/BioMedBooster: Steering bodies with representation from members of Maastricht University and other stakeholders (City of Maastricht, Academic Hospital, LIOF development agency, business sector) are put in place and meet on a regular basis with the management of the respective valorisation bodies. The board members will discuss the strategy of the Holding, respectively BioPartner, BioMedBooster. There is good communication and trust among the partners. This was built up over the years and is partly thanks to the people who sit on the boards and the management. The director of the Holding used to be the same person as the director of BioPartner. From last year (2009) there is a new BioPartner director, making the two units more separate from each other.

5.2.3 UNIVERSITY-ENTERPRISES STAFF MOBILITY

The project studied the extent to which universities encourage/tolerate mobility between public and private sectors. Not surprisingly, as the AMU case study report put it about Poland, “the world of enterprises and the world of academia are different, totally separate worlds. There seems to be no mobility between enterprises and universities possible. Once an academic leaves the university, his/her chances to return are minimal. Institutional culture at the university does not seem to allow such mobility”. It is not much different in Germany (in the Cologne case study, “mobility as such, although it is tolerated, it is not frequent” and, in the Kassel case study, “there is no mobility between the university and the academia”), in Italy (“the rigidity of Italian university recruitment regulations does not allow easy mobility to and from enterprises”), and in the Netherlands (“there is not a lot of mobility between the university and enterprises. It is tolerated, though”). Slightly more positive
conclusions are reached in both UK cases (“in principle, this would be welcome”). Finally, new developments are reported in the two Spanish cases: at a national level, a new law on universities (2007) promotes UEPs, enabling academics to participate in, or create, private firms, allowing them to take “technological leaves of absence” and to retain their university tenure for up to 5 years. The practical consequences of the new law in this area seem still uncertain; as the Valencia report stresses, “this new norm represents a strong cultural change that is just starting to be used by academic staff”.

Thus, so far, the mobility understood as moving back and forth between the university and the enterprises seems marginal. Professors running spin-off companies in the Netherlands (both the Maastricht University and the Twente University cases) are requested to reconsider their presence in the company’s management bodies within a year, and decide which path of activity (business or academic) to follow. In Poland there are no legal restrictions to run spin-off companies and to work full-time at the university at the same time, but the number of such companies is limited. In the Kassel case, there is clear path followed by many junior researchers involved in the Institute’s projects and contracted research: they stay at the university until completing their MA or PhD theses, and then they immediately leave for the business sector. This is a classical example of one-way university-enterprise mobility in engineering; as the case study explains.

Young researchers leave academia upon completing their PhDs. Also there seems to be limited ways to continue their research track, should they want to, as the number of professors is strictly limited and it may take several decades to be able to apply for a professorship. The standard for young researchers is to leave the university for much better paid company jobs. For the university, as in this case for the centre, it is of critical importance which companies are hiring graduates or PhDs. One of dimensions of excellence of the centre is the prestige of companies which employ its graduates. The better companies, the better students in the future, this is the link.

There is much more mobility between university support structures and enterprises than between universities themselves and enterprises. Most support structures represent business attitudes and foster business or business-like culture of entrepreneurship, which is closely related to their financial self-reliance. It was clearly reported for the Kennispark at Twente and for the Maastricht University. University cultures and business cultures still rarely mix in the cases studied and therefore the mobility between business-oriented UEPs support structures to the business world and back is much more conceivable than the mobility from purely academic structures.
5.2.4 FUNDING REGULATIONS (INCLUDING OVERHEADS)

The role of funding regulations in establishing and running UEPs (at all relevant levels: national, institutional and at the microlevel of partnerships) is in most cases very important. Current levels of overheads in the institutions studied seem reasonable and are certainly not an inhibiting factor to UEPs. The budget from research and consulting contracts is often decentralized. Overheads, understood as either a tax on the project of central administration or as costs of central services and support infrastructures used, play an important role for UEPs but they may become a more critical issue in the context of EU’s recent emphasis on full cost modelling, full cost recovery, or cost recovery plus a surplus in external projects. Funding regulations in UEPs are also crucial in the context of the issue of the growing need of financial self-reliance of universities, to be realized by external research projects, contracted research and consulting and generally linking universities to more competitive, external sources of funding. Institutional policies and governance of UEPs will be very useful for polices and governance of all projects based on external funding.

Financial autonomy

There is a widespread trend in European universities confirmed by the present study: in general, institutes and departments already seem to have almost full autonomy in opening and closing temporary administrative and research positions as long as they are externally (project-based) funded. The project studied in detail the degree of decentralization of universities in 18 selected European universities as the degree of autonomy at the institute/department level to create new research and administrative positions, the degree of autonomy experienced by university departments in setting salaries and the degree of autonomy in budget allocation and generation of external revenues by departments and research groups at the university.

As expected, departments have almost full autonomy with project-funded positions, no or highly limited autonomy in setting salaries, and moderate to very high autonomy in allocating external revenues, except for standard or negotiable overheads (and with growing emphasis on full costing models in the Netherlands and the UK).

With the exception of AMU (Poland) where the theoretical autonomy of creating new positions is high but practical autonomy is limited due to the structurally low level of external funding, in other case studies the autonomy in this respect is “very high” or “considerable” (Cologne, Kassel, Twente, Hull, Maastricht, Hertfordshire, Santiago, Valencia). At AMU, new policies, strongly favouring the generation of external incomes, are that easily-opened project-funded positions can be subsidized by the university to make them more attractive. The restrictions mentioned in the case studies include a short-term basis or a clearly temporal form of employment (Valencia, Santiago) and
a check by the dean or rector on the financial sustainability of new positions (both Dutch cases: Twente and Maastricht) or, finally, meeting a general condition that the unit creating new research or administrative positions is generating a surplus (both UK cases: Hull and Hertfordshire). In the case of small-scale research-related and contracted teaching-related partnerships (both German cases: Kassel and Cologne), the units involved in a partnerships are fully autonomous in terms of employment decisions, as long as positions are fully project- or contracted research-funded.

In contrast to project-funded temporary positions, in all cases the creation of new fixed positions is very complicated, strongly centralized, and depends on either the central university administration or regional (Germany) and national public administrations. At Twente University there are quite a few endowed chairs, sponsored by private business organizations and charities; also in Kassel’s case, the chair was endowed in the first years of operation by regional industry and trade companies, all regional SMEs. At Kassel, the central administration backed by regional authorities of Hesse intends to lower the number of chairs from over 320 to 300 in the course of the next few years (but at the same time gives university units full autonomy in creating externally-funded project-based positions, creating a new structure of university employment in which the number of internally-funded staff and academics decreases and the number of externally funded ones increases).

In contrast to temporary employment, departments’ autonomy in setting salaries for full-time employed is minimal in all the cases studied. In Germany, Spain, Italy, and Poland there are national salary brackets which do not leave research groups, departments (or universities) with any freedom of increasing (or decreasing) salaries. Thus salary levels are ascribed to fixed administrative and research positions; in Germany, Spain and Italy, university professors are civil servants; in Germany, their salaries are determined jointly by universities and the regional authorities, and in Spain there are additional (small) payments to professors from regional authorities. In the UK cases, by contrast, salaries are subject to university-wide policies.

Finally, regarding the generation of external revenues and the budget allocation by departments and research groups in the university, the autonomy in the cases studied is very high or almost full (with the exception of AMU, Poland, where it is moderate, mainly due to high overheads paid to the university from all external sources in all cases analyzed). While at AMU the level of overheads (taxed by the central administration) is 20 percent for research projects in social sciences and 30 percent on research projects in natural sciences, and 50 percent on revenues from student fees charged from part-timers, in the Cologne case of contracted teaching, overheads are 5 percent, in Valencia they are flexible and negotiable, in the case of Kassel’s almost self-financing centre, the level of overheads is 5-10 percent from re-
search projects and 10-20 percent from contracted research with enterprises. In all UK, Spanish and Dutch cases the level of autonomy regarding generation and allocation of external income is high. Most cases report high or very high flexibility in determining the use of external funding at the level of an individual researcher or a particular research group. Both Dutch cases represent systems in which institutions have decentralized budgets – at Twente University, departments are fully responsible for balancing their budgets and bringing in sufficient amount of internal and external revenues to cover their expenses. Twente University has an internal system of pricing in which every central service has to be paid for, while at Maastricht University full-cost pricing is high on the university’s agenda. While in Germany and the Netherlands the regulations on what part of a salary a university professor can derive from external income are strict, in most other cases the regulations are relatively flexible. In Poland there are no legal limits on either external income obtained via the university (from external sources administered by the university) or via parallel work in other academic institutions (public or private). Generally, academics in the majority of cases studied are also entitled to earn additional income via outside consulting services. The limits on overheads are imposed in all EU-funded projects, from 7 percent, for example, in Lifelong Learning projects, to either transitional flat rate of 60 percent, or to full-cost models for those universities which are able to calculate real costs. The EU is clearly encouraging full-cost models, and moving towards them in all projects funded by it.

Pricing policies and cross-subsidizations

The project also studied explicit pricing policy with respect to research carried out for external clients in detail. In all partnerships studied, in general, a market approach was used and the units involved charged broadly commercial rates for their services, be they research, renting spaces or granting access to research facilities. Their self-sustainability determines an overall market approach, combined with flexibility in price-setting, individual approach to partners or clients, depending on past history of collaborations, prospects for future collaborations, etc. Most often full costs including indirect costs are required in external contracts. At Twente University and at its Kennispark, a system of internal charging for all services (lecture halls, libraries, computer facilities, etc.) has been in place since 1988. Not surprisingly, in a highly entrepreneurial setting, the share of researchers working on externally-funded contracts there is highest among the Dutch universities (while the average is about 50 percent, at Twente University two thirds of its research staff are paid either by the national research council, 35 percent, or through external projects, 31 percent). In both UK cases, “full economic cost” is charged (including full overhead costs) and at Maastricht University the project is to charge 10 percent above its full cost (to prevent researchers internally cross-subsidizing external research).
In general, a low level of overheads in practice means a low level of funds top-sliced by the university to cross-subsidize those units which are not doing financially well at a given point of time; it is often a reflection of institutional policies encouraging research units to seek external funding. In increasingly entrepreneurial settings in which the cases analysed operate or which they are creating themselves, wide-scale cross-subsidizations with top-sliced external revenues are becoming increasingly problematic as overheads are generally low and the funds are mostly at the disposal of those units which obtained them.

At the institutional level of the university, the idea of using revenues from better-performing units for cross-subsidizing financially worse-performing units seems to be gradually losing to the idea of leaving as much revenue, and with as much flexibility to use it as legally possible, in the units which are generating them. As numerous empirical studies (of Burton Clark, Sheila Slaughter and Gary Rhodes in the US, Simon Marginson in Australia, and Michael Shattock, Gareth Williams, Paul Temple, Jose-Gines Mora and Marek Kwiek in Europe) show, entrepreneurialism can be both teaching- and research-related, and can be scattered throughout the university, in all research and study areas rather than only in selected areas (e.g. Shattock 2008 summarizing EUREK findings on academic entrepreneurship). Consequently, it is clear from the GOODUEP studies that new university policies accompanying UEPs favour leaving an increasing share of externally earned income where it was actually earned: at the disposal of departments, research groups, units and academics who brought it to the university. In a longer term, this changing policy towards externally earned income will either make differences between various parts of the university more visible, or will make all university units more engaged in all sorts of externally funded activities, be they UEPs in research or academic entrepreneurship in fee-based teaching etc.

A major counterexample to UEPs support units becoming increasingly financially self-reliant is the Torino case of the ISMB where over 50 percent of funds (5.4 M€ out of 10.14 M€ in 2007) are guaranteed annually by its principal financing partner and smaller partners. As explained in the case study, “the permanent financial support of the CSP [Foundation Compagna di San Paolo] (supporting the ISBM with 5M€ yearly) shows the commitment of this foundation and facilitates the working of the ISMB. The fixed contribution of other partners is smaller (400,000€ yearly) but also important”. The CHINC “University Incomes Report”, analyzing European institutions, stressed that “perhaps the clearest observation is that there has been a general increase in almost all institutions’ shares of grants and contracts... more than one-third of the institutions for which data was available doubled their share of grants and contracts resources between 1995 and 2003”. The balance between “core funding” allocated at the institutional level and the “external project funding”
is changing, with the role of the former steadily increasing. Consequently, studies of UEPs’s governance and accompanying institutional policies are becoming increasingly relevant.

5.2.5 Increasing Income/Available Budget to Universities by UEPs

The role of increasing income/available budget to universities by UEPs is rarely explicitly presented. From the case studies it appears that the motivation of boosting regional economy is in general much more important than the motivation of bringing additional income to universities involved in partnerships. All partnerships are, or have been in their initial stages, heavily subsidized by either public funds or private funds, or both. Despite the business attitude dominating in university support structures for UEPs, they are focused on the economic development regions where their parent universities are located rather than economic returns to universities themselves. Consequently, a purely financial analysis of UEPs in terms of external funds received, used and surplus reinvested at universities does not seem to be working. As stressed in literature on knowledge transfer in the US, knowledge transfer activities, with some notable exceptions, are not profit-earning at the moment and the majority of university knowledge or technology transfer offices need university (or external) subsidies to continue their operations. Also in the cases studied here, universities involved do not expect returns from UEPs. Therefore money flows from partnerships studied, especially UEPs support structures, to universities are insignificant or hard to trace: UEPs are future-looking, and reinvest any surplus, should they occur.

Explicitly, profit-making attitude, combined with the regional focus, was dominant in one case only. As the Maastricht University case study remarks business-like attitude to running the Holding and the BioPartner: The steering of UM Holding stresses the wish to make a profit for each of the Holding’s companies. In 2007 the Holding’s revenue was about 2.7 M€ and about 1.9 M€ in 2008. The profit is invested partly in the companies (their R&D), and is partly paid out as dividends to the university to be used for scholarships for (PhD) students (allowing the best students to study for free). For the incubator BioPartner, an occupancy rate of 75% is regarded as a measure of success. Employment of entrepreneurs: all people working in the management of UM Holding have their private business and have contracts with the Holding to work for part of their time. They get paid by the hour and in case of failure their contract is terminated.

In other cases the role of short-term financial gains for the structure of the university was strongly disregarded. At the same time, in most cases the issue of self-sustainability appeared. Units involved in partnerships have to consider their own
existence as organizations, and in this respect the financial dimension of all forms of UEPs and all types of funders, be they public or private, is of critical importance.

5.2.6 TRUST IN UEPS

The role of trust in partnerships with enterprises is fundamental, both from a short-term, and especially from a long-term perspective. It is the trust between researchers from universities (or researchers and administrators, or “knowledgeable officers” from knowledge transfer offices or from university support structures) and enterprises. The trust between the various levels of sponsors and funders (most often municipal, regional, and national) and the university, especially when working together in various governance bodies of universities, governance bodies of university support structures, and of university-related foundations, linking universities and the local/regional economy. The trust between academics seeking the commercialization of their inventions and university support structures represented by various forms of research “valorisation” units, business incubators support staff, university business advisors, technology transfer officers. The trust between enterprises, often local SMEs, seeking practical, inexpensive and fast solutions to their technical problems and universities believing they can help, as partners, those enterprises, without leaks about their problems or solutions. Finally, what is needed is also the trust within university units most aggressively engaged in partnerships with enterprises, the trust put in those in charge of these units and in their personal abilities and managerial talents to run mostly self-financing research and contracted research units for a prolonged period of time. Strong convictions of both managers and staff about financial sustainability of units involved in partnerships, combined with the loyalty towards these units, is also important.

Most units involved in partnerships, be they university units or university support structure units, depend heavily on non-core/non-state income; their freedom to realise various sorts of fascinating ideas together with their private business partners is closely related to their financial vulnerability, either all the time, or upon the retirement of their heads, directors, chair-holders etc. Financial independence and self-sustainability also means heavy financial vulnerability. Even in the cases where high level of annual funding is guaranteed by big national companies (the ISMB in Torino), local SMEs (Kassel University) or by government seed-funding (AMU in Poznan), the business culture of financial uncertainty is different from a (generally prevailing among those not involved in partnerships with enterprises) academic culture of guaranteed state subsidization of at least core activities. A good example of the scope of financial self-sustainability is the Kassel University case in mechanical engineering research in which for a team of 25 researchers there are only five positions internally funded by the university; the remaining 20 staff are fully dependent
on project-based competitive research funding and contracted research performed by the centre.

As the Kassel case study explains, trust between the chair-holder, staff and the companies seems crucial: trust that no leaks about problems being solved or solutions being found will occur (in any form, including scientific papers); or trust that the chair or co-worker will do whatever possible to solve a given problem. Finally, the trust in the quality of services rendered and, internally, the trust between the chair holder and staff that funds will always be available for those funded by research projects and contracts. The feeling of being a part of self-financing community seems to be powerful but the central role is always played by the chair holder. Incentives to staff include international trips and conferences, co-authored papers and, especially, knowledge which can be applied later on outside of the university, in companies. Staff know that they can always find good employment in the outside world based on experience gained in the team work.

Also in the IBV case of Valencia, the role of trust is stressed. Success factors of UEPs include “reputation and long-lasting experience in knowledge management. During its 30 years of working, the IBV has built a strong network of trustful relationships with clients and partners. This brings the IBV to a good position to observe and identify new applications and business opportunities”.

In the Cologne case, the individual nature of relationships is stressed: Academics linkages with the private companies, on an individual basis. Cooperation in developing and running study programmes has fostered trusting long-lasting relationships. This facilitates the establishment of research contacts and consultancy activities.

Similarly, at Twente University the case study mentions as one of success factors of its UEPs studied: Close trustful personal relationships between key stakeholders’ representatives. In addition to the above, the main partners from Kennispark, the university and the municipality have very good communication partly due to previous coincident career paths. This has permitted the development of an informal and loose governance scheme, which so far has been successful and very instrumental in the effectiveness of the partnership. However, the partners recognise that this may be risky in the long-run and therefore are considering ways of reaching a more formal but still effective model.

5.2.7 FLEXIBLE MANAGEMENT AND GOVERNANCE STRUCTURES

The role of flexible management and governance structures is critical, as stressed in several case studies. At Twente University, overall governance structure and practices are part of its UEPs success:
The fact that Kennispark is legally a foundation permits flexibility in the determination of the agenda, decision-making processes and budgetary management. Also, it is crucial that representatives from the university, the enterprises, the municipality and the provincial government interact formally and informally in the Kennispark’s Board of Supervisors and its Steering Committee.

In the case of Kassel, one of the reasons for the institute’s top position which is not research-related is an excellent management and governance of ongoing research projects and industry contracts: work is clearly divided between team members, there are several layers of collaboration (and collaborators), and there are leaders/ coordinators at each layer. Governance structures seem very flexible with general accountability towards the chairholder and the university, the role of the university as a whole in the functioning of the institute in projects is moderate.

5.2.8 LEGAL STATUS OF UEPS SUPPORT STRUCTURES

The role of the legal status of analysed organizational units, units involved in partnerships are most often private bodies, associations or foundations, for profit companies or venture capital companies, with various stakeholders involved, the central one of them being most often the university. Foundations and associations are usually founded by at least the following parties: the university (whose representatives are often chairing the Board of Oversight or Board of Trustees), the municipal and regional authorities, and the local and regional business (either particular companies, or regional business associations). Analysed structures are close (both physically and personally) to the university but at the same time separate from it, for a variety of reasons, including profit-seeking via the participation in university spin-out companies, which most often is not legally possible for public (and non-profit) universities. As Maastricht case study explained,

Private status of the university’s valorisation agencies. The Holding, the BioPartner Center, and the BioMedBooster Company were set up outside of the university, allowing them to engage in profit-seeking activities. Universities (or their academic hospitals) cannot raise the capital needed to start new companies, therefore private partners are required. The LIOF is such a private partner. The university, through its Holding, participates in spin-off companies, but it has a policy of only keeping a minority of a company’s shares. The UM Holding’s exit strategy is to get out of such ventures after 5-7 years.

For instance, the IBV in Valencia is independent from the Valencia University of Technology and a non-profit association, governed by an assembly and a board, comprising the university, the regional government and enterprises; the AMU Foundation which is running a Science and Technology Park in Poznan, Poland, is legally a non-
profit foundation which is chaired by the university rector and on whose board there are representatives of local authorities and regional enterprises; in Torino, Italy, ISBM is a private law foundation of a big national banking group and the Torino university of technology; the Kennispark (“Knowledge Park Twente”), a science and technology park in Enschede, the Netherlands, is run by a private foundation and its various projects involve, in various constellations, the Twente University, public authorities (city of Enschede, provincial government, regional development agency, national ministries) and private partners (industry and associations of businesses, intermediate organizations, banks and venture capitalists. The UNIRISCO case is still different – it is a venture capital company run by the University of Santiago de Compostela’s support structure dedicated to increasing the entrepreneurial culture at the university (called UNIEMPRENDE). It is registered and authorised by the CNMV, the Spanish Securities and Exchange Commission. Finally, the University of Maastricht Holding is also a separate unit set up aside of the university and it is a holding company that holds shares in companies, fully owned by the university (such a private legal entity enables the university to indirectly take business risks and undertake commercial activities that a public organization would not be allowed to do). A perfect example of how to creatively use opportunities provided by various legal statuses of a university support organization is given by the IBV in Valencia: The IBV activities started in 1976 at the university under the initiative of a small group of people, including its current director. In 1989, the IBV moved its headquarters to a technological centre in the outskirts of Valencia and in 1994 became a non-profit association. These shifts were due to opportunities offered by the Valencia Institute of Small and Medium Sized Enterprises (IMPIVA), a regional governmental agency. In 1993 the IBV moved back to the university campus; it is currently based in a 6,000 m² independent building at the 140,000 m² science park. In the case of Valencia, being a private non-profit association has allowed the IBV to take its own major decisions. This would not have been possible in the traditional university setting. Being a non-profit association has given the IBV flexibility reducing the response-time to opportunities that emerge. This is reflected in its competitive position.
6. Final conclusions and policy orientations

6.1 GENERAL CONCLUSIONS

Most of the conclusions of this study have been presented in the previous chapters. The conclusions based on the analysis of the ten cases of good practices could be extended to a great extent to most UEPs activities around Europe. In this final chapter we summarise those conclusions and we will also present some methodological conclusions in the following section.

1. Probably, the most relevant conclusion of this study is the great amount and diversity of UEPs that we have found in European universities. Our sample of 18 universities was not a rigorous scientific sample in a statistical sense, but we selected institutions representing different countries, regions, types of higher education institutions, disciplines and other characteristics. They could be considered a fair representation of average European universities. Under this premise, we may affirm that European universities are, on the one hand, extremely active in developing UEPs. There are more activities than we supposed at the beginning of the study and much more than public opinion thinks. This is an outstanding and positive conclusion of this study.

2. The variety of approaches is equally important. We found almost no common structures or approaches in the considerable amount of UEPs that we analysed in this study. This lack of communalities is both a problem and a challenge. It is a problem because it increases the difficulties in finding simplistic frameworks for explaining UEPs, but at the same time it is a challenge to find the common traits in all the UEPS that we studied.

The diversity of approaches is a consequence of many factors:

· Historical and cultural differences. In some places cooperation between universities and enterprises is easily accepted for historical and cultural reasons, but in other places, universities are more reluctant to cooperate.

· Diverse economic contexts. In some regions, a prosperous economic context stimulates UEPs, but in others the stimulus comes from the need to overcome a less buoyant economic situation.

· National or regional policies. Governments have developed different policies (more or less explicit) for supporting UEPs and also different financial instruments to incentivise these activities.

· Institutional culture. Institutions have their own culture as a consequence of history, location or disciplinary approach.

· Individual entrepreneurialism. Entrepreneurial individuals in universities have envisaged different ways of developing UEPs.
This variety of contexts, cultures and individuals produced a wide range of responses from universities, and the ways of building the UEPs are extremely diverse.

An additional factor which explains the variety of approaches to UEPs is the lack of experience in these activities. Universities around Europe have initiated relationships with enterprises with few models that they can imitate. This lack of experience in good practices and the diversity of contexts have provoked the diversity of solutions to similar problems. On one hand, this makes it difficult to find a general framework, but on the other, allows us to study an interesting diversity of good practices.

3. A clear conclusion of this study is the relevance of the contexts in the development of UEPs and also in the way they are developed. UEPs need a certain initial basis (financial, legal and cultural). When all the conditions are negative, UEPs do not seem feasible. Nevertheless, where and when these minimal conditions exist, UEPs flourish only depending on institutional and individual initiative. When the context is not the most adequate, there are perhaps less initiatives but there is even more room for adopting brilliant solutions.

Although the support of a large industrial partner or foundation may be helpful in some cases, UEPs do not depend on the presence of big business or large multinationals in the region. They come in a variety of forms and also flourish in regions where a lot of SMEs are located.

Successful partnerships are always based on the innovative capacity of the institution in some area or field. Participant universities need to be strong in some area, though not necessarily in research. Teaching, financial or services partnerships are also feasible and they could be developed in most universities.

4. The governance of the institution has an important role in the successful development of UEPs. A climate of institutional autonomy, flexibility and appropriate management is a necessary condition. This ambience of flexibility should exist in all levels of the institution, including the management of human resources. Freedom is necessary at the level of the faculties/departments to engage in UEPs activities and to recruit temporary staff to run projects as they appear.

Nevertheless, when institutional flexibility is not the most adequate because of national regulations on universities, UEPs also flourish through external institutions related to universities but emancipated of bureaucratic burdens. The more regulated the system, the higher the tendency to look for “shortcuts” such as private foundations or external bodies. A separate private legal entity to organise, facilitate and manage the UEPs may allow additional options for such partnerships to come to fruition and not interfere with the core activities in universities (as public organisations).
5. The **internal governance** of UEPs is also important. It is necessary to have competent people with a variety of skills to support knowledge transfer, scout, coach, and give advice on business plans and IP issues. In successful cases of UEPs, the management helps to create an organisation that is internally and externally clear and visible.

Successful UEPs have governing boards where the university, the business sector and public authorities are represented. Their members often communicate and negotiate outside of the formal board meetings, sharing information and maintaining trustful relations.

6. Obviously, the **funding mechanisms** are another key issue in the development of successful UEPs. Several aspects should be considered:

   - **Initial support** from public or private sources. Many successful UEPs had initially been supported by public authorities, foundations or enterprises. This seems to be a key aspect for those UEPs which have a high requirement of initial investment such as Science Parks, but it is not a necessary condition for all types of UEPs. In the case of spin-offs, venture funds need to be organised to help spin-offs to start and grow.

   - **Financial incentives** for UEPs. Financial incentives are among the most frequently employed policies to support UEPs. Fiscal incentives for UEPs, although not very generalised, are also an additional instrument for involving business in partnerships.

   - **Personal incentives** to academics involved in the development of UEPs seem to be critical. These incentives are not necessarily economic. Academic work is still to a large extent evaluated by traditional criteria of research excellence and productivity. Taking into consideration the academic staff’s involvement in UEPs for their assessment, promotion and academic recognition is a key incentive. Mobility, intellectual property regulations and overheads are also aspects that play a role in stimulating or hindering UEPs activities.

7. At least in the initial stages of a UEP, **individual entrepreneurialism and leadership** is probably the most important factor. Most initiatives are to a great extent based on individuals or networks of people with an entrepreneurial vision and attitude. In most cases the key person is an individual with academic prestige and leadership, but is also a person able to develop a strong network with local authorities and business people. Only after reaching a certain stage of development can the individual initiatives become institutional, but even in this case, UEPs need a strong leader that speaks the language of the business world, is respected in academia, and is competent in networking.

8. UEPs need **the mutual trust and commitment** of local/regional authorities and enterprises. Generally speaking there is a lack of understanding between
the academic and the business worlds. Overcoming this barrier and creating a climate of trust and mutual understanding is a key element to having successful UEPs. A strong commitment and communication between the university and its partners is crucial in founding UEPs and making them work.

The development of UEPs in European universities also has some barriers which do not allow more efficient partnerships. They have been implicitly mentioned throughout this study. Some of them depend on the context and not too much can be done in the short term to collapse these barriers but others are more easily removable, at least in the mid term. We will finalise this section by mentioning three of them:

1. It is necessary to develop a more favourable vision on UEPs. One of the problems detected in this study is the university’s reluctance to accept and put exchanges with enterprises into practice. But the problem not only comes from the university side. Businesses are not always interested in cooperating. An innovation strategy is possible only if existing distrust between university, industry and government is eliminated. To a great extent these barriers are mental and cultural. This is why a new attitude towards UEPs should be promoted. At least the following arguments can be used:

   - UEPs provide benefits but not only financial ones. There are many equally important non-monetary returns: generation of ideas, jobs, companies, research opportunities and projects.
   - UEPs help to develop research that is more focused on social needs. It is obvious that long perspective basic research is consubstantial with universities, but applied research will be more adapted to social needs if the final or intermediate users of the outcomes from this research are involved in the process.
   - UEPs help to develop teaching and learning modes better connected to socio-economic demands. UEPs could help to reduce the gap between socioeconomic needs and what students learn in universities. UEPs can be a way to continuously update these needs and to find ways of meeting them. Connecting students with UEPs could also be important to communicate entrepreneurship.

2. Entrepreneurialism is to some extent a natural condition for some people. Nevertheless, institutions may play a role in promoting or slowing down entrepreneurialism. **Facilitating entrepreneurialism** is something that all institutions can do. On one hand they may develop incentives to entrepreneurial individuals (financial, but mostly recognition benefits). On the other hand, institutions may allow mobility and flexible working conditions for academics involved in these activities. However, the entrepreneurial activity of university staff should be monitored to ensure integrity and prevent cross subsidies.

   Governance could be a barrier for UEPs in many countries. Successful expe-
Experiences are developed outside universities because in many cases the university structure does not allow a flexible management of UEPs. Increasing flexibility and autonomy of universities is needed to develop UEPs and nowadays a feasible goal in European universities at the mid term. Changing the governance models should also include a more flexible status for academics.

**6.2 UEPS RESEARCH AND ANALYSIS CONSIDERATIONS**

The analysis of UEPs leads to the identification of some research and analysis considerations. The accountability, analysis and benchmarking of UEPs and, in general, third mission activities is relatively incipient and under development from a policy perspective. Basically, the following considerations are related to the availability and communication of information on UEPs.

1. Visibility of UEPs. For several reasons, UEPs are not always visible from a country, institution or even faculty perspective. Several reasons for this lack of information have been found:

   - Cultural scepticism. Given that UEPs are not always well regarded within universities, academics collaborating with enterprises are reluctant to give information about these activities.

   - Lack of appropriate information systems. Given that in European universities generally, UEPs have been relatively recently developed, promoted and regarded as something desirable, accountability systems on them are also incipient. There is no (explicit) agreement yet on standard indicators for evaluating UEPs as there is for evaluating research activities, for instance. This problem is seen within universities but also in national HE public agencies. Although many countries are fostering UEPs through national level policies, not much accountability at the national level is observed.

   - Non-financial involvement. Many types of UEPs do not involve considerable flow of funding, for instance, involving enterprises’ representatives in curricula design or offering internships and jobs. Because a limited flow of funds is present, universities’ central administrations are less likely to compile such information in their annual reports.

   - Informal financial involvement. Informal linkages between individual academics and enterprises, involving extra payments or not, are also frequent. These types of interactions are also hard to assess on a formal basis.

   - Often, UEPs are developed on an individual basis (e.g. consultancy activities). The information about these activities does not always flow
to upper or more aggregated levels. As a consequence, many relevant UEPs may be invisible and difficult to assess when the direct implementer of the UEPs is not approached.

· Many of the activities which have been regarded as UEPs are not immediately seen in universities as UEPs because they are not used to seeing them from that perspective.

2. Non-linearity of UEPs development.

Policies and especially institutional support structures do not necessarily follow the same development path as they become more developed. For example, supporting knowledge exchange activities and specifically for managing IPR, different institutions have followed paths which many not be compared as one being better than the other; they have just followed different approaches which meet different needs. This produces a methodological difficulty for the analysis of the broad group of UEPs activities.

3. Contextual diversity.

· Both national and institutional features shape the culture and needs of UEPs developers, which vary considerably among the European UEPs actors. Thus, there is no one-size-fits-all UEPs policy mix, appropriate or desirable for all contexts. Rather, the policy and governance mixes are very much dependent on local idiosyncrasies and university, business and governmental contexts. However, the relationship between the contextual characteristics and the development of UEPs is only visible to some extent at first sight.

4. Differences in UEPs aims.

· The fact that similar institutions may have differences in their UEPs-related aims (e.g. the relevance of attracting external funds), limits comparability because the same indicators cannot describe the different institutional aims.

· Academics in some disciplines are more inclined to develop UEPs than in others. The most active ones could be more visible. However, the least active ones may be part of socially-relevant partnerships, important from a social perspective. The indicators for analysing both types of activities cannot be similar.
7. Annexes

7.1 ANNEX 1: TEMPLATE FOR NATIONAL REPORTS

A. Overview of the national HE and research systems

a. Basic characteristics of the HE system

I. What is the general structure of the system?

II. What is the overall size of the system (enrolment, participation rate)?

III. What is the basic governance structure and regulatory framework of the HE system? What are the general funding mechanisms?

b. Basic characteristics of the research activity in the country

I. What is the overall expenditure on R&D in the country? (e.g. total, per capita, as % of GDP); How is the expenditure distributed by sources? (e.g. between enterprises, government, universities, private non-profit institutions and external (e.g. EU) sources); How is the expenditure distributed by sector of performance? (e.g. between enterprises, government, universities and private non-profit institutions).12

II. How is research activity distributed between university-based and other types of research centres? (e.g. distribution in terms of expenditure, personnel employed, publications and patents)

B. Historical aspects and development of UEPs

a. During the last two decades, has there been any major event or shift in the structure and governance of the national HE system affecting the development of UEPs? (e.g. inclusion of joint activities with external stakeholders in institutional assessments)

b. During the last two decades, has there been any major event or shift in the country’s R&D policies affecting the development of UEPs? (e.g. intellectual property laws, increase in public funding for R&D)

c. During the last two decades, has there been any major event or shift in the country’s enterprises and industrial sectors affecting the development of UEPs?

d. If available, what is the current overall performance of UEPs in the country? (e.g. share of university revenues from industry; joint publications between researchers in industry and universities; staff mobility between the two sectors).

12 These and other indicators are available in the attached file “Main Science and Technology Indicators 2007”, OECD.
C. National /regional policies, legal framework and funding on UEPs

a. Is there a legal framework supporting the development of UEPs?

b. In broad terms, what is the national/ regional agenda on innovation? Through which mechanisms is it established?

c. To what extent are UEPs included in the agenda on innovation? In this context, are there certain types of UEPs particularly fostered? (e.g. funding programs to promote collaborative research between universities and enterprises?)

Is there a specific policy for knowledge transfer and if so, how does it encourage universities and enterprises to put it into practice?

Besides the national agenda on innovation, are there other policy instruments designed to encourage universities and enterprises to develop partnerships? (e.g. funds for further training of enterprises’ staff in universities, inclusion of UEPs development as assessment criteria in national agencies’ evaluations of research and teaching activities).

Are there any barriers presented to universities and/or enterprises to develop partnerships derived from the national legal and policy framework?

Is there systematised national information on the different types UEPs?

D. Institutional policies to promote UEPs

According to your opinion,

a. Do universities’ missions and strategies usually include linkages with enterprises as key activities? Is there a particular emphasis on some types of partnerships and with some types of enterprises (e.g. SME)?

b. Do the main university associations in the country (e.g. Rectors’ conference) consider UEPs in their analysis, guidelines or activities?

c. Is it a common practice (legally established or not) that universities include in their internal and external accountability mechanisms, and at the institutional, faculty or department levels, criteria which include the development of UEPs activities?

E. Enterprises policies to promote UEPs

According to your opinion,

a. What actions or policies have enterprise associations taken to promote, develop or assess UEPs?

b. Are there experiences of enterprises with formal policies for developing UEPs?
7.2 ANNEX 2: TEMPLATE FOR INSTITUTIONAL REPORTS

A. Introduction

a. Short university profile (type of university, size, special features)

b. Regional context

c. Changes in the role of universities in the context of regional economy and change of the UEPs role

B. Institutional perspective to UEPs

What are the main types of UEPs developed in this university? What are the main characteristics of the partnerships? (e.g. What are their levels of formality? Who is the university’s counterpart in the partnership? (e.g. individual academics, central level entities); Who is the enterprise’s counterpart in the partnership? What is the number and type of staff involved in the partnerships? How much are the funds invested and revenues obtained? What are the sources of those funds? What are the main types of activities developed in the partnerships? What are the main governance structures of the partnerships?)

How have the number and intensity of the different types of UEPs evolved at the institutional level? (e.g. Which types of UEPs have increased more? Which are the most important ones for universities?)

University policy and strategy towards UEPs

Are there any institutional policies to foster UEPs? Who is in charge of developing them? Which are the main types of UEPs encouraged? To what extent are UEPs policies contextualized in innovation and third mission institutional strategies?

Are there policies to encourage UEPs via human resources management incentives?

To what extent are the partnerships described above a consequence of institutional policies? Have national/regional policies played a key role in their development? Have these partnerships been impelled by the involved enterprises?

C. Characteristics of partnerships (of the one or two cases from each of the main types of partnerships assessed more in detail)

a. Qualitative aspects

   I. Brief description of partnership

   II. Stakeholders involved (public authorities will be included in the reports only if relevant to the analysed cases)
III. Governance/management

1. General governance structure
2. Decision-making procedures/ strategy development
3. Funding/financial system
4. Internal and external accountability
5. Steering tools (e.g. customer-relation management)

b. Quantitative aspects

I. Funding/financial figures (e.g. revenues, budgets, financial incentives)
II. If available, figures on staff involved, results, valorisation, depending on particular aims

7.3 ANNEX 3: TEMPLATE FOR REPORTING IN-DEPTH CASE STUDIES AND ANALYTICAL FRAMEWORK

DESCRIPTION OF THE PARTNERSHIP

Objective of this section: to introduce the UEP to be analysed describing briefly its main aspects

Suggested length: 1 page

Contents:

A. Type of partnership

I. Main activities developed
II. Aim of the partnership for each key stakeholder and in general terms
III. Duration, scope and magnitude of the partnership

The following outputs/forms of interaction may support the description of the partnership:

· Patents applied for, awarded, licensing income
· Research funding from the private partner (number of contracts; turnover)

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13 Distinguish between: a short project on a specific issue (e.g. an enterprise addressing a certain research group to solve a particular technical problem); a middle or long term framework agreement containing several exchanges and joint activities, (e.g. a multinational corporation building its R&D centre next to the campus, sharing research facilities with the HEI, offering internships to its students, funding professorships, etc.); and a (nearly) open-ended commitment of a private foundation to sponsor awards, laboratories and scholarships.
Joint appointments and staff mobility between university and private sector  
Spin-offs  
Co-publications  
Opportunities for students (internships, thesis)  
Guest lecturers  
Sharing facilities

B. Main partners involved (these are analysed in detail in the governance section)

C. Main results of the partnership which validate it as a good practice

**ANALYTICAL FRAMEWORK**

Considerations:

- The analytical framework (AF) has two sections: context and governance of UEP.
  - The context section includes key elements of the regional and institutional situations (including support structures) which directly affect the development of the UEP.
  - The governance section focuses on the partnership-level structures, mechanisms and instruments for being governed. Where relevant, the governance analysis comprises the interaction not only of university and enterprise partners but also of governmental actors.

- The unit of analysis of the AF is specific university-enterprise partnerships. This leads to including general institutional governance in the institutional context section and only specific partnership governance in the governance section.

- For cases where partnerships are at an institutional level, their governance may have overlapping characteristics with the general institutional governance.

- Depending on the type of UEP assessed, some dimensions and criteria may not be applicable. If this happens, please explain this situation.

- Some of the partnerships analysed may be institutional support structures. The focus of the analysis of support structures is on their organisation as partnerships; how do the different counterparts work in partnerships for offering the services.

- Nevertheless, all types of support structures may be described in the institutional
context and regional/national initiatives may be described in the regional/national context of the case studies, whenever this information is relevant for understanding the partnership’s functioning.

**CONTEXT**

The contextual section of the AF includes aspects on the national/regional context and the institutional context. Particularly for national/regional context and to a lesser extent for the institutional context, the information may be found in the national, institutional and mapping reports (all these available in the project’s website). Obtaining the information for filling in this section of the AF (especially the national/regional one) should not be the focus of the visits as it can be obtained previously from other sources.

If possible, each response (on the grey lines), should be not more than three lines long.

**NATIONAL /REGIONAL LEVEL CONTEXT**

**A. Economic and industrial structure**

1. Distribution of the regional /national industrial sector by size of the companies

   Brief response:

   ![Selector options]

   II. The extent to which the industrial sector is technologically intensive

   ![Selector options]

   Brief response:

**B. Structure of the HE, research and lifelong learning (LLL) systems**

1. The extent to which HEIs concentrate the development of applied research

   ![Selector options]

   Brief response:

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14 Where changes in the past decade have been dramatic and have strongly affected the scope of background for partnerships’ development, these should also be mentioned.

15 Similarly, as with the economic and industrial structure, key shifts in the systems may be stressed when relevant.
II. The extent to which HEIs play a key role in LLL supply

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

C. Policies and regulations on:

I. Funding R&D&I with enterprises participation

- The extent to which the public funds’ structure, amount and distribution support U-E collaboration:
  ☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL
  Brief response:

- Indirect funding, for example, in the form of public space for large scale UEP facilities, such as joint research centres
  ☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL
  Brief response:

II. The extent to which intellectual property management for U-E linkages is regulated at the national level, and what the main implications for universities and enterprises are

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

III. The extent to which academics’ income scale is regulated and allows/ restricts the sources of income

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

IV. The extent to which enterprises are affected by fiscal regulations which promote their cooperation with universities

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL
Brief response:

V. Other economic and non-economic incentives for enterprises and universities to collaborate
Brief response:

VI. The extent to which the governmental support to UEP is administratively efficient. e.g. in the provision of information and support for setting up certain types of large size UEP; transparency of regional calls; management of European funds and programmes.

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

VII. The extent to which the political support to UEP is visible and effective; i.e. the level of priority attached to measures aiming to supporting research, development and innovation in the productive sector.

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

**INSTITUTIONAL CONTEXT**

A. of institution: teaching and research intensiveness, size and evolution

Brief response:

B. Institutional governance structure\(^\text{16}\)

I. The extent to which the university has put support structures for UEP in place

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

\(^\text{16}\) In this section the focus is on a general description of the institutional governance structure. The details on the support structures directly affecting the development of UEP are to be presented in the section “Role of institutional support structures in developing this UEP” included in the partnership’s governance section.
II. The extent to which the university includes the collaboration with enterprises as relevant components of its teaching and research activities (e.g. regular collaboration in curricula design)

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

III. The extent to which external funding (non-basal public funding and in particular from enterprises) is relevant in the institutional budget

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

IV. The extent to which enterprises, industrial organisations and chambers of commerce are represented in university governing boards

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

C. Institutional human resources management, incentives to academics and academic culture

I. The extent to which collaboration with industry is considered in research and teaching assessments/evaluations

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

II. The extent to which collaboration with industry is considered in promotion, salary and employment decisions

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

III. The extent to which university IP policy financially rewards individual researchers

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:
IV. The extent to which university policy to encourage commercialisation and spin-offs brings any financial rewards to individual researchers and research groups

☐ HIGH ☐ MODERATE ☐ LOW ☐ NIL

Brief response:

V. The extent to which the university encourages/tolerates mobility between the university and enterprises

☐ HIGH ☐ MODERATE ☐ LOW ☐ NIL

Brief response:

D. Degree of decentralization

I. Degree of autonomy at the institute/department level to create new research and staff positions.

☐ HIGH ☐ MODERATE ☐ LOW ☐ NIL

Brief response:

II. Degree of autonomy experienced by university departments in setting salaries

☐ HIGH ☐ MODERATE ☐ LOW ☐ NIL

Brief response:

III. Degree of autonomy in budget allocation and generation of external revenues by departments and research groups in the university

☐ HIGH ☐ MODERATE ☐ LOW ☐ NIL

Brief response:

**PARTNERSHIP’S GOVERNANCE**

This aspect should be the focus of the interviews. In this section, the specific aspects of the partnership (and not the institution in general) are assessed.

A. UEP stakeholders and model
I. Types of stakeholders participating in the UEP (representatives from the enterprise(s), the university and others like governmental agencies or third sector institutions)

Brief response:

II. Responsibility sharing between institutional, enterprise and other types of partners\(^ {17}\)

Brief explanation of the sharing of responsibility in the partnership:

To what degree are responsibilities shared in the following functions/areas of UEPs?

In the following table, please describe briefly in the corresponding cells, the degree of responsibility that each stakeholder assumes in the main tasks to develop the partnership.\(^ {18}\)

<table>
<thead>
<tr>
<th>Functions / responsibility of stakeholders</th>
<th>Responsibility of the university</th>
<th>Responsibility of the enterprise</th>
<th>Responsibility of other actors such as governmental agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programming/research agenda</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management(^ {19})</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Execution of core activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervision</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Bruijn and van der Voort (2000)\(^ {20}\)

\(^ {17}\) The identification of the stakeholders’ responsibilities, i.e. who does what in the partnership, is included with the aim of understanding the UEP model. It does not suggest that a partnership.

\(^ {18}\) Although it has been suggested in the literature (Bruijn and van der Voort (2000)) that the most intensive form of partnership occurs when it has been decided to interweave each of the functions, in this analytical framework we are not necessarily assuming that hypothesis. Some GOODUEP cases suggest that intense partnerships may be reached without a strong interweaving of functions. The table is used here to organise the analysis of functions undertaken by the different stakeholders.

\(^ {19}\) This includes the roles of “gatekeepers” in both the universities and the enterprises, as people who manage the partnership, help embed the new knowledge in the organisation if that is the case, etc.

III. Benefit sharing between institutional and enterprise partners\textsuperscript{21}

Brief explanation of the sharing of benefits in the partnership:

To what degree are benefits from the partnership shared in the following aspects?

In the following table, please describe briefly in the corresponding cells, the degree to which stakeholders are benefited from the partnership in each of the forms of benefit. You can add other types of benefits.

<table>
<thead>
<tr>
<th>Benefit to the university</th>
<th>Benefit to the enterprise</th>
<th>Benefit to other actors such as governmental agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intellectual property</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training and education\textsuperscript{22}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge and acknowledge of partners’ needs and capacities\textsuperscript{23}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IV. Historical evolution of linkages with different stakeholders

Brief response:

B. Role of institutional support structures in developing this UEP

I. Type and range of services provided by these structures (e.g. supply of information, administrative support, training)

Brief response:

\textsuperscript{21} Different types of partnerships generate different types of benefits. Thus not all cells in this table are feasible to fill in, in all study cases.

\textsuperscript{22} Includes on-site training for students and academic staff and continuous education for enterprises' employees.

\textsuperscript{23} Includes acknowledgement of labour market conditions and enterprises’ needs as well as university research results, facilities and capacities.
II. The extent to which the labour of the researcher is driven and simplified by the central institution’s support structures

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

C. The extent to which economic and fiscal incentives and other local and national governmental actions clearly impacted the starting and development of the partnership

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

D. The extent to which policies and actions taken by enterprises and their associations directly fostered the starting and development of the partnership

☐ HIGH  ☐ MODERATE  ☐ LOW  ☐ NIL

Brief response:

E. Conflicts of interest

I. Is there a code of conduct that regulates ethical behaviour in research? (i.e. Requirements to report who is your funder; regulation on the disclosure of research results; requirement to report conflict of interests.)

Brief response:

II. Is there an explicit pricing policy with respect to contract research carried out for external clients? (i.e. are private parties required to cover all, including indirect costs?)

Brief response:

24 These aspects may be specific to the partnership or applicable generally to the institution.
KEY ASPECTS LEADING TO PARTNERSHIP’S EXCELLENCE

Objective of this section: to identify the most important variables contributing to the partnership goodness

Suggested length: 1 page

Contents:

A. Main aspects contributing to the success of the partnership. Identify whether these are related to contextual characteristics, governance structures, models or practices (all these presented in the analytical framework) or to other issues beyond these25.

B. Analysis of the mechanisms by which these ‘success factors’ affect or affected the UEP; i.e. how was the positive impact on the partnership’s development generated.

C. Assessment of the relevance of these ‘success factors’ in the success of the case; i.e. the extent to which the ‘success factors’ have been crucial or rather secondary in the partnership’s results.

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25 The key aspects contributing to the success of the partnership may be related to institutional, enterprise or governmental actions. They may be present in different stages of the partnership’s development and may include initial drivers, contributors to its maintenance, growth and evolution.