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IP Protection in Belgian Universities – best practices and  
analysis in the European academic and business context

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*ABSTRACT*

Protection of intellectual property has become an important topic in academic research. Since the concepts of academic spin-off and valorisation of academic research results gained influence in Europe, the academic culture and dissemination of research results is subject to a metamorphosis. This study aims to give a first insight in the ways and procedures used by Belgian Technology Transfer Offices (TTO's) to protect the results of hard and often pioneering research work. The main topics addressed in this study concern the way of organising the TTO service within the university, the adopted policies and procedures, the method of prior art search and a indication of the cost structure through subventions and cost participation by departments and third parties. Analysis of the observed heterogeneity results in 4 archetypes during the evolution of a TTO. In a further stage, this study tries to discover similarities and differences between IP protection in Belgian universities and in commercial enterprises in innovating sectors and foreign universities. The analysis provides insight in the main differences between the academic and the commercial world in the matter of patent filing procedures and policies and IP protection.

*KEYWORDS*

Intellectual property, university, technology transfer office

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**INTRODUCTION**

The ongoing wave of IP protection and valorisation in Europe calls for comparison in the methods and proceedings used to protect these intangible assets. The recent shift in attitude in European universities towards commercialisation of public funded research results (Goldfarb and Henrekson, 2003; HEFCE, 2003; Pirnay et al., 2003;

Ndonzuau et al., 2002; Klofsten, sine dato), doesn't everywhere result in an attitude shift among the academic research staff. The number of publications influences the reputation of a senior researcher much more than the number of granted patents or jobs created (Heydebreck et al., 2000). Though, protection of intellectual property has become necessary to gain influence and money to be able to afford expensive research labs at top level and to continuously keep the granted authority of the public sponsors (Debackere, 2000). University research has become a contributor to economic development in many regions (Debackere, 2000). The way of protection – or better the path used towards protection – seems quite different among universities, enterprises and research institutes. This study aims to discover different patterns and actions used to protect IP in a proper way. The basic research sample consists of 5<sup>1</sup> Belgian universities. For purposes of in-depth analysis and comparison, the sample is broadened with 4 enterprises and 2 foreign universities. This study will be structured as follows. The first section provides an overview of the working method used by the Belgian universities and research institutions to protect the IP. In the domain of IP, the focus will be exclusively on patents. Trademarks, copyrights, design claims and other forms of IP protection will not be treated. The second item provides a comparison between these Belgian academic players and the creation of 4 general profiles. The entire first and second section paragraphs are situated in the university context with technology transfer offices or incubators. A comparison with business innovation centres and private incubators (Grimaldi and Grandi, 2005) will be drawn in the third section. In this section, the comparison will be broadened with an analysis of IP protection patterns at foreign universities and in enterprises.

## **BELGIAN UNIVERSITIES AND RESEARCH INSTITUTES**

The Belgian academic landscape is quite fragmented, because of the federal structure of the country. Due to this structure, important and interesting differences occur between Flemish and Walloon universities concerning IP protection, valorisation and

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<sup>1</sup> Universiteit of Antwerpen (UA), Katholieke Universiteit Leuven (KUL), Vrije Universiteit Brussel (VUB), Universiteit Gent (UGent) and Université de Liège (ULg).

management. In addition to the political fragmentation, each university started its IP protection program independently and at a different moment. Each of them is at a different stage of the learning curve. The methods and paths used to protect the IP are as diversified as the number of universities in Belgium. Yet, these differences make it interesting to analyse the Belgian landscape of IP protection.

In general, this study will discuss the trajectory and internal evaluating of each patent filing procedure in each of the universities, the number of started procedures and the team. In addition, this study aims to give a (general) and indicative overview of the different cost structures. All the data were acquired through structured interviews, guided by a uniform questionnaire. Each interview was taken by 2 researchers. After the meetings, the researchers compared and discussed the results to avoid misunderstandings and distortions.

#### 1. *KUL (Leuven, Belgium)*

The oldest and largest university in Belgium is the *Katholieke Universiteit Leuven* (KUL). Since 1972 the university engaged actively in IP protection, first as a service within the university, later on as a separate department. Due to this long presence within the university, the main part of the researchers 'grew up' with K.U. Leuven R&D - which is the incubator of the University of Leuven - and adapted the academic culture. Nowadays, the department has a team with 30 members and starts an average of 50 (provisional) patent filings per year (Debackere, 2000).

A researcher with a new invention first has to fill in an 'Invention Disclosure Form', in order to have a first insight in the nature of the invention and the possible application field. With this information, the IP department does a first search, in order to judge the value of the project. After this short search, the decision of further steps is taken, without the necessity of presenting research data or proof of a principle. Usually, the KUL makes use of a provisional filing in the United Kingdom for each patent because of cost aspects. The department of the researcher has to carry all the costs of the filing procedure, in order to gain commitment of the researcher and to avoid useless or worthless patent filing. After the provisional period of 12 months, the KUL usually starts the PCT filing procedure. For this stage, a patent

attorney is attracted to support the IP department. For reasons of easy communication, cost savings and loyalty, the KUL always cooperates with the same multidisciplinary patent attorney, although a strong network has been built up with several other attorneys (Debackere, 2000; Vangeninden, 2005).

At the KUL, the prior art search is performed by the researcher and the IP department in the first place. To support the search actions, the university bought a license of the Micropatent database. The UK Patent Office will perform a second search, the 'UK search'. A search by a patent attorney will only be performed in a later stage, when the PCT filing procedure has been started. In order to suppress filing costs, the KUL not only makes use of the provisional filing in the UK (the so-called 'Quick & Dirty' procedure), but always tries to bring in a commercial partner as early as possible in the process. The commercial partner will have to participate in the filing costs, in exchange for a license on the invention. At universities and academic TTO's, the cost participation principle occurs often when the concerning technological innovation is still underdeveloped or in it's earliest phase (Markman et al., 2005 (2), p. 251). The KUL doesn't fulfil an active role in the search of patentable inventions, but the university organises seminars to convince researchers of the value and necessity of IP protection. Neither does the KUL actively prohibit the publication of research results in order to prevent public disclosure before patent filing. Once again, the university tries to make researchers conscious of this topic and advises not to disclose the invention before filing (Vangeninden, 2005).

## 2. *UGent (Ghent, Belgium)*

The Department for Technology Transfer of the *Universiteit Gent* (UGent) was realised in the year 2000. The department counts 8 staff members and reaches annually around 10 filing procedures (provisional in the UK), after a stringent pre-selection of the dossiers within the department. More than 80% of the started procedures is maintained after the first provisional year and flows into the PCT filing procedure. The rigorous examination of the initial 'Invention Disclosure Form' leads to the rejection of more than 2 out of the 3 dossiers in the first stage of IP protection within the university.

In contrast with the KUL, the UGent does search actively for new inventions with commercial value. During seminars (some of them in cooperation with enterprises!) at the university, the department of Technology Transfer stir up the researchers consciousness of the necessity of IP protection. Due to this cooperation with enterprises, some invention will reach market introduction faster and the university realises a faster return on the IP investment, although the university never gives over her complete commercial rights.

Costs during the filing procedure are suppressed through provisional filings in the UK and internal prior art searches with the database Delphion. Additional searches are performed in cooperation with the Service for Intellectual Property of the Ministry of Economic Affairs in Belgium. On top of that, the UGent forces the department of the researcher to contribute in 50% of the filing costs, in order to create more engagement. For the final submission of the dossiers, the UGent cooperates with 2 different patent attorneys, to be able to select the most proper and cognizant attorney for the concerning invention.

### 3. *VUB (Brussels, Belgium)*

The *Vrije Universiteit Brussel* (VUB) has no separate department for technology transfer. The Interface service is maintained inside the R&D Department. Most of the annually 10 to 20 filing procedures are provisional. A researcher with a patentable invention contacts himself the Interface with the 'Invention Disclosure Form' or the Interface notices the invention during its 'active searches'. The Interface maintains daily contact with the academic research team in order to be in touch with the latest developments and to detect opportunities in the early stages of the research. Next to the active screening for opportunities, the Interface organises seminars and workshops to raise the researchers' consciousness of the IP protection topic. The final decision to make investment relies with the college of rectors.

The financial matter is treated differently at the VUB. Patent filing often occurs in cooperation with enterprises, who participate in the costs. In addition, the prior art search is performed internally, although the university doesn't have disposal over a

search database. The additional searches are carried out in cooperation with the Service for Intellectual Property of the Ministry of Economic Affairs in Belgium.

In contrast with the 2 largest Flemish universities, the VUB usually starts the EPO filing procedure and, after 12 months, the PCT route. In order to successfully run through the procedure, the VUB cooperates with 3 different patent attorneys. The complete responsibility remains with them, as the VUB doesn't write any of the patent applications itself.

#### 4. *ULg (Liège, Belgium)*

The *Université de Liège* (ULg) is by far the largest Walloon university. The separate Department of Technology Transfer has 10 full-time staff members, of which 4 execute prior art searches and 2 draft the applications. The team annually starts 12 patent applications on basis of the 'Invention Disclosure Form', of which 90% is continued after the priority year. The investment decision needs no formal approval of the university rector. Provisional applications (UK or US) are only initiated under time pressure. Usually, the EPO-route is being used during the priority year, followed by the PCT application.

The prior art searches are performed almost completely internally with the databases Questel and Espacenet. For none of the applications, the ULg make an appeal to a patent attorney, which brings substantial cost savings. Additionally, the university receives subventions of the Walloon government, in contrast with their Flemish colleagues. Often, patent applications are submitted in cooperation with commercial partner who participate in the filing costs.

Due to overburdening of the department, no active search for opportunities is performed. In the past, the department set up a large-scale sensibility campaign. As a result, the academic staff is very conscious of the IP protection matter and the necessity not to draft publication too soon.

#### 5. *UA (Antwerp, Belgium)*

The *Universiteit Antwerpen* (UA) is the only one in Belgium to have a completely separate entity for technology transfer and valorisation. The Antwerp Innovation

Centre is an enterprise created by investment banks and the Antwerp University in cooperation with the high schools of the Antwerp region to look after their intellectual property and its valorisation. With 4 FTE and its recent establishment, AIC is one of the smallest technology transfer organs in Belgium.

Within the UA, researchers with new inventions have to pass through 3 stages. First, they fill in the 'Innoquis questionnaire' (comparable to an invention disclosure form). The first judgement occurs within the Technology Transfer Office. With a positive advise of this department, the dossier is transferred to AIC, who will take care of the rest of the procedure. On average, the AIC initiates 7 filing applications per year.

The prior art search is performed by 3 parties. In the first places, the researcher himself has to unveil his knowledge on prior art. Internally, the AIC performs searches with the database Nerac. The patent attorney performs the last prior art search. The usual pattern of application starts with the EPO-route, followed by the PCT application after the priority year. For these applications, the AIC cooperates with a single patent attorney.

## OVERVIEW AND ANALYSIS

The table on page 9 (Table 1) provides an overview of the discussed topics on IP protection at Belgian universities. Starting from this overview, 3 types of technology transfer organs can be detected:

- The 'Quasi-mature' technology transfer organ;
- The 'Transition' technology transfer organ;
- The 'Start-up' technology transfer organ.

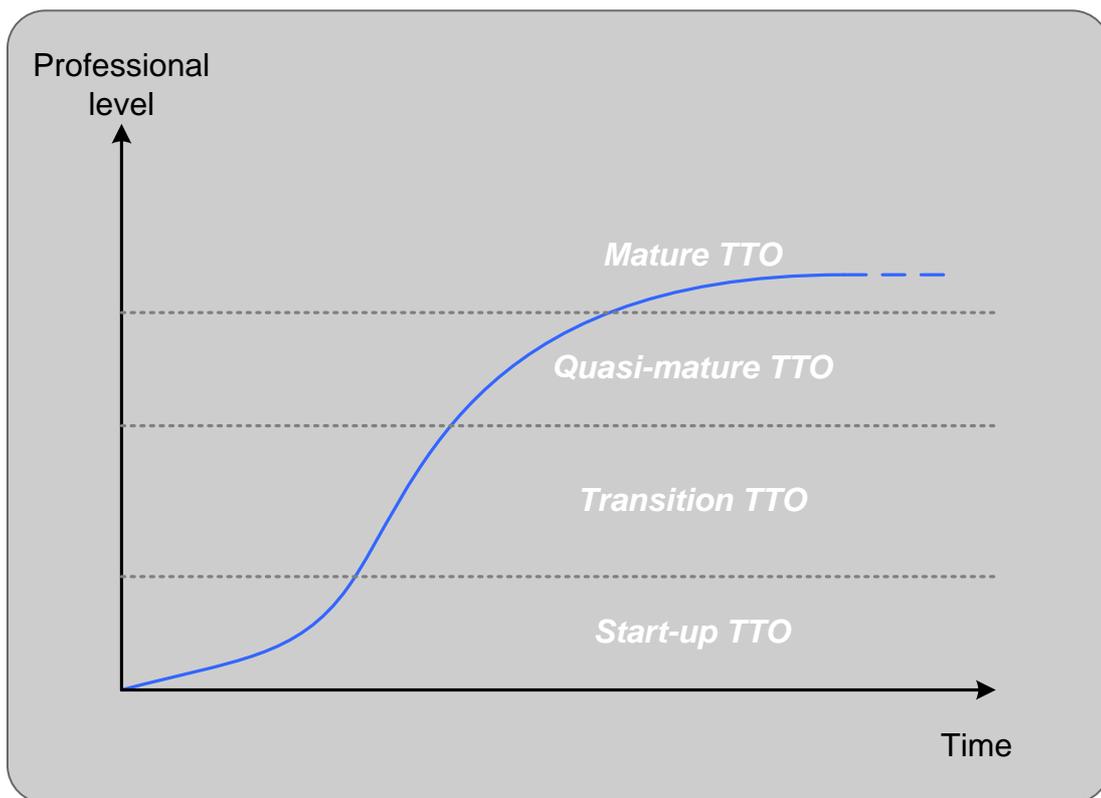
Each of these 'archetypes' will be discussed in more detail in this section, with extra attention to the different characteristics of the TTO in each stage. In addition to the 3 types of TTO, Graph 1 mentions an additional archetype: the 'Mature' TTO.

These stages of technology transfer offices or incubators can be complemented with different types of incubation, as identified by Grimaldi and Grandi (2005). They

identified 4 types of incubators, dependent on their goal, origin and character: Business Innovation Centres (BICs), University Business Incubators (UBIs), Independent Private Incubators (IPIs) and Corporate Private Incubators (CPIs). The research behind these types suggest a natural evolution towards these different types because of distinguished business needs. Each of the separate incubating models proves to have its existence reason (Grimaldi and Grandi, 2005).

For the specific context of university incubation, Markman et al. (2005 (2)) distinguish 3 types of technology transfer offices: the traditional university structure, the nonprofit research foundation and the for-profit private venture extension. These types are an extension of the University Business Incubators (UBIs) of Grimaldi and Grandi as cited above.

**GRAPH 1**                      **EVOLUTION STAGES OP TTO'S**



**TABLE 1**      **COMPARISON OF IP PROTECTION AT BELGIAN UNIVERSITIES**

	<i>KUL</i>	<i>UGENT</i>	<i>VUB</i>	<i>ULG</i>	<i>UA</i>	
<i>ORGANISATION</i>	Department	Department	Service within department	Department	Separate organisation	
<i># APPLICATIONS/YEAR</i>	50	10	10 – 20	12	7	
<i>SIZE</i>	30 FTE	8 FTE	10 FTE	10 FTE	6 FTE	
<i>SCREENING</i>	Semi-active	Active	Active	Passive	Passive	
<i>PREVENTION OF PUBLICATIONS</i>	Info with start application	Awareness campaign	Seminars and workshops	Awareness campaign	Info with start application	
<i>SUBVENTIONS</i>	No	No	No	Yes	No	
<i>COST PARTICIPATION DEPARTMENT<sup>2</sup></i>	100%	50%	0%	Partial	0%	
<i>COST PARTICIPATION THIRD PARTIES</i>	Commercial partners	Co-ownership with partners	Commercial partners	Commercial partners	Commercial partners	
<i>PRIOR ART SEARCH</i>	Internal & external	Mainly internal	Mainly internal	Internal	Internal & external	
<i>DATABASE</i>	Micropatent	Delphion	none	Questel	Nerac	
<i>PATENT ATTORNEY</i>	1	2	3	0	1	

<sup>2</sup> The Department in which the research took place has to bear some costs arising from the patent application.

In its establishment phase, an average technology transfer office (TTO) in the first place has to gain access and credibility to the academic research staff. All required systems need development, often from scratch. When the TTO springs from an existing 'service' within the university, some of the needed systems and procedures might already have been developed. Next to the 'organisational' difficulties, a *start-up TTO* is faced with an academic culture targeted at publications in renown academic journals – this situation occurs in almost each European university, where some of the departments have to face an identity crisis due to this radical change in publication-culture (Bray and Lee, 2000; Hindle and Yencken, 2003). The absence of an entrepreneurial culture is a key constraint in the formation of new-technology based ventures (Carayannis et al., 1998).

Start-up TTO's wrestle with cost efficiency and searching the easiest, fastest and most suitable path for IP protection. Speed in general as constituent of *innovation speed* – and thus also the speed of IP protection - is considered as one of the key elements in commercialisation success of new technology products (Markman et al., 2005 (1)). The diversity in search databases, trajectory of an invention within the university and way of screening for new opportunities can be seen as the result of this sometimes feverish search of the right TTO positioning.

The *Transition TTO* builds on a well-considered vision of its future 'way-of-life'. During its start-up phase, the TTO team has gained insight on required procedures, changes and means to establish a well-oiled technology transfer office. The way of dealing with researchers and new inventions starts to take an appropriate shape. Often, this stage is characterised by a number of important changes. Original databases for prior art search are quit or supplemented with other useful databases. Cost participation of the researcher's department can be reviewed. Or, seminars and 'publicity' campaigns aim to enlarge the awareness of the necessity of IP protection and of the existence of the TTO. In summary, this stage is characterised by major changes, the execution of the long term vision on the future of the TTO and increasing improvements.

After years of search for adequate procedures and ways of doing things, the *Quasi-mature TTO* reached the stage of efficiency, established systems and 'brand recognition' among the academic researchers. Though, during this stage some of the chosen paths seem inappropriate. As a result, the last transitions are started to give the technology transfer office a definitive shape. The size of the TTO and the number of treated cases made the TTO reach an advanced stage of the learning curve. Cost savings are made because experience has been built up in the editing of patent applications, in the prior art searches and in the communication with patent attorneys. However, during this stage the cost increasing aspect of cooperation with external patent attorneys (McAdam et al., 2005) is often subject of discussion. Towards researchers, the office gained both name recognition and credibility. In addition, the academic culture has become one of awareness and consciousness towards business opportunities and valorisation of research results.

The *Mature TTO* has established a strong organisation with clear and adequate systems and evaluation methods. In addition, the team has gained experience and has come to a point where the needed expertise is present. Both inside and outside the university, the technology transfer office has built up a reputation and strong relationships with the business world, the financial world and the academic world. An established network or platform for all innovation and venture-creating actors indicates a certain level of maturity.

Table 2 on the next page provides an overview of the main characteristics of the 4 archetypes as discussed in this section. In relation with Graph 1, it gives a complete overview of the evolutionary stages of the 'general' Technology Transfer Office in the Belgian university context. The next section will analyse its usefulness in both the European academic and business context and will indicate the main differences and similarities between the academic and the business IP protection world.

**TABLE 2** *SUMMARY OF TTO ARCHETYPES*

	<b>Start-up</b>	<b>Transition</b>	<b>Quasi-mature</b>	<b>Mature</b>
<b>Long-term vision</b>	In development	Developed, in execution	Developed, almost completed	Developed and completed
<b>Procedures</b>	Search for the best procedures	Establishing procedures according to vision	Establishment of adequate procedures, revision and replacement of inadequate ones	Completion of procedure establishment
<b>Cost efficiency</b>	Not primary issue, search of the most suitable path for protection	Revision and analysis of procedures to detect both the most cost efficient and the most suitable	Adaptation of procedures in terms of cost efficiency	Continuous small improvements and analysis of the chosen IP protection path
<b>Expertise</b>	Present, but in development (often trial and error)	Growing fast, building knowledge base to maintain expertise	Strong knowledge base, advanced learning curve	Professional top-expertise, continuous analysis
<b>Name recognition</b>	Weak	Growing	Strong	Strong
<b>Relationships</b>	Under construction	Elaboration and deepening	Established	Established
<b>Academic culture</b>	Primary directed towards publications	Directed towards publications	Directed towards publications and valorisation	Primary directed towards protection and valorisation

**EUROPEAN ACADEMIC AND BUSINESS LEVEL**

This section aims to compare IP protection in Belgian universities with the process in other European universities and in European enterprises. The procedures and ways

of protecting IP seem to contain differences. This is illustrated by Table 2 (on page 15), which provides an overview of the common practices in different enterprises and foreign universities. The interviewed universities are the Dutch University of Maastricht (UM) and the German Rheinisch-Westfälische Technische Hochschule Aachen (RWTH A). As commercial enterprises, the data set includes Agfa-Gevaert (Belgium, imaging), Janssen Pharmaceutica as an entity inside Johnson & Johnson (Belgium, pharmaceuticals), Atlas Copco (Sweden, industrial tools and equipment) and Alcatel Bell (France, communication and transport solutions). All the interviews with commercial entities proceeded in Belgium, so the data only apply to the Belgian entity if the company is part of a larger group.

Through analysis of the available data, it becomes clear that in general, commercial enterprises with considerable R&D activities file on average 2 to 10 times more patents in comparison to universities. For this difference, several causes are responsible. In the first place, heterogeneity in the extent of the R&D staff is a possible cause. Secondly, the organisational culture and rules play a major role in the attitude towards patent filing versus publication. University recognition often rests with the number of publications with peer review in journals. Commercialisation and protection of IP struggle with acceptance among the more experienced and elder research academics, while these items are often integrated in a company policy or even in the contract. As a third explanation, we can refer to the concept of 'R&D efficiency'. This refers to the outcome of R&D efforts in terms of the invested resources. For thousands of reasons, it could be that a difference occurs in the efficiency between commercial organisations and universities. Finally, the link between R&D and commercialisation is obvious in commercial enterprises, where the R&D-efforts are directed towards maximisation of profits and return originating from R&D commercialisation. This link is much less clear in universities, where the commercial approach is not necessarily the driving force of the research.

In the present research sample, it is unclear which explanation holds true. Probably, a combination of reasons – even other than cited here – explains the observed differences. Further research can investigate the underlying causes.

A second topic for analysis is the diversity in applied procedures and co-operators, which could be called the ‘natural search’ concerning IP protection. Every industry or group (in casu universities) has to search the most suitable and efficient way of protecting intellectual property. The heterogeneity in applied procedures, patent attorneys and search databases illustrates this ongoing search. The most significant and visible difference between the academic and commercial world, is the attitude towards publications. In general, the enterprises have a stronger form of protection or even prohibition against publication. One of the most obvious reasons is of course the possible revenue stream that can be crucial for company survival or growth. The earlier discussed academic culture has a severe impact on this topic. A shift in this cultural heritage is often hard to obtain.

Besides, the ‘average’ university seems to make an appeal on one or more specialised patent attorney to fulfil the patent application procedure. In our research sample, the only exception is the University of Liège. Due to their year-long effort to build up in-house expertise, the ULg contrives to complete the entire patent application procedure without intervention of a patent attorney. On the other side, the ‘average’ commercial enterprise in our sample (3 out of the 4) estimates to have enough in-house knowledge to draft the entire patent application. The corporate pass rates concerning patent filing seem to confirm this statement. On average, 80% or more of the started filings are continued after the priority year (this rate drops to 50% or lower for some universities).

## IP Protection in Belgian Universities

	<i>UM</i>	<i>RWTH A</i>	<i>AGFA-GEV.</i>	<i>JANSSEN PH.</i>	<i>ATLAS C.</i>	<i>ALCATEL B.</i>
<i>ORGANISATION</i>	Separate organisation in start-up	Department and shared regional entity ProVendis	Department	Department	Patent Committee	Patent Committee
<i># APPLICATIONS/YEAR</i>	7-8	23	100	50-60	20	70
<i>SIZE</i>		16 at ProVendis <sup>3</sup>		15		
<i>SCREENING</i>	Active	Active	Passive	Active	Awareness campaign	
<i>PREVENTION OF PUBLICATIONS</i>	Prohibition (at least 3 months)	Passive	Admission needed	Contractual; admission needed	Guideline ProCura; admission needed	Prior screening of publications
<i>SUBVENTIONS</i>	Yes	100% (2006: 50%)	No	No	No	No
<i>COST PARTICIPATION DEPARTMENT</i>	100% once revenues	To be adapted in 2006	100% organisation	100% organisation	100% organisation	100% organisation
<i>COST PARTICIPATION THIRD PARTIES</i>	Commercial partners	To be adapted in 2006	/	/	/	/
<i>PRIOR ART SEARCH</i>	Internal	Internal & ProVendis	Internal & EPO	Internal (separate department)	Internal & external	Internal
<i>DATABASE</i>	none	Internal (Delphion & DEPATISnet) & ProVendis	Delphion, Derwant, WPIDS	STN, Delphion, Dolphin, Newport, Micropatent	Delphion	none
<i>PATENT ATTORNEY</i>	1	1	0	0	1	0

<sup>3</sup> ProVendis is a regional entity founded for IP protection and valorization of universities and polytechnics in the Federal State of North Rhine-Westphalia

## DISCUSSION

In their study on business and management processes in university innovation centres, McAdam et al. (2005) give 3 possible explanations for the gap in literature that emerged on business and management topics concerning technology transfer. In the first place, management aspects are not often subject of patenting processes and spin-off activities. Secondly, a large part of the scientist lacks insight in the complex managerial and business implications of IP protection and spin-off activities. Thirdly, day-to-day concerns of infrastructural character obscure the need for business and management intervention. Our study can help cover the specific aspect of IP protection at universities. However, the managerial impacts of this study are rather limited due to the small number of research subjects. Yet the first insights provided can be useful for further analysis.

The managerial impact of business incubation reaches further than IP protection. Autio and Klofsten (2001) presented 2 business incubation support programmes in Scandinavia. The extent of their study goes far beyond the small aspects presented in this paper. Yet, according to De Coster and Butler (2005) IP protection and support during the filing procedure have been identified as the key domain that determines the success of an academic spin-off in its struggle to protect its competitive advantage.

The study presented in this article has several limitations. The authors are aware of the limited research sample. Due to that, one must be aware that the conclusions may not hold true for all university technology transfer offices in every region. The aim of the study only was to provide a first, indicative comparison of common practises and differences concerning protection of intellectual property at Belgian universities, in comparison with foreign universities and business enterprises.

## CONCLUSIONS

This paper aimed to provide an insight in the matter of protection of intellectual property at Belgian universities, with a small comparison towards European universities and commercial enterprises in innovating sectors. The basic idea is that the academic world struggles with the 'natural search' for the most effective way of IP protection. The heterogeneity between the universities seems to confirm this search. The Belgian universities – or more precise their Technology Transfer Offices - are characterised by different evolution stages. The more mature and experienced Belgian TTO's have reached the quasi-maturity stage, while other find themselves in transition or even start-up phase. These diverse evolution stages are reflected in the fan of adopted policies, procedures and partners during the patent filing process. This study can help to cover the managerial and process gap (McAdam et al., 2005) that emerged in the literature on academic technology transfer offices.

Comparison of the current procedures in Belgian universities with their equivalents in business enterprises in innovating sectors and in foreign universities revealed in the first place that in general, the common practises among European universities are quite heterogeneous. We referred to the so-called 'natural search' due to the young age of the academic incubation world in Europe as primary cause for the differences. Secondly, adopted policies and procedures in universities seem to differ quite substantially from the business world. Especially the policy towards publication of research results strikes the eye. Companies often have general rules concerning publication of results prior to IP protection, sometimes even contractually. Universities seldom screen texts before publications. This way, opportunities for protection of the intellectual property or even commercialisation are lost. The academic culture of the past decades, where reputation depends on publications and citations in famous journals, is the key responsible. The required cultural shift is however hard to obtain in short term.

## REFERENCES

- Autio, E., Klofsten, M., 1998. A comparative study of two European business incubators. *Journal of Small Business Management* 36 (1), 30-43.
- Bray, M. J., Lee, J. N., 2000. University revenues from technology transfer: licensing fees vs. equity positions. *Journal of Business Venturing* 15, 385-392.
- Carayannis, E., Rogers, E., Kurihara, K., Allbritton, M., 1998. High-technology spin-offs from government R&D laboratories and research universities. *Technovation* 18 (1), 1-11.
- Debackere, K., 2000. Managing academic R&D as a business at K.U. Leuven: context, structure and process. *R&D Management* 30 (4), 323-328.
- De Coster, R., Butler, C., 2005. Assessment of proposals for new technology ventures in the UK: characteristics of university spin-off companies. *Technovation* 25, 535-543.
- Goldfarb, B., Henrekson, M., 2003. Bottom-up versus top-down policies towards the commercialization of university intellectual property. *Research Policy* 32 (4), 639-658.
- Grimaldi, R., Grandi, A., 2005. Business incubators and new venture creation: an assessment of incubating models. *Technovation* 25, 111-121.
- HEFCE, 2003. Higher education-business interaction survey. HEFCE Publication, Paper No. 11.
- Heydebreck, P., Klofsten, M., Maier, J. C., 2000. Innovation support for new technology-based firms: the Swedish Teknopol approach. *R&D Management* 30 (1), 89-100.
- Hindle, K., Yencken, J., 2004. Public research commercialisation, entrepreneurship and new technology based firms: an integrated model. *Technovation* 24, 793-803.
- Klofsten, M., sine dato. Training entrepreneurship at universities: a Scandinavian study. Centre for Innovation and Entrepreneurship, Linköping University.

- Markman, G. D., Gianiodis, P. T., Phan, P. H., Balkin, D. B., 2005 (1). Innovation speed: Transferring university technology to market. *Research Policy* 34, 1058-1075.
- Markman, G. D., Phan, P. H., Balkin, D. B., Gianiodis, P. T., 2005 (2). Entrepreneurship and university-based technology transfer. *Journal of Business Venturing* 20, 241-263.
- McAdam, R., Keogh, W., Galbraith, B., Laurie, D., 2005. Defining and improving technology transfer business and management processes in university innovation centres. *Technovation* 25, 1418-1429.
- Ndonzuau, F. N., Pirnay, F., Surlemont, B., 2002. A stage model of academic spin-off creation. *Technovation* 22, 281-289.
- Pirnay, F., Surlemont, B., Nlemvo, F., 2003. Toward a typology of university spin-offs. *Small Business Economics* 21, 355-369.
- Vangeninden, K., 2005. Het octrooibeleid binnen de universitaire incubatie. University of Antwerp, Faculty of Applied Economics (Masterthesis series).