Jan Dekelver

Higher education, research and innovation in Flanders and at the KH Kempen university college (Belgium).

Belgium, Geel, Katholieke Hogeschool Kempen

1 Flanders: a energetic region in Europe, Belgium

Flanders is a region in the northern part of Belgium with a total surface of 13.522 km², and 5.9 million inhabitants (60% of the Belgian population). This represents a population density of 434 inhabitants per km². **(01world_belgium.jpg)**

It is a federated entity of Belgium, a parliamentary democracy with Brussels as capital and main cities like Bruges, Ghent, Antwerp, Hasselt and Leuven. The native language is Dutch.

The main activity and competences are situated in the field of mobility, public works, energy, welfare, health, equal opportunities, culture, youth, urban policy, housing, education, training, employment, tourism, environment, agriculture, home affairs, sports, economics, town and country planning, media and export. A recent report [1] from VRWB (Vlaamse Raad voor Wetenschapsbeleid - Flemish Science Policy Council) identified 6 strategic clusters of research an innovation that will play a major role for Flanders in the future. These clusters are: (1) transport, services, logistics, supply chain management; (2) ICT and health services; (3) health, nutrition, prevention and treatment; (4) new materials (nanotechnology); (5) ICT for socio economic innovation; (6) energy and environment.

The most recent report from the World Economic Forum (WEF) gives Belgium a very good score on higher education. [2] The quality of education in mathematics and science is ranked third of 125 countries in the study. The quality of our management schools en of the whole of the educational system, the availability of research and training facilities ranks Belgium in the top 10 world wide. Belgium gets a very good score for its research institutes and the collaboration on research between universities and business.

2 University and non-university higher education in Flanders

When Flemish youngsters, generally at the age of 18, end their compulsory education they have the choice of continuing with higher education. Flanders has six universities and 22 university colleges. These institutions offer a broad range of disciplines: politics, communications, economics, engineering, science, music, languages, law, art, medicine… The higher education institutes are organised according to the bachelor/master-structure laid down by the Bologna Agreements. The universities of Leuven and Ghent are internationally praised for their postgraduate and doctoral research facilities.

The six universities count 57.000 students with a total annual budget of 775 million Euro. The 22 university colleges count 122.000 students (25.000 academic + 77.000 professional) in total with an overall annual budget of 626 million Euro. This means an average budget of 13.600€ per student per year at university and 5130€ per student per year in university colleges.

3 Stimulation of research activities in higher education by the Flemish Government through IWT

The Flemish government stimulates innovation through different channels. For higher education institutes, the main governmental R&D funding organization is "The Institute for the promotion of Innovation by Science and Technology in Flanders" (IWT-Flanders) [3]

IWT-Flanders was established in 1991 by the Flemish government as a regional public institution to provide R&D and innovation support in Flanders. For this IWT has several financial tools and an annual budget of 260 million EUR (in 2004) available to support projects. In addition to direct funding, a variety of services is provided to the local industry in the field of technology transfer, partner search, information about international subsidy options, etc. IWT has also an important co-ordination mission, aiming at a strong co-operation between all organizations in Flanders, offering technological innovation services to companies.

Over the years IWT has expanded into the knowledge centre for R&D and innovation in Flanders. If we look at the year-on-year trend in the global support volume, an increase can be noted from e 65 million in 1994 to 260 million in 2004, which is a fourfold jump within the short space of ten years. The number of completed subsidy dossiers increased by more than 400% between 1993 and 2003. A series of IWT duties, such as the provision of services, co-ordination of innovation intermediaries, policy preparation, etc., are not directly related to the management of the subsidy procedures.

Research institutes can participate in company-originated R&D projects at the expense of the companies. Their costs are then also taken into consideration for a subsidy. Besides this, there are a number of support tools in which the research institute is the beneficiary, such as TETRA (which focuses on technological conversion of research done at university colleges and universities), support for strategic basic research (long-term research with an economic or social mission) and agricultural research.

4 Other Flemish government initiatives to promote innovation

For larger projects, it is the Flemish government itself that takes the decision and that grants the allowances, as the authorities dispose of separate budgets for such projects. Such large projects include those that are of a major social and economic importance for Flanders, or 'centres of excellence' which are designed to serve as a solid knowledge base for a whole range of companies. Some examples are: Flanders' Drive (automotive supplies) (www.flandersdrive.be), Flemish Institute for Logistics (VIL) (www.vil.be), Flanders' Mechatronics Technology Center (FMTC) (www.fmtc.be), Incubation Point Geo-Information (IncGeo) (www.incgeo.be), Interdisciplinary Institute for Broadband Technology (IBBT) (www.ibbt.be), Flanders' Materials Centre (FLAMAC), Flanders Interactive (interactive digital television) (www.vlaandereninteractief.be)

5 Research at the K.U.Leuven Association: the largest higher education association of Flanders

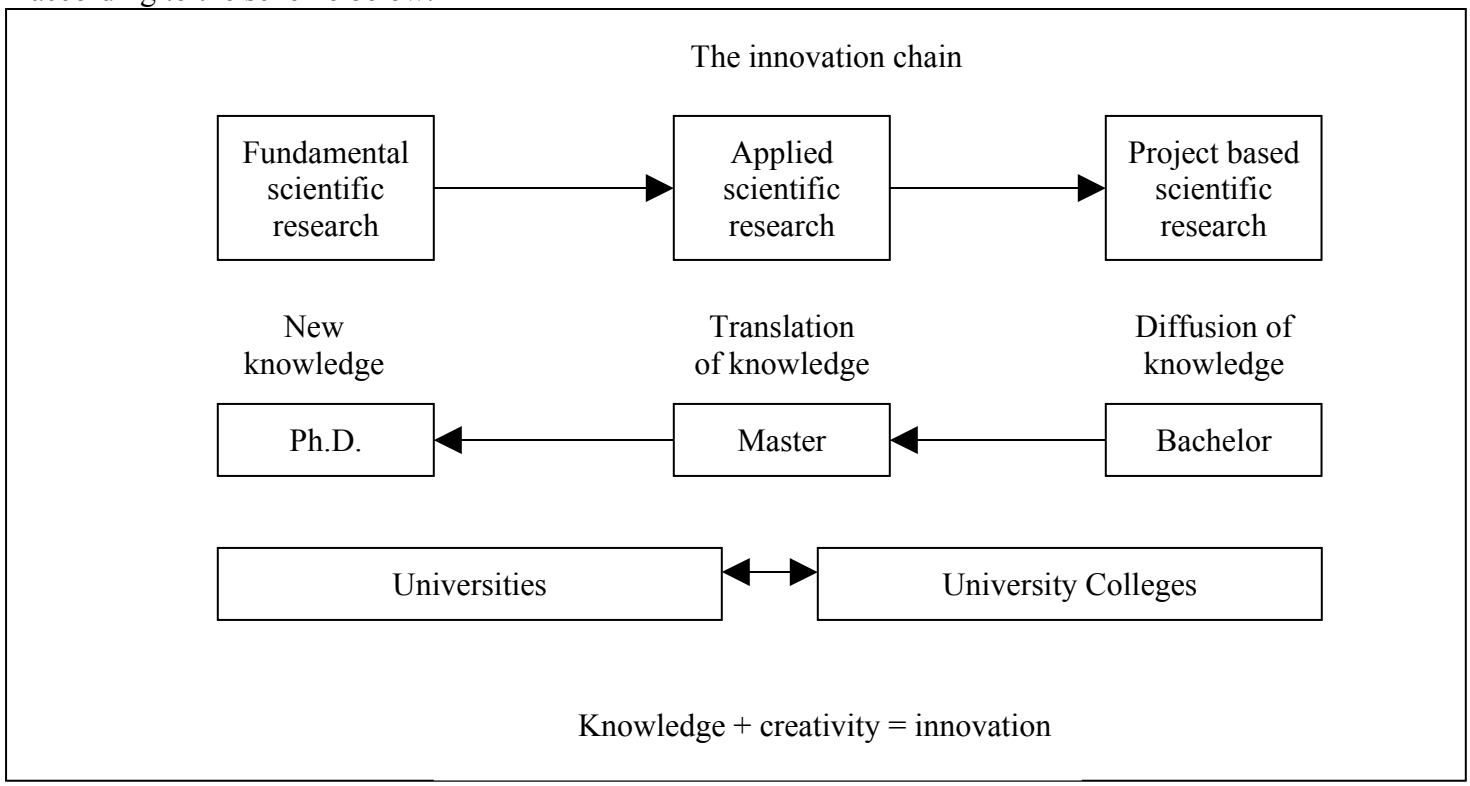
The Katholieke Universiteit Leuven is the oldest university of the Low Countries and the largest Flemish university. K.U.Leuven carries out fundamental and applied research in all academic disciplines. In the past few years, the quality and quantity of K.U.Leuven's research efforts and output have increased considerably, thus positioning Leuven at the forefront of European universities.

Since July 11, 2002, the K.U.Leuven Association is operational. Thirteen institutions of higher education in Flanders have joined forces in this association in order to occupy a position of strength

within the new European educational landscape and to work together towards quality improvements in education. The primary aims of the K.U.Leuven Association are [4]:

- to offer a wide range of study and training
- to improve the quality of education
- to improve the quality of research by concentration and an intensive co-operation.

Research options within the K.U.Leuven Association differ, depending on the kind of education, according to the scheme below.



According to this scheme, research can rely in the best possible way on competences and natural networks of knowledge and relationships. University colleges are well connected to enterprises through student thesis work and historical close collaboration. Project based research, supported and fed by the applied and fundamental research at universities therefore match with the bachelor degrees at university colleges. Bachelor students can go through bridging and collaboration programs and achieve a master degree or Ph.D. The University can build on fundamental research at international level, enabling a forefront position that generates innovative spin-off and spin-in activities.

To promote and support the transfer of knowledge and technology between the university and the industry, a separate entity was created in 1972: K.U.Leuven Research & Development (LRD). (http://www.kuleuven.be/lrd/) LRD is one of the first technology transfer units in Europe, with the specific mission to exploit the economic potential of the university's research results. [5] In order to do this, K.U.Leuven Research & Development offers professional advice with regard to legal, technical as well as business-related issues. The activities of K.U.Leuven Research & Development include:

- Contract research: professional advice is provided both to determine opportunities and to negotiate and elaborate research agreements.

- Intellectual Property Rights management: an active patent and licensing policy is pursued with respect to university research results.
- Establishment of new research-oriented and innovative spin-off companies.
- Promotion of high-tech entrepreneurship and innovation by stimulating networking initiatives.
- Offer the above services for all university colleges, member of K.U.Leuven Association.

6 Research at KH Kempen

The KH Kempen is a university college from K.U.Leuven association focusing on 10 major fields of research: energy management, sustainable protection, biomedical technology, animal care, functional nutrition, ICT, local social en economic strategy, gerontology and geriatrics, education efficiency research, mother and child care. Although R&D has always been part of the KHKempen activities, the activities in this area have grown with more then 200% over the last 4 years with a total budget of over 3 million Euro in 2006.

Financial resources for research come from different sources: (a) governmental funds that come with the global envelope for higher education (41%); (b) funding from the Flemish government, mainly through competitive calls organized by IWT(see above) or other funding bodies (51%); funding from European projects (6%); (c) other funding (2%). [6]

Some examples of ICT related R&D projects that are developed in close collaboration with business show that research at KH Kempen serves for main criteria [7]:

1. To fulfil accreditation standards, set out by the government;
2. to be leading in 10 well defined fields of research;
3. to be a regional platform and centre of expertise that companies and organizations can rely on for research and services;
4. to organize training and civil services, in close connection to the needs of society.

7 Example 1 – DoKS: Document and Knowledge Sharing

A few years ago a portal for bachelor and master theses from Flemish university colleges was established by means of the open source repository software DoKS. [8] The project was funded by the IWT-Tetra fund and SME companies with a total of over 600.000€ in 4 years. At the moment about 3500 theses from Flemish university colleges are available online. The growing use of the portal has led to a new communication stream that requires supervision and maintenance. Social software components amongst others are or will be integrated in the portal to give users a platform to communicate, annotate and advertise, amongst others. Although different local DoKS repositories and the concept of the DoKS application are similar to repositories and tools within the scientific community, the scope and the aim of a theses repository university colleges are different. The main part of the database consists of applied research and most theses are trainee reports. Thus, in addition to students and instructors, the portal is attractive to key players in industry, non-profit institutions and private users with a particular interest in a theses subject. (http://www.doks.be) . The recent addition of students' curriculum vitae module is of particular interest for enterprises in the Flemish market where unemployment figures (6,12% - April 2007) dropped 19% over the last year and is at its lowest level since 5 years. [9] Companies have a hard time finding qualified personnel and look for potential new employees among graduating students. DoKS has proven to be a very powerful tool, in addition to existing recruiting services for employers.

8 Example 2 – WAI-NOT [10]

WAI-NOT offers tailor-made ICT to people with mental disabilities. This website was developed after pragmatic research that defined best practices and real needs or people with mental disabilities. [11] The www.wai-not.be website presents content and communication tools adapted to the users skills. News topics, games, music, sports, educational content, recipes, stories and much more are made available through a user friendly interface. The largest part of the website is open to everybody. Registered users can send e-mail, chat, take part in online contests or join a discussion forum. User registration and follow-up is supervised by a coach or a teacher. The website is available in Dutch, French, English, Polish and Portuguese and is educative, creative, recreational and informative. The website uses written text, spoken words, pictograms and Beta-pictures. The information is classified in three levels: (1) 'Digispecials' is meant for people with a slight social or mental disability; (2) 'Clickies' is meant for people with a moderate mental disability. (3) 'Plussies' is meant for people with a serious mental disability. The website is supported by a content management system that enables the WAI-NOT team to add new content and information. The www.wai-not.org website offers additional information for teachers, parents and coaches who want to learn more about ICT for people with mental disabilities in general and about the WAI-NOT project in particular. The "WAI-NOT test" offers advise to website builders who wish to make their website more accessible for people with mental disabilities. The WAI-NOT foundation and KH Kempen developed the WAI-NOT project with partners in Belgium, the Netherlands, Portugal and Poland. The initial research and development was supported by a Minerva project. The dissemination is supported by a Comenius project. WAI-NOT is a "best practice" example on the www.elearningeuropa.info website from the EU-commission. WAI-NOT was IST-prize nominee in 2005 and received numerous awards. The overall budget over the last 5 years is about 625.000 €.

9 Internet Inclusive. The Accessibility of Internet [12]

This research focuses on the accessibility of the Internet for people with an intellectual/cognitive disability. Unfortunately, many of today's most 'advanced' websites and Internet-based communication tools seem not to meet the minimal requirements to be considered accessible for people with cognitive disabilities. For instance, interfaces are overly complex or abstract, the language is not adapted to particular cognitive limitations or even the size of visual add-ins may not be appropriate owing to limited human capabilities or knowledge. To date, applied research in this context remains a fallow field. While limited, extant research has focused on building websites for people with cognitive limitations. Ours aims to concentrate specifically on how existing websites can be made more accessible for these people. We formulate the following research questions on the basis of practical experience: (1) What expectations do adults with cognitive disabilities have concerning the use and the efficiency of the Internet and Internet sites? (2) Which parameters operationally define the accessibility of Internet sites for adults with cognitive disabilities? (3) How to increase the usefulness of existing Internet sites for adults with cognitive disabilities? (4) Which specific recommendations can be formulated for building and/or revising Internet sites that have particular people with cognitive disabilities as a target group?

This 3 year project is funded by KHK own governmental research resources with a budget total of 120.000€

Literature

1 VRWB, Expertgevalideerde prioriteitsstelling inzake technologie en innovatie in Vlaanderen, aanbeveling 29, 2006

2 *The Global Competitiveness Report 2006-2007* - This is an annual survey conducted by the WEF in the countries covered by the Report. For the 2006-2007 report, over 11,000 business leaders were polled (http://www.weforum.org/en/initiatives/gcp/Global%20Competitiveness%20Report/index.htm)

3 Paul Zeeuwts, Make a real change in your world, IWT, 2005.

4 About the K.U.Leuven Association, http://associatie.kuleuven.be/eng/about.htm

5 Brainport Eindhoven, Crossing borders, moving frontiers, 2007

6 Annual report KH Kempen, 2005

7 KHK strategic policy plan, 2006

8 Rudy Baccarne, A bachelor and master theses portal: specific needs and business opportunities for the DoKS repository tool/ Conference Paper, Elpub 2007, 11th International Conference on Electronic Publishing, Vienna University of Technology, Austria, 13-15 June 2007.

9 VDAB, figures on unemployment, April 2007, http://www.vdab.be/trends/

10 Jan Dekelver, ICT en jongeren met extra zorg - ICT voor leerlingen met een verstandelijke beperking - deel 1:technologische hulpmiddelen en ondersteunende software, Wolters Plantyn, 2007.

11 Jan Dekelver, ICT en jongeren met extra zorg deel 2 - WAI-NOT, een aangepaste leeromgeving voor jongeren met een verstandelijke beperking, Wolters Plantyn, Mechelen, 2007

12 Jo Daems, Internet Inclusief, project presentation, 2006.