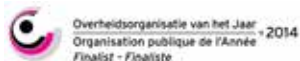


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Editorial

It's time to sit down and think...

As citizens of Belgium, we are constantly forced to think in terms of institutional positioning. The stakes of the May 2014 electoral campaign remind us of this every day. We consider every issue in our daily lives through the prism of the federal competences or entities, Regions, Communities, Provinces, towns, etc., who deal with them. It is often confusing... We also sometimes forget the European aspect.

Reaching the end of this very special term of office – due not only to its rather short duration – we have just finalised what we shall certainly consider to be, in the future, the most important state reform our country has known. And it is indeed important because it concerns considerable transfers of competences (almost 20 billion euros); because these transfers are all centrifugal (from the federal state to the Communities and Regions) and, finally, because, whatever happens, it will mark a turning point in the history of our country. A turning point between two destinies, two hypotheses: either, the ultimate phase of the institutional reforms that Belgium has undergone for the past 40 years, therefore spelling stabilisation or, if it isn't the last... the end of Belgium.

I am 50 years old. My generation has lived through this entire period of history: that of the Belgian state which has become our current institutional structure. However, I often have the feeling that that no-one has ever really established a precise assessment of the consequences and the possible



added value of these reforms. And yet, what must guide the political choices, beyond the fundamental aspirations of all the democratic movements of our country, which is so dynamic in this respect, is the scale of the impact of the actions taken. Providing a scientific perspective and support for political decision-making is one of BELSPO's tasks (Art. 6bis. §2, Law of 8 August 1988), whose means of communication you are currently using. We are therefore the ideal authority to proceed with this in-depth and objective analysis. We are ready for it.

But BELSPO is also a player in scientific research in Belgium. A major player. As proof, let us remind you that even if research policies, whose vocation is applied or industrial, and universities, research funds and centres fall under the regional or community domain, almost one out of every two euros of public funding for research is federal. More precisely, when we add the operating budgets to the tax and special tax system in favour of researchers and research, we represent 47 % of public funding in Belgium. This not only gives us a voice in the chapter but also considerable credibility in our country's scientific community. A community that, based on its own analysis or that of international audits, isn't afraid to declare that it is suffering from the institutional division of funding and the way research is organised. A community that looks on with dismay at the choice imposed by the negotiators of the last state reform, to destroy the most efficient system that has ever been created to stimulate high-level fundamental research in our country; which, among other things, has led to the confirmation, through experience, of the discovery that earned François Englert his Nobel Prize. I am talking about the Interuniversity Attraction Poles. The only and ultimate system allowing Belgian researchers to collaborate, throughout the entire country, in networks whose essential characteristic is the extraordinary quality flourishing within.

Therefore, today, I am inviting everyone to sit down and think; to objectively consider the possible consequences of this concrete break that, fortunately, would only occur in 2017. This chance offers us the time required for this evaluation. It also gives us the opportunity to show that our reforms are truly inspired by a concern for added values. And the possibility, if necessary, to reconsider a decision that the entire Belgian and international scientific community already deems fatal for our research and, consequently, for the future and prosperity of our fellow citizens and, in particular, future generations.

Dr. Philippe Mettens,

Chairman of BELSPO's Management Committee

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WIV-ISP:
the population's health
under close watch



Scientists studying zebrafish in the NERF lab, more specifically how the brain of zebrafish processes sensory information such as smell and taste. The NERF lab was set up by IMEC, VIB (Vlaams Instituut voor Biotechnologie) and the Leuven University to unravel the neuronal circuitry of the human brain. More info: www.nerf.be © IMEC

Collaboration between knowledge centres and industry: meanings and measurements

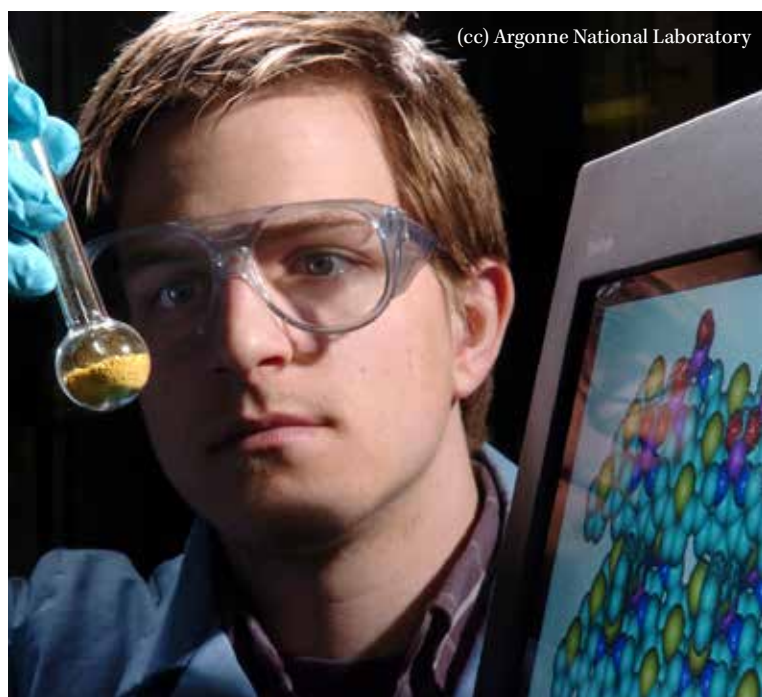
André Spithoven

Collaboration between knowledge centres and industry has been a prominent topic on the political agenda in the past decade. Many initiatives for facilitating knowledge transfer were set up during this time. For the purposes of this article, knowledge centres are defined as institutes of higher education – universities and colleges – as well as the public knowledge centres such as the Interuniversity Microelectronics Centre (IMEC), the Belgian Nuclear Research Centre and the Royal Belgian Institute of Natural Sciences. Universities and public knowledge centres have, for example, increasingly set up specialised organisations for technology transfer to streamline the supply of knowledge and technology to industry. However, such organisations are just one example of the channels through which knowledge transfer can take place.

Opinions are divided on smoothing the way for collaboration between knowledge centres and industry. No one disputes the necessity of knowledge transfer, but concerns are often raised that the scientific knowledge developed in these centres may be failing to have a socio-economic impact, and specifically that despite the generation of knowledge or scientific work of outstanding quality, this is not being converted into commercial products or new applications.

Knowledge creation is understood here in terms of research and scientific publications, and knowledge application as innovative activities and taking out patents. According to this line of thinking, it should be a policy priority to promote knowledge transfer from the knowledge centres by ensuring that they are aligned with the needs of industry.

Belgium has been ranked, in relation to other European countries, based on two indicators for knowledge transfer, as a means of identifying its strengths and weaknesses and the challenges faced. This article is focused on the collaboration between knowledge centres and companies within the national innovation system, from the perspective of both input and output. The input side is examined based on the amount of research and development (R&D) within knowledge centres that is being funded by companies. This can be a way for the knowledge centres to access greater financial resources. On the output side, the collaboration



(cc) Argonne National Laboratory

between industry and knowledge centres geared towards innovation in products and processes plays a central role.

Collaboration on research and development

Why are companies willing to fund R&D within knowledge centres? Companies need research results that can enable them to solve technical problems, for example, or to acquire know-how – by purchasing licenses to patents from knowledge centres or through contracted research or joint research projects – which can lead to the development of new applications and products.

Table 1 shows an overview of the R&D carried out in higher education (chiefly at universities) and the funding by industry sources based in Belgium and abroad.

Column (i) of Table 1 indicates the total expenditure on R&D carried out in higher education – universities and colleges. For Belgium, this was 1.8 billion euros in 2011. Of this, 11.9% was funded by industry sources based in Belgium and abroad (column (ii)), which puts Belgium in sixth place. At 14%, the amount of industry funding is even higher in Belgium's trade partner Germany, ranking it in second place. However, whereas in Germany, this share has grown by 1.8 percentage points over the last decade (2001-2011) as shown in column (iii), in Belgium, growth has stagnated (-0.7 percentage points). Industry funding in Belgium grew by 5.0% per year between 2001 and 2011; however, since the proportionate amount has stagnated, this means that the growth in R&D expenditures in higher education is proceeding at approximately the same pace. Belgium's other trade partners show differing proportions, which primarily reflects the organisation of the national innovation system. The proportion of industry funding of the R&D carried out by higher education in the Netherlands, for example, is 8.2% and the ten-year evolution has been up by 2.9 percentage points. Between 2001 and 2011, industry funding grew by 8.5% per year. At 2.8%, France has a much lower proportion of industry funding for R&D in higher education, and this is also stagnating (at a rate of -0.3 percentage points between 2001 and 2011), while the funding has grown by just 3.1% per year between 2001 and 2011.

The proportion of industry funding of R&D in higher education provided by companies corresponds to expectations if one takes into account the fact that the innovation system in Belgium is largely based on universities (OECD, 2002). For this reason, it is interesting to compare this with proportion of the R&D in public knowledge centres that is funded by industry (Table 2).

In Belgium, the R&D expenditures of the public knowledge centres reached 658 million euros in 2011 (column i). The proportion financed by companies is over a third of this (36.6%) which makes Belgium the frontrunner in the European ranking (column ii). The different authorities in Belgium have made great efforts to encourage R&D in a number of spearhead sectors of particular value to industry, such as ICT and biotechnology. The vast majority of the industry funding is provided by foreign companies looking for the specialised know-how that is present within strategic knowledge centres such as IMEC. Although IMEC was founded in 1985, after an initial period of development, it has now become extremely active and an increasing proportion of its activities are therefore being funded by (international) companies.

Among the trade partners, the Netherlands scores particularly well. This can be attributed to their innovation system in which the Grote Technologische Instellingen (Major Technology Institutes), such as TNO, play

Table 1

R&D expenditures in higher education and the funding by companies

Country	R&D in 2011 (in million euros)	Proportion funded by companies (in %)*	Evolution in the proportion between 2001 and 2011 (in percentage points)	Evolution in the funding by companies (compound annual growth rate %)
	(i)	(ii)	(iii)	(iv)
European Union - 28	60987.7	6.5	0.0	4.6
Austria	2117.6	6.2	2.2	11.1
Belgium	1825.5	11.9	-0.7	5.0
Bulgaria	22.5	19.0	-8.0	6.1
Croatia °	93.4	10.6	0.1	0.0
Czech Republic	621.7	1.0	0.4	21.8
Denmark	2258.3	4.5	1.5	15.4
Estonia	107.0	4.5	-0.6	14.4
Finland	1431.8	6.7	0.0	5.5
France	9450.1	2.8	-0.3	3.1
Germany	13449.2	14.0	1.8	6.1
Greece	559.5	9.4	2.6	7.3
Hungary	243.1	12.2	7.9	17.1
Ireland	704.0	4.0	-0.4	8.6
Italy +	5669.2	1.4	0.0	3.4
Latvia	68.8	4.7	-5.3	7.4
Lithuania	153.2	12.2	-0.2	18.1
The Netherlands	3994.2	8.2	2.9	8.5
Poland	995.6	2.9	-3.4	0.5
Portugal	983.7	1.9	1.1	19.5
Romania	150.3	5.7	-0.3	21.7
Slovenia	105.4	13.5	6.8	14.3
Slovakia	163.7	3.5	3.2	62.2
Spain	4002.0	8.3	-0.4	7.1
Sweden	3460.4	4.9	-2.2	1.5
United Kingdom	8211.3	5.8	-0.2	1.8

Source: Eurostat (2014) - our own calculations

Notes: * Funding by domestic and international companies; + 2005 instead of 2001; ° 2002 instead of 2001,



Table 2

R&D expenditures in the public knowledge centres and the funding by companies

Country	R&D in 2011 (in million euros)	Proportion funded by companies (in %)*	Evolution in the proportion between 2001 and 2011 (in percentage points)	Evolution in the funding by companies (compound annual growth rate %)
	(i)	(ii)	(iii)	(iv)
European Union - 28	32396.2	8.2	1.5	5.2
Austria °	425.2	4.5	-1.5	2.0
Belgium	658.6	36.6	24.2	19.3
Bulgaria	78.7	6.2	1.2	7.4
Croatia °	92.1	3.8	-1.6	0.8
Czech Republic	504.4	13.7	7.1	18.2
Denmark	156.1	6.8	-0.6	-11.9
Estonia	31.1	1.5	-2.9	4.5
Finland	633.7	13.3	-1.9	1.7
France	6249.0	8.6	1.5	3.4
Germany	10974.3	9.3	7.0	20.0
Greece	331.7	8.4	6.5	22.7
Hungary	189.8	12.8	-0.3	2.7
Ireland	131.9	1.7	-8.6	-14.6
Italy	2653.6	5.6	2.1	5.5
Latvia	32.8	9.9	6.0	26.1
Lithuania	55.3	12.7	-0.1	4.3
The Netherlands	1321.2	15.9	-4.8	-1.5
Poland	979.4	7.4	-6.9	2.1
Portugal	194.1	1.4	-2.5	-10.9
Romania	267.6	23.0	-3.6	17.1
Slovenia	127.8	7.3	-2.6	1.3
Slovakia	129.6	12.9	-1.1	12.9
Spain	2762.4	7.2	0.1	10.9
Sweden	566.8	5.5	4.0	21.0
United Kingdom	2706.3	10.4	-2.1	-2.6

Source: Eurostat (2014) - our own calculations

Notes: * Financing by domestic and international companies; ° 2002 instead of 2001.

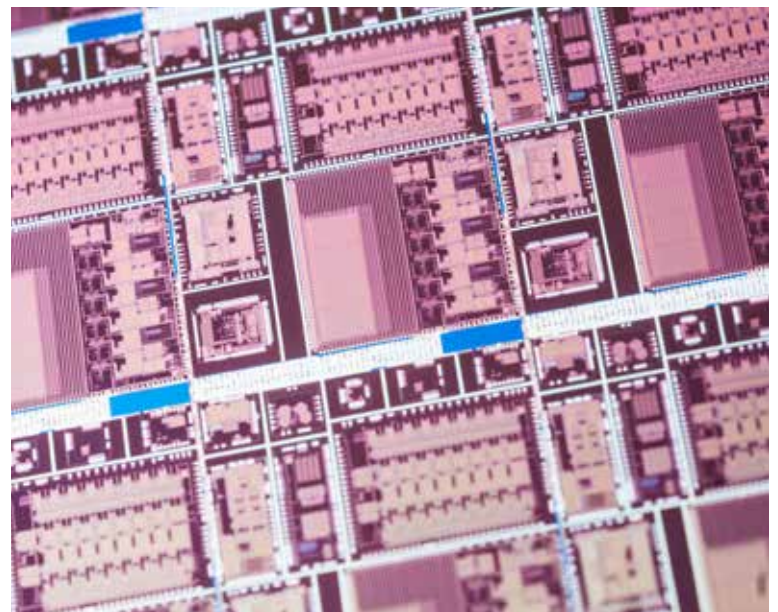
a prominent role. The proportion is also high in the United Kingdom. The rest of the small, open economies show a highly diverse pattern, depending on the organisation of their innovation systems. Finland scores above the average for the EU-28, but other small, open economies which are comparable to Belgium - such as Austria, Denmark, Ireland and Sweden - fall below this average level.

Moreover, the evolution in the proportion between 2001 and 2011 can be regarded as highly positive, certainly in comparison with the other countries (column iii). The evolution of industry funding in Belgium has increased annually by 19.3%. Of all the trade partners, only Germany performs better on this account, whilst the growth rates are negative in the Netherlands and the United Kingdom.

Collaboration on innovation

With regard to the output side of the innovation system, collaboration on innovation has been used as an indicator. The numbers in Figure 1 show the percentage of the innovative companies that collaborated on an innovative project with a higher education institute or with a public knowledge centre. Collaboration on innovation is described as active participation together with other companies or non-commercial institutions. Both of the partners may not necessarily stand to gain commercially from the collaboration, and this also does not include the outsourcing of activities without active collaboration.

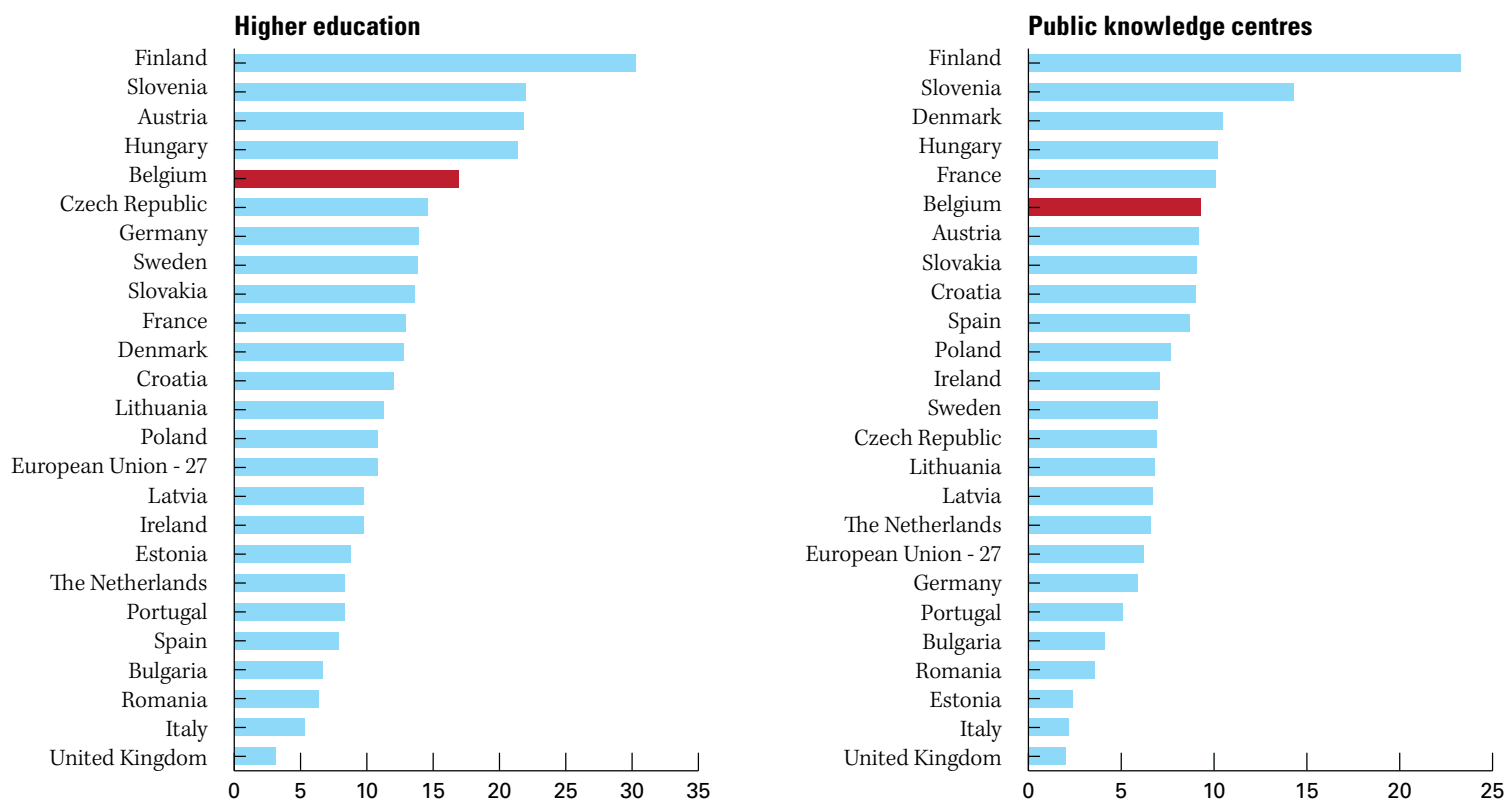
In comparison with the other European countries, innovative companies in Belgium show a very high score for collaboration on innovation. If all types of partners are taken into account, then 42.3% of the innovative companies are working together with a partner. However, collaboration with a partner in higher education – universities and colleges – on innovation projects is considerably less prevalent: 16.9% of all innovative companies. Universities function in this context as problem-solving partners for innovation projects. This fact itself is a hopeful sign, as it offers a potential counterargument for the notion of poorly suited competencies: the universities appear to have the capacity to carry out research that is valued by companies. In comparison with the trade partners – Germany, France, the Netherlands and the United Kingdom



A multi-parameter signal acquisition system-on-chip for connected personal health applications. © IMEC

Figure 1

Collaboration with higher education and public knowledge centres on innovation



Source: Eurostat, 2013.
Notes: No data available for Greece; Cyprus, Luxembourg and Malta have not been included.

– Belgium has the highest proportion of companies that collaborate with higher education on innovation. Looking at the other small, open economies that are comparable to Belgium, the exceptional position of Finland and Austria is of particular note.

Collaboration with public knowledge centres happens less frequently than with higher education institutes. This primarily reflects the nature of the national innovation system in place. Thus, in Belgium, for example, the Flemish Region has focused on strategic knowledge centres such as IMEC, VIB, VITO and iMinds. This focus on specialisation gives these public institutions a critical mass which allows them to become international players. Companies in Belgium, with 9.3% of the innovators, make relatively heavy use of public knowledge centres as collaboration partners for innovation, in comparison with the other countries. One striking result is the high score for Finland, but also Denmark and France (with its significant defence sector) outscore Belgium. Nevertheless, companies in Belgium maintain relatively more innovative collaboration relationships with public knowledge centres than in the trade partners such as the Netherlands, Germany and the United Kingdom.

Conclusion

Collaboration between knowledge centres and industry can take many forms, each of which can be quantified in its own way. We scrutinised two measurements here, one from the input side and one from the output side of the innovation system. This revealed that, in Belgium, there is no difficulty in the flow of knowledge from higher education and public knowledge centres towards industry. The international comparison demonstrates that the nature of the national innovation system determines the type of public sector partner. In Belgium, universities are important players in the innovation system; in France, the R&D tends to be done through public knowledge centres. However, in order to obtain a nuanced picture of the phenomenon of knowledge transfer, multiple indicators would be needed, and many channels and mechanisms remain difficult to quantify. This will be the overarching theme of the annual report of the SIST that will be published in late 2014. |

More

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Emerging technologies: BIOTECHNOLOGY AND NANOTECHNOLOGY

Karl Boosten and
Julien Ravet

Technology is not a static subject. Innovations succeed each other constantly and give rise to new technologies. These technological innovations have an impact on our daily lives, for example in the form of new medical applications and new materials.

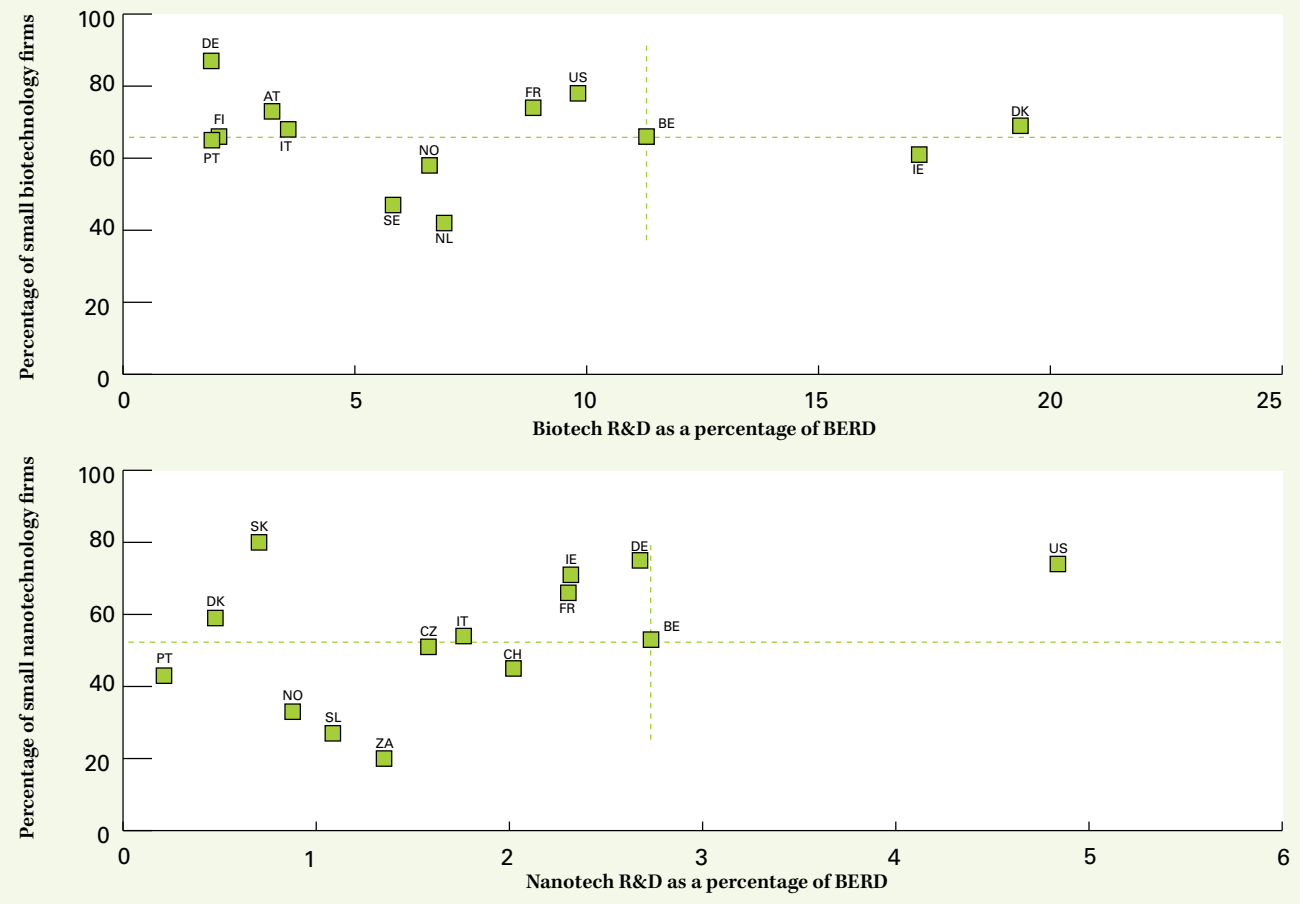
It is essential for economic policy to take account of these emerging technologies. In this context, the Belgian Science Policy Office (Belspo) is taking part in a project in collaboration with the OECD to develop indicators for the research and development (R&D) activities of firms in biotechnology and nanotechnology. These R&D figures constitute a unique approach to these activities (the figures for nanotechnology are the result of a pilot project) that are generally measured using scientific publications and patents. Indicators for R&D investments allow to examine the degree to which the private sector uses new technologies for the development of new products.

Biotechnology comprises a whole array of research technologies and methods with many areas of application. For example, recombinant

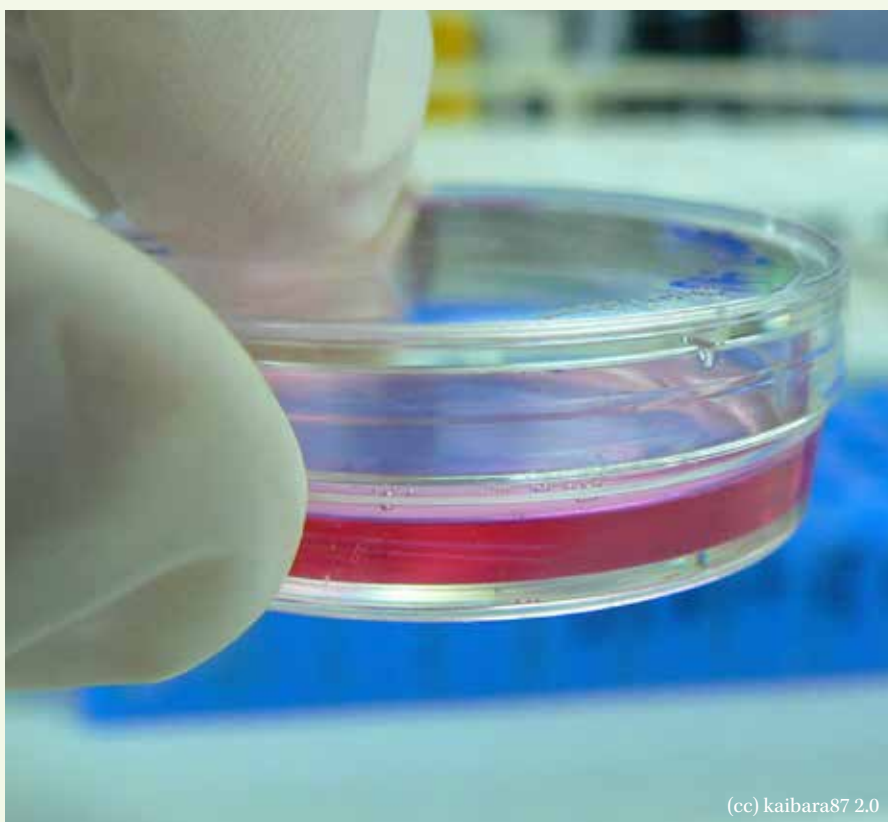
Biotechnology: the application of science and technology to living organisms (as well as parts of organisms, products and models) with the aim of altering living and non-living matter to produce knowledge, goods and services.

Nanotechnology: the application of new technologies that allow small-scale (often smaller than 100 nanometres) structures and systems to be manipulated, studied and employed.

- AT = Austria
- BE = Belgium
- CH = Switzerland
- CZ = Czech Republic
- DE = Germany
- DK = Denmark
- FI = Finland
- FR = France
- IE = Ireland
- IT = Italy
- NL = The Netherlands
- NO = Norway
- PT = Portugal
- SE = Sweden
- SK = Slovakia
- SL = Slovenia
- US = United States
- ZA = South Africa



Note: for the Netherlands and Sweden, firms with fewer than 10 employees were not taken into account. Some countries were not included in the graphs above because of a different composition of the population of enterprises. Source: Belspo (Belgium, 2011) and OECD (2010-2011 or the latest available year).



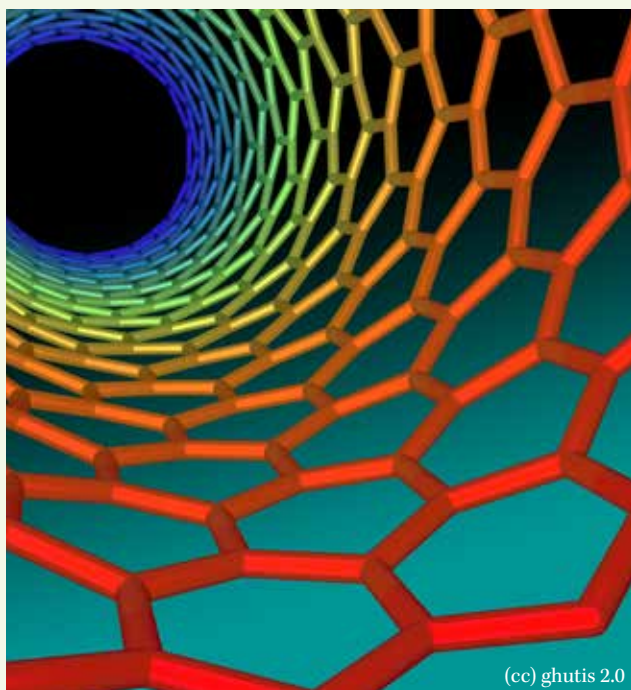
(cc) kaibara87 2.0

DNA technology can be used in the pharmaceutical sector to develop new medications, in the agricultural sector to develop more resistant crops, and in the chemical sector to produce new enzymes and catalysts. Nanotechnology allows matter to be understood and controlled at the atomic level and new properties to be given to materials. These new properties can be used in various sectors such as microelectronics for developing hardware components and sensors, or in the chemical sector for developing materials.

Biotechnology and nanotechnology lead to the production of new goods and services and have an important impact at various levels. Thereby, these technologies have an economic impact by changing the industrial structure of countries and improving their competitiveness. The development of these technologies, as in healthcare, can also have a beneficial effect from a social point of view. Within the field of environmental issues too, these technologies can generate new dynamics, for example through the development of biodegradable materials or by contributing to the preservation of biodiversity.

Biotechnology and nanotechnology in Belgium

In Belgium, 11.3% of the R&D of private companies are devoted to biotechnology activities. Approximately two thirds



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of the firms active in biotechnology are defined as small firms (fewer than 50 employees). Nanotechnology represents 2.7% of all R&D expenditure in Belgium, and it can also be established that a relatively large number (53%) of small companies are involved in nanotechnology activities. The limited percentage of nanotechnology R&D reflects the new nature of this technology, the importance of which will probably keep growing in the future. We also note that small firms, in particular those with fewer than 10 employees, are characterised by very high R&D intensities (R&D as a percentage of turnover).

From an international perspective, the figures rank Belgium in a good position in the bio- and nanotechnology fields. In fact, the share of R&D devoted to biotechnology is larger than that of the United States and most of the countries that took part in the OECD data collection, in particular our neighbouring countries France (8.8%), the Netherlands (6.9%) and Germany (1.9%). The percentage of small biotechnology firms is smaller than that of Germany (86.9%), the United States (78.1%) and France (73.9%).

As for nanotechnology, the share of this technology in Belgian R&D is relatively large in comparison with other countries. However, the United States has a large lead on the other countries and shows a relatively high percentage of R&D in this technology (4.8%) as well as a high proportion of small enterprises (73.7%). We also note that Germany is more active in nanotechnology (2.7% of R&D) than in biotechnology.

In Belgium, R&D activities in biotechnology are concentrated in certain sectors. In order of importance, the pharma-

ceutical, chemical, food and agricultural sectors represent a little more than 90% of the R&D in biotechnology. Nanotechnology activities in Belgium mainly take place in the electronics, metallurgy, chemistry, plastics and medical sectors. These sectors account for more than 80% of the nanotechnology R&D.

Several large enterprises that have long been active in Belgium stand at the top of the Belgian ranking with regard to R&D investments in bio- and nanotechnology. Nonetheless, half of the R&D in these technologies is carried out by companies that are less than 20 years old. In particular, over one third of nanotechnology R&D is carried out by firms that are less than 10 years old and have a very high R&D intensity.

In general, these figures show the extent to which bio- and nanotechnology occupy a relatively important place in the Belgian technology landscape today. This turns out to be a recent phenomenon, given the large number of young enterprises that contribute to the development of these technologies. This still offers substantial prospects for growth for the future. If Europe and more particularly Belgium want to keep playing an important industrial role, these figures suggest there is still room for the industry in our economy. |

More data on biotechnology:

www.oecd.org/innovation/inno/keybiotechnologyindicators.htm

More data on nanotechnology:

www.oecd.org/sti/nanotechnology-indicators.htm

Eurofed and Horizon 2020

Kristof Vlaeminck

Horizon 2020, the new research and innovation programme of the European Union, was launched at the beginning of this year. Representing €80 billion in funding over seven years (2014 - 2020), it is the largest funding instrument for research and innovation in Europe. As they did for the Seventh Framework Programme (KP7), the Eurofed team will assist and guide researchers in submitting successful project proposals for the new programme.

Horizon 2020, the EU's new Framework Programme

The first of January 2014 was not only the start of a new year, but also marked the beginning of a new budgeting period for Europe. The first day of this calendar year also witnessed the launch of the next phase of the European Union's Multiannual Financial Framework, which will run until 31 December 2020. Although the title does not immediately suggest a connection with scientific research, the nearly €80 billion for Horizon 2020 forms part of this Multiannual Financial Framework.

Horizon 2020 is the EU's new programme for research and innovation designed to encourage efforts to create economic growth, prosperity and jobs in Europe. Compared to the previous Framework Programme, the rules for participation have been considerably streamlined (for example,

only one single financing system for the entire project), which will reduce the amount of time to be invested in the administrative aspects of the project. The reason why the programme is called Horizon 2020, and not the 8th Framework Programme, is partly because there is greater emphasis on innovation, and partly because it combines various funding mechanisms: Framework Programmes for research and technological development, the innovation-activities of the Competitiveness and Innovation Framework Programme (CIP) and the European Institute of Innovation and Technology (EIT).

The structure of Horizon 2020

The biggest change relative to the Seventh Framework Programme (FP7) is that the programme goes a step further than exclusively funding research, as Horizon 2020 is designed to provide financial support for everything from fundamental basic research to pilot projects.

The second difference is that Horizon 2020 has a completely new structure, although many of the themes are similar to those in FP7. These themes have been given different names, however, to reflect new areas of emphasis. Thus, the new programme is made up of three pillars, each with its own specific goals, and a Horizontal Challenge that extends beyond the pillars. The first pillar is Excellent Science, which provides grants for basic research, doctorates and mobility as well as research infrastructure. The Industrial Leadership pillar chiefly targets innovative research and is especially geared towards industry. However, this does not imply that there will be no room here for research carried out by federal institutions, since the topics are not exclusively reserved for industry, and collaboration between industry and research institutions is in fact encouraged. The last pillar is Societal Challenges which, as the name suggests, is focused on the major challenges facing our society (climate change, food supply, health...).

The final difference compared to FP7 is the completely new approach of the programme. Whereas previously, in FP7, all themes tended to be neatly separated, the themes are now more connected to one another. For example, international collaboration is no longer a separate theme but shows up in specific topics across all themes. The same applies for climate change: although there is a specific theme to address this challenge, there are also topics within the other themes whereby climate change is approached from their specific context (for example, within Secure Societies, there is a topic for crisis management in the event of extreme weather conditions resulting from climate change).



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The Eurofed contact persons (NCPs): from left to right Kristof Vlaeminck, Laurent Ghys and Pascale Van Dinter.

The Eurofed team and Horizon 2020

The Eurofed team has concentrated on 11 themes which are relevant to the federal institutions:

Within the pillar *Excellent Science*:

- *European Research Council*
- *Marie Skłodowska-Curie actions*
- *European Research infrastructures*

Within the pillar *Industrial Leadership*:

- *Leadership in enabling and industrial technologies - Dedicated support for ICT*
- *Leadership in enabling and industrial technologies - Space*

Within the pillar *Societal Challenges*:

- *Health, demographic change and wellbeing*
- *Food security, sustainable agriculture, marine and maritime research and the bio-economy*
- *Climate action, resource efficiency and raw materials*
- *Inclusive, Innovative and Reflective Societies*
- *Secure Societies*

As horizontal themes:

- *Science with and for Society*
- *Joint Research Centre (JRC)*

As with the Sixth and the Seventh Framework Programmes, the Eurofed team will also be monitoring Horizon 2020. The team was created to inform the federal actors and support them in their search to obtain European funding. Informing federal actors is primarily a matter of making information available through a renewed website (<http://eurofed.stis.belspo.be/>) which is now structured according to Horizon 2020. The monthly newsletter has been replaced by a service whereby news on a particular theme can be sent directly to your mailbox. If you would like to register for this service, please see the website or use the abbreviated link: <http://goo.gl/PGVcYW>

Of course, as in the past, Eurofed can still be reached by telephone or mail to answer any questions on Horizon 2020 or to discuss ways of finding a solution to a specific problem. The Eurofed team also gives presentations on the subject of Horizon 2020. These presentations can be customised for federal institutions and focus on relevant research topics of the various researchers, or a specific need (scientific and financial aspects, auditing, conditions for participation, etc.).



After a project proposal has been written, it is often useful to have it reviewed by an outsider to determine whether everything is clear and well structured and appropriate for the theme as described. Here, too, the Eurofed team can help as proofreaders and provide researchers at the federal institutions with feedback on their project proposals.

In short, the message the Eurofed team would like convey to you is that, if you are interested in Horizon 2020, please contact them! They are here to help. |

Biodiversity for research and industry

Virginie Storms, Philippe Desmeth
and Marleen Bosschaerts

Microorganisms are an important resource for biotechnology. The properties of bacteria, fungi, yeasts and diatoms are used in numerous industrial applications and processes. Just think of fermentation processes and the use of probiotics in the food sector, the production of antibiotics in the medical sector, the use of microorganisms as growth-promoting agents in agriculture and as tools for bioremediation of polluted sites, and so forth. Moreover, all the properties of microbial species are not yet known.

The public collections of the BCCM (Belgian Coordinated Collections of Microorganisms) are a treasure trove of biological material that can be explored for all these purposes.

Ensuring the diversity of microbiological material by incorporating it into collections, preserving it and making it available to academic and industrial partners is an important mission of the BCCM. In addition, users can also turn to the BCCM collections for all kinds of services such as e.g. identification and characterisation of microbiological material, related consultation or contract research.

The BCCM consortium was established in 1983. Today, 30 years later, it has grown into one of the most important culture collections in the world with regard to both the extent and quality of its collections (bacteria, yeasts, fungi, plasmids, diatoms, DNA libraries) and its expertise.

Users' Day

In honour of its 30 years of existence, BCCM organised a users' day with the central theme of 'Biodiversity for research and industry'. This event took place on 26 and 27 November 2013, back-to-back with the annual meeting of the Belgian Society for Microbiology (BSM), and during these two days attracted some 150 interested visitors, primarily from the academic world but also from industry.

Scientists from the various BCCM collections tended information stands there with sec-





tor-oriented examples and documentation on the available material and services for medical biotechnology and pharmaceuticals, food and agricultural technology, industrial biotechnology and the aquatic sector. A scientific programme was also provided in which speakers from industry illustrated various practical examples of collaboration between a BCCM collection and a company active in the biotech sector via tandem presentations with BCCM staffs.

As the cherry on the cake, the completely modernised house style was unveiled to the participants on the occasion of the 30-year existence of BCCM. With a new logo, an updated website and a new communication approach, BCCM hopes to more visibly and clearly engage in dialogue with its current and potential users. |

Belgian Coordinated Collections of Microorganisms (BCCM)

The BCCM consortium:

- 7 complementary culture collections
- more than 64,000 specimens in the public collections, distributed over:
 - 2300 genera
 - 9900 species
- annual distribution of approximately 5500 strains
- 1 vision, 1 mission, 1 strategy!

The BCCM collections:

BCCM/DCG	diatoms	bccm.dcg@ugent.be
BCCM/IHEM	biomedical fungi and yeasts	bccm.ihem@wiv-isp.be
BCCM/ITM	mycobacteria	bccm.itm@itg.be
BCCM/LMBP	plasmids, DNA libraries	bccm.lmbp@irc.ugent.be
BCCM/LMG	bacteria	bccm.lmg@ugent.be
BCCM/MUCL	agro-industrial fungi and yeasts	bccm.mucl@uclouvain.be
BCCM/ULC	(polar) cyanobacteria	bccm.ulc@ulg.ac.be

<http://bccm.belspo.be>

The BCCM consortium is coordinated and financed by the Federal Science Policy Office.



A member of the Belspo staff is re-elected president of the World Federation for Culture Collections (WFCC)

Since its creation in 1983, the BCCM consortium has been financed by the Federal Science Policy Office, where a team of six experts is charged with the coordination of the collections in the areas of quality management, bioinformatics, communication, international cooperation, and legal issues with regard to management of biological resources. The professionalism and expertise of this BCCM coordination unit has been acknowledged once again via the re-election of one of its members to the Presidency of the World Federation for Culture Collections (WFCC).

At the beginning of his second term of office as President of the WFCC, Philippe Desmeth presided over the 13th International Conference on Culture Collections organised in Beijing by the Institute of Microbiology of the Chinese Academy of Sciences (September 2013).

Philippe regularly receives invitations to present the developments and initiatives of the BCCM consortium to decision-makers and culture collections around the world. The BCCM consortium model has proven its efficacy, and Philippe uses this experience in coordination of a distributed scientific infrastructure to create a constructive and collaborative mindset within the WFCC community.

During Philippe Desmeth's first term, WFCC membership increased by ten percent. He expects a similar trend during his second term. The World Data Centre for Microorganisms and all the other members of the executive board of the WFCC are aiding him in providing new IT

and management tools to culture collections. These infrastructures play a central role in the study and preservation of micro-biodiversity. They contribute to better comprehension and sustainable use of the microbes essential to all life on earth. Culture collections are also essential infrastructures for the application of the Nagoya protocol to the Convention on Biological Diversity.

We wish Philippe Desmeth much success and thank him for his energy and enthusiasm in defending the cause of culture collections.



WFCC President Philippe Desmeth

The Interuniversity Attraction Poles (IAP) INTERDISCIPLINARY RESEARCH: A POWERFUL DRIVER

The ‘Interuniversity Attraction Poles’ (IAP) programme was set up in 1987 by the federal government. It was launched with the aim of supporting basic research and reinforcing the high level scientific potential of the universities by integrating the notion of a network. This action has been developed in five-year phases.

The IAP programme is managed by the Federal Science Policy Office (Belspo) and federates the efforts of research teams from the universities in the north and south of the country and federal science establishments – as well as universities from other countries – in all areas of research.

In 2011, the Council of Ministers approved the implementation of the seventh phase, with a budget of 156.5 million euro for the period 2012-2017. This phase currently covers the running of 47 networks involving 369 research teams (257 Belgian teams and 112 foreign teams). We met Professor Véronique Dehant from the Royal Observatory of Belgium, who coordinates one of these networks, called *Planet TOPERS*.

What attracted you in the IAP programme?

Véronique Dehant: I was attracted by the IAP programme because it allows us to collaborate with teams of competent scientists from the north and the south of the country, combining different but very complementary competences. Through the IAP, these teams are allocated extra human and material means to unite a sufficient critical mass and further increase their international influence.

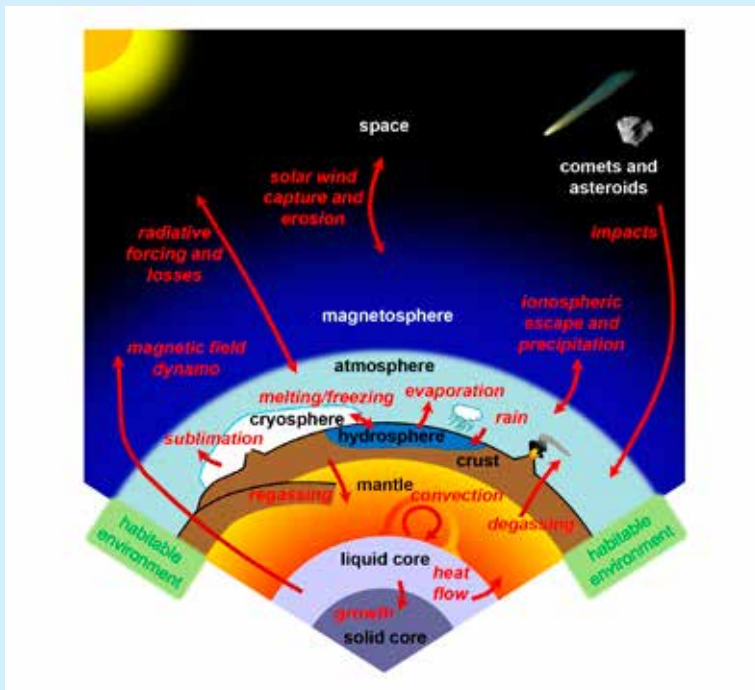
For instance, my IAP network, called *Planet TOPERS* (Planets: Tracing the Transfer, Origin, Preservation, and Evolution of their ReservoirS with a view to understanding their habitability), involves Belgian partners belonging to two federal institutions, two Belgian French-speaking universities, two Belgian Dutch-speaking universities and a highly renowned German research centre. The network incorporates existing and internationally renowned competences in planetary sciences, geobiology, cosmo- and geochemistry, analytical and physical chemistry, with the aim of establishing an interdisciplinary infrastructure-network in Belgium. Thanks to this synergy, the IAP enables leading-edge research to be carried out in the domain of the evolution and habitability of planets and to reinforce the international competitiveness of the Belgian teams involved.

How does working in a network have a positive influence on your research results?

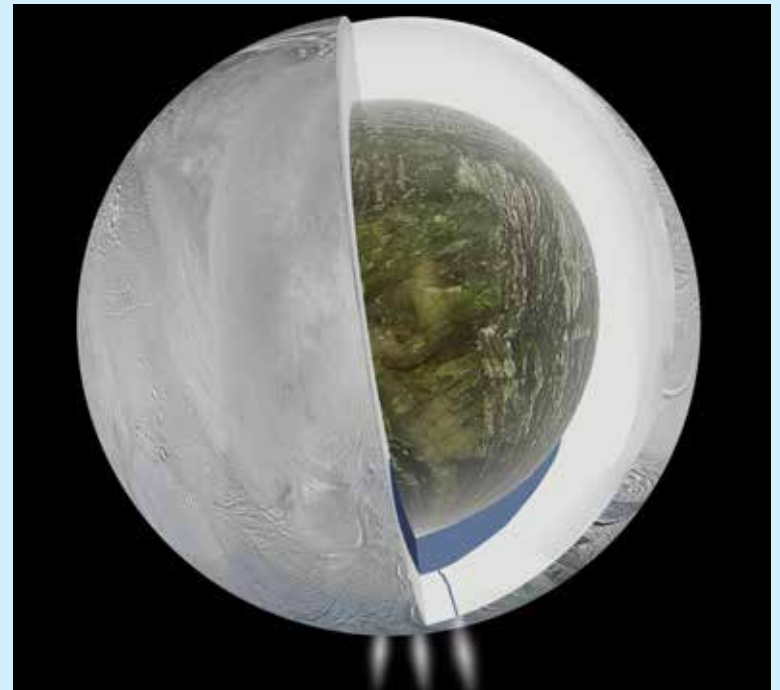
VD: All our teams’ activities are reinforced by horizontal exchanges of competences and the interactions between the scientists involved favour complementarity and interdisciplinarity. Thanks to these exchanges and interactions, we are all the more able to attract young researchers and expand the teams through other projects (snowball effect). For instance, since the creation of our IAP Planet TOPERS network, two teams have obtained ERC (European Research Council) funding from the European Union. Our current results are reinforced by numerous publications in journals with a reading committee. They are published either by the individual teams (an average of 20 publications per team in the first year), or jointly (38 joint publications out of 134 for the first year).



Professor Véronique Dehant



Basic relationships and interactions between the different planetary reservoirs as conditions capable of supporting life.



The Cassini spacecraft discovered plumes of ice and water vapour coming from liquid water below the surface of Saturn's moon Enceladus. © NASA/JPL-Caltech

In what way are these collaborations useful?

VD: In order to better understand the concept of habitability, i.e. the environmental conditions capable of supporting life (such as the existence and persistence of liquid water, energy and nutrients), we have to understand the evolution of the planets. This is dictated by the composition, structure, and temperature of their internal core, their mantle, their lithosphere, their crust, and the interactions with space, the atmosphere and possibly the oceans, if there are any. The research within the framework of my IAP therefore aims to better understand the basic relationships and interactions between these different planetary reservoirs as well as their evolutions in time, by including the study of the preserved biosignatures and understanding the interactions between life and the geochemical reservoirs according to time (see figure).

The interdisciplinary approach applied in this project goes beyond the current studies on Earth system sciences, planetology and / or astronomy by encompassing the whole planet from the upper atmosphere to the deep interior, within the framework of a study of its habitability. It goes without saying that specialists of planet interiors will be working with atmosphere specialists and even specialists in the effects of meteorite impacts on the latter, as well as primitive Earth specialists. Among the partners, there are also experts in analysis methodologies for meteorite samples. Furthermore, some partners have major responsibilities as regards the instruments used on board space missions, which ensures the group has special access to data and the information derived from it.

How is the work organised within your IAP?

VD: We have organised the researchers around themes that require interaction between the teams and we have set up workgroups for these inter-institutional interactions. In addition, we organise one or more meetings a year for the entire consortium where we present our

results and discuss them. There are also regular exchanges between team leaders. Once a year, we hold a meeting open to scientists outside the IAP; we invite foreign specialists to discuss results. We listen to the opinions of four experts outside the consortium concerning the research strategies and the optimisation of specific research objectives in our IAP.

How do you see your role as network coordinator?

VD: As the coordinator, I seek to ensure the network is running smoothly above all. I try to follow the research being carried out as much as possible. I set up mechanisms to ensure the optimum retrieval and sharing of information (internal website, e-mails, meetings, video conferences); I encourage interactions, the work of the teams and workgroups that we have set up; I discuss the teams' progress; I organise the consortium's scientific meetings.

Thanks to the atmosphere at work and the friendship that reigns in the network, my role as coordinator is made all the more enjoyable. I also play the role of interface between the teams in my IAP and the managers of Belspo's IAP unit and I distribute information concerning the results to Belspo and the public through a website (<http://iuap-planet-topers.oma.be/>).

For you, what is the specificity of the IAP programme?

VD: The total mass of researchers within the framework of an IAP is optimum for a wide-scale research project that places Belgium in an international network, in international projects or simply to strengthen the position and visibility of Belgian researchers in the field of scientific research.

What's more, the IAP allow collaborations with institutions and universities from the north and south of the country and even with foreign partners; to my knowledge, no other funding mechanism allows this.

What opportunities has the IAP created for you?

VD: For the teams in my IAP, this gives extra visibility and increased recognition by our peers. We stimulate research in our domain in Belgium and on an international level. For instance, we organise entire sessions in international congresses. We discuss with high level scientists and we are also recognised as such. Internal collaboration in the group is an enriching experience for everyone, both from a scientific and human point of view. We have created strong links that allow us to better position ourselves on an international level.

For me, personally, this allows me to reinforce my knowledge and my understanding of the evolution of planets and the concept of habitability. I have been able to compare my understanding of this question limited to my domain with that of competent scientists in other domains. This has also allowed me to meet new young or older researchers, all passionate, devoted and excellent, as well as strengthening my scientific and friendly ties with the project initiators.

Which doors has the IAP opened in terms of the collaboration between the FSE and universities?

VD: The IAP has opened doors to new knowledge, on the one hand, and new multidisciplinary approaches, on the other. Excellence and international recognition aren't innate, they are built up first through personal work, then through team work and, finally, by making use of the complementarities between the research teams. The IAP facilitates the last step. The IAP has opened doors to new international networks. The IAP has only been running for just over a year and, for instance, we have just become involved in a COST action (European Cooperation in Science and Technology) recently accepted by the European Union: *ORIGINS* (Origins and Evolution of Life on Earth and in the Universe). COST actions allow coordination at European level of research financed at national level.

What are the other benefits of the formalisation of these collaborations?

VD: A joint effort accompanied by funding and a formalism that ensures added value.

How does the IAP funding model favour collaboration between universities and the position of Belgian universities in international research environments?

VD: We are in a scientific world where individual research alone can't (or only exceptionally) lead to great discoveries. In an era where communication is fast and efficient, the accumulation of past available detailed knowledge necessary for our understanding can't be concentrated in a single brain. *'We can't be a specialist in every subject'* and the approaches must not only be systemic but also multi/interdisciplinary and integrative. Collaboration with other scientists is essential and even necessary for the survival of their science. The IAP group research activities with the same scientific objective, from an interdisciplinary point of view. The IAP funding model encourages this collaboration in Belgium between federal institutions and Flemish and French-speaking universities.

In which direction would you like to see the collaborations between the Belgian universities evolve, if we take into account their integration into international research?

VD: I would like the collaborations made possible by the IAP to be maintained. Interdisciplinary research is a powerful driver that must be kept. I believe it is essential to stimulate intercommunity interactions and



The planet Mars habitable (presence of water) in the past (left) and the dry surface of Mars now (right). © NASA

reinforce the links between the federal institutions and the universities belonging to the different communities in the light of Belgium's evolution. The creation of sustainable networks will prevent the division which could occur.

What are the advantages of the IAP system compared with other funding for research projects?

VD: The flexibility of the IAP system permits evolution according to actual needs that aren't always anticipated as they are dependent on research discoveries and the vagaries of life in the groups, while focusing on the project's initial vision and objective. The IAP aren't assessed according to demanding deliverables but according to activity reports where the indicators, such as publications, quality of the results, scientific communications, prizes and awards for the group, and international responsibilities are considered. For me, this is the best way to judge the scientists. Participation in international networks and the new projects resulting from the IAP, provide an additional assessment criterion which is rightly considered on an equal basis.

Belpo's management supports us with constructive and efficient answers to our questions and a participatory and constructive presence at meetings which puts the right external pressure on the group. This guarantees a balanced participation in activities, encourages interdisciplinarity and favours a rapid evolution.

Are there any remarks you'd like to make regarding the way the IAP programme is managed?

VD: I hope that the next government will find a political solution to keep the IAP at the federal level and within the operation range of Belpo that since 1988 assures an excellent management. Moreover, I think it is very important to form in the future real national centres of excellence in very specific and frontier areas such as the 'BEL-centre' imagined by Nobel Prize Winner Professor François Englert in honour of the Belgian scientists Brout, Englert and Lemaître. A resolution on this matter was recently voted by the Belgian Senate. |



Maintaining a leading role in space

Belgian space potential is primarily reflected by industrial players: there are some 40 of them, representing 2000 full-time equivalents and a total turnover of 300 million euro a year. Then there are the scientific players, with more than 70 research teams working in research centres, federal scientific institutions and in the majority of Belgian universities. Just as important are the infrastructures, with the ESA centre in Redu (satellite control and data reception), the CTIV at VITO in Mol (VEGETATION image processing) and the Centre Spatial de Liège (CSL – instrument testing).

Finally, there are the three incubators for the transfer of space technologies and the creation of spin-offs: WSL (Wallonia Space Logistics, the Walloon incubator for engineering sciences) and the two ESA incubators (ESA-BIC Business Incubation Center) in Redu and Geel. Belgium is therefore present in all space segments, from fundamental research to the development of leading-edge technologies and the delivery of products and services.

The Federal Science Policy Office (Belspo) devotes 204 million euro a year to space activities, with 175 million euro for the ESA, 24.5 million euro for bilateral activities (mainly with France) and 3.5 million euro for the Earth Observation (STEREO) national research programme.

The budget dedicated to the ESA allows us to participate in programmes in different domains: earth observation (Proba-V to monitor vegetation on a global level); space sciences (missions to Mars, Mercury, Venus, the sun and astronomic missions); ISS (infrastructures and experiments in microgravity on board the international space station); telecommunications and navigation (new telecom-



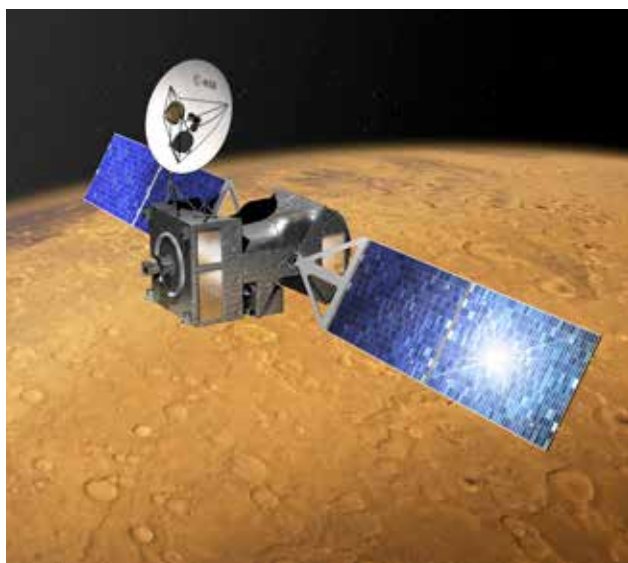
Mobile gantry for the Vega launcher, seen from underneath (CSG-Europe's Spaceport, Kourou, French Guiana).
Credit : Edgar Martins (www.edgarmartins.com)



The Copernicus programme will provide information concerning the environment and civil security.
© ESA

munication satellites and the Galileo system); Ariane, Soyuz and Vega launchers; support for the development of generic technologies; support for scientific research (the development of instruments and the analysis of information provided by the instruments in orbit).

Thanks to the ESA, we have developed skills in the field of small satellites, i.e. Proba satellites: Proba-1 (earth observation), Proba-2 (observation of the sun) and Proba-V (observation of vegetation). On a European level, we are taking part in the Galileo and Copernicus programmes (previously known as GMES-Global Monitoring for the Environment and Security).



The Exomars Trace Gas Orbiter © ESA-D. Ducros

Furthermore, we are developing a close bilateral collaboration with France. This collaboration concerns optical observation satellites for civilian applications (Pléiades programme) and military ones (the optical component of the Musis programme). We are also working with Argentina within the framework of SAOCOM, a radar observation satellite programme.

Stakes in the coming years

An initial stake concerns the infrastructures: it is crucial for Belgium to participate in the new Ariane 6 launcher, if it is to maintain launching autonomy on a European level.

It is also important to be involved in the development of applications by making the best use of Galileo's navigation infrastructures and Copernicus' monitoring infrastructures.

Exploration is another significant stake, beginning with that of Mars: it is advisable to unite the various space powers beyond Europe (the United States, Russia, China, Japan) as this project will benefit everyone. Exomars, which will be launched in 2016 and 2018 in collaboration with the Russians, bears witness to this international cooperation that should be applied on a widespread scale.

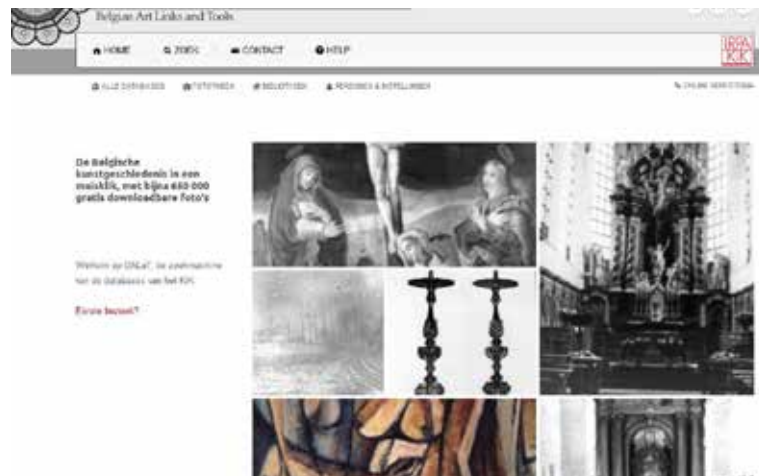
Finally, on a national level, Belspo ensures support for the high level of performance of Belgian scientists. It is thanks to their competences that Belgium will retain a leading role on a European and global level. |

The Royal Institute for Cultural Heritage

Despite a rather unstable context, the Royal Institute for Cultural Heritage (KIK-IRPA) has been the source of plenty of initiatives and major projects in favour of the study and conservation of our country's cultural heritage: extensive photographic documentation campaigns have enriched the photo library; art works were studied from the point of view of both art history and materials and techniques; research was done on restoration methods and products; works were treated and new discoveries published.

In autumn 2013, the KIK-IRPA launched BALaT (Belgian Art Links and Tools), a new search engine that allows users to carry out a search in four databases simultaneously: the KIK-IRPA's photo library and book library, the *Dictionnaire des peintres belges* and a list of people and institutions. Nearly all the photos can now be downloaded for free and new functionalities make searches easier. By offering this tool, the KIK-IRPA has further reinforced its role as a central point for information on our country's artistic and cultural heritage.

Among the millions of negatives kept in the institute's photo library, several thousand are dedicated to the Art Nouveau heritage. Within the framework of the European Partage Plus project, in which 23 institutions from 21 countries participated, between 2012 and 2014, these photos were digitised and made available to the public via the Europeana website. As such the KIK-IRPA could make valuable additions to the vast virtual collection compiled through Partage Plus.



The databases of the KIK-IRPA are simultaneously searchable thanks to a new search engine: BALaT.

In April, the KIK-IRPA inaugurated a latest generation particle accelerator coupled to a latest generation mass spectrometer (MICADAS – Mini carbon dating system) specially developed for radiocarbon dating: a first in Belgium! The datings are now all done in Belgium, which is an incredible time-saver and offers new research opportunities. The KIK-IRPA has benefited from the support of the National Lottery to acquire this device and a room was specifically adapted for its installation by the Belgian Buildings Agency.



From March 2012 to March 2014, the *Altarpiece of St. Denis* from the collegiate church of St. Denis in Liege was the subject of a study and conservation-restoration treatment at the KIK-IRPA. It is a unique example of partial polychromy in the altarpieces produced in the region in the 16th century (project funded by the InBev-Baillet Latour Fund and the David-Constant Fund, both of which are managed by the King Baudouin Foundation).



The MICADAS at the KIK-IRPA carbon dating laboratory.



The restoration of the *Adoration of the Mystic Lamb*.

The different departments of the KIK-IRPA have continued to work on the *Adoration of the Mystic Lamb* by the Van Eyck brothers (1432), a major work kept in Ghent. A team of specialists began working on its conservation in October 2012. In June, the results of the first nine months of study and treatment were drawn up for the press. The eight panels of the external wings of the polyptych were the first to be treated. After having been extensively documented (high resolution photographs and scientific imaging such as RX, IR, IRR and UV, both before and during treatment), they were cleaned, then the most recent layers of yellowed varnish were gradually removed. In May 2013 an international commission of experts met and decided unanimously to continue removing the old varnish and overpaint. This will bring us closer to the original pictorial layers painted by the Van Eyck brothers and facilitate their consolidation.

The institute has organised many events, open days, study days and symposiums, which have brought together several hundred specialists and art-lovers: the symposium on the Roman gates of Tournai Cathedral organised in collaboration with the Walloon Region's DG04; the *From Carpentry to Joinery* study day, jointly organised by the KIK-IRPA's dendrochronology laboratory, the Université de Namur, the Université Libre de Bruxelles and the Royal Museums of Art and History; a workshop on preventive conservation; the 14th art history seminar on monumental stained-glass windows, etc. The KIK-IRPA has also organised several international experts meetings on matters such as the restoration campaign for the *Altarpiece of St. Denis* and the *Adoration of the Mystic Lamb*.

On an international level, the KIK-IRPA partnered with ICCROM to organise a *Forum on Conservation Science*. Hilde De Clercq, head of the Laboratories department, was elected a member of this international body's committee.

As regards publications, the *Contributions à l'étude des Primitifs flamands* collection acquired a new work dedicated to the illuminator Marc Causin from Hainaut and the *Bulletin 33* was published. But, above all, 2013 was marked by the publication of the KIK-IRPA's first e-book: *A Masterly Hand. Interdisciplinary Research on the Late-Medieval Sculptor(s) Master of Elsloo in an International Perspective*. It was published both in hard copy and electronically. It contains the results of two years of intensive interdisciplinary study on the Master of Elsloo, the name given to several



In 2013, the KIK-IRPA started conservation work on a series of eight tapestries from St. Salvator's Cathedral in Bruges depicting the life of Christ. They were designed by the painter Jan Van Orley and woven in Brussels at the workshop of Jasper Van der Borght in 1731. This project, scheduled to run through 2018, is supported by the InBev-Baillet Latour Fund.

late-Gothic sculptors active in what is currently known as the Meuse-Rhine Euregion. Just like the other opus of the Scientia Artis collection, it is lavishly illustrated with hitherto unseen photos. This appealing and easy-to-use e-book is available for free on www.kikirpa.be. Its plus points: users can zoom into the majority of photos and use the direct links created between the inventory and BALaT, the KIK-IRPA database.

Within the framework of Belspo's BRAIN-be programme, the KIK-IRPA has obtained two pioneering projects (GuilleMets. *Disentangling the Masters of Guillebert de Mets: An Interdisciplinary Approach* and Verona. *Van Eyck Research in Open Access*) and a network project (ELINC. *European Lacquer in Context*), which could start in 2014.

The important missions entrusted to the KIK-IRPA bear witness to the great esteem its partners have for its work: the Walloon, Brussels and Flemish Regions, the Communities, the church administrations, private collectors, etc. The KIK-IRPA continues to reinforce these collaborations and as such, organised several specific information sessions in 2013. |



Thanks to a research project funded by the Federal Science Policy Office, the KIK-IRPA has been able to enhance its expertise in laboratory techniques for the study of modern and contemporary art, in order to be able to meet the needs of museums for this type of analysis. Here, a work by Raoul De Keyser (from the collection of the S.M.A.K., Ghent) is examined using Raman spectroscopy.

Heritage, science and the public at the Royal Museums of Art and History

It has been a long time since the Cinquantenaire Museum has experienced such success. With 77,000 visitors, the major *Henry van de Velde – Passion Function Beauty* retrospective, which ended on 12 January 2014, rightly honoured the father of design in celebration of the 150th anniversary of his birth. Queen Mathilde even came on an official visit. As for *Contour Scribes – Drawing in Ancient Egypt*, this exhibition focused on drawing in Pharaonic Egypt. The sketches and caricatures on ceramic tiles or fragments of stone showed the surprisingly contemporary nature of the old observation techniques and the craftsmen’s rigorous talent. Finally, the *Ramayana – Indian Miniature Art from the National Museum New Delhi* exhibition brings to life this eponymous classic epic through 101 miniatures.

The Halle Gate has surprised its visitors with the *Peep!* exhibition concerning squeeze toys, while the Museums of the Far East presented Hokusai’s finest prints from their own collection in the *Hokusai – Views of Mount Fuji and other Japanese Landscapes* exhibition. The Musical Instruments Museum has put a great deal of effort into the preparation of the exhibition on Adolphe Sax, the inventor of the saxophone, thus hoping to attract a new set of visitors in 2014.

During the *Kids in America* family day on 17 March 2013 at the Cinquantenaire Museum, young and old were able to discover the New World: creative workshops, stories and guided tours, sign language classes in a tipi and live music allowed families to discover the immensity and diversity of a whole continent. Besides one-off events of this sort, the usual activities, aimed mainly at a young audience, also took place. Within this context, the educational and cultural services welcomed approximately 30 000 pupils for the guided tours, mainly of the antiquity collections. During the school holidays, many young people enjoyed taking part in the various workshops.

Except for the one conducted in Egypt, all the Cinquantenaire Museum’s archaeological missions continued. In addition, initial prospecting in



New staff at work on the inventory for the National Archaeology and General Prehistory collection.
© MRAH-KMKG 2014



The curator Werner Adriaenssens shows Queen Mathilde round the exhibition dedicated to the designer, architect and professor of art, Henry van de Velde, in the company of the general director, Michel Draguet.
© MRAH-KMKG 2013



Study of the so-called *excretion statuettes*. ©MRAH-KMKG 2013

Tadzhikistan has opened new opportunities in terms of archaeological excavations. Over a period of twelve years, the RMAH have carried out excavations in Easter Island, with the collaboration of the University of Ghent and the Royal Belgian Institute of Natural Sciences, thanks to funding from the Federal Science Policy Office (Belspo). In November 2012, under the aegis of the Royal Academy for Overseas Sciences, a symposium was organised in order to compare the results obtained with the work of other researchers. As a result, it should be noted that the hypothesis of a collapse of Easter Island's traditional society in the 18th century must be nuanced: behavioural modifications would appear to be the most appropriate term. This symposium's report was established in 2013.

Continuing in 2013, the inventory of the National Archaeology and General Prehistory collections began, within the framework of an Agora project. This rich collection contains objects in pottery, wood, metal and stone from pre- and protohistory and Gallo-Roman and medieval periods. The archaeological pieces, collected since 1835, are stored in a reserve with no proper inventory and no order in terms of chronology or place. The project will put everything in order through six phases: moving the pieces, cleaning, identification, inventory, photography, packing in adapted boxes. Thanks to the intervention of Belspo, six extra team members were hired in January 2014 for one year.

No less than three *Brain.be* projects have started up. The objective of the Bareo project is to digitise the archives of five Belgian archaeological missions in the Near East, while promoting hitherto unseen material. By jointly implementing

3D technology and infrared techniques, the EES pilot project aims to facilitate the reading of hieratic texts featured on so-called excretion statuettes. These texts are a major source of hitherto unseen data on towns in the Near East that were the enemies of Egypt at the beginning of the 2nd Millennium BC. Finally, through a multidisciplinary approach, the *ELinC* project is endeavouring to find out more about the historical reach of the lacquer technique, its production method and its use on furniture, boxes and musical instruments during the period between 1600 and 2000; with the emphasis being on works from our regions. |



For all the family: *Kids in America*. © MRAH-KMKG 2013

The Royal Museums of Fine Arts of Belgium

In 2013, the Royal Museums of Fine Arts of Belgium (RMFAB) set up a whole range of ambitious projects. Through exceptional exhibitions, international research projects, various projects linked to the digitisation of collections and, above all, the opening of the Musée Fin-de-Siècle Museum, the RMFAB once again promise a year rich in activities of an international reach.

The opening of a new museum

The Musée Fin-de-Siècle Museum opened its doors on 6 December 2013. It has already proven to be one of the flagships of our heritage. It presents Brussels as the creative crossroads of Europe at the turn of the century. Thanks to the *Salons des XX* (1883-1894) and *La Libre Esthétique* (1894-1914), artists met and created works and objets d'art that bear witness to a great diversity.

Here, the public can discover the wealth of our collections of works by Belgian artists such as James Ensor, Fernand Khnopff, Léon Spilliaert, Victor Horta, Henry van de Velde, Philippe Wolfers, etc., and foreign artists such as Paul Gauguin, Auguste Rodin, Pierre Bonnard, Emile Gallé, Louis Majorelle and Alphonse Mucha, among others.

It is thanks to the patronage of the Gillion Crowet family, National Lottery sponsoring, the support of the Belgian Science Policy Office Belspo, the Belgian Buildings Agency and the Brussels-Capital Region, that this wide-scale international project has seen the light of day. And not forgetting our partners: the Royal Library of Belgium, Belfius, Cinematek, the King Baudouin Foundation, the Cinquantenaire Museum, ULB, the Bibliotheca Wittrockiana and the Théâtre royal de la Monnaie.



Alphonse MUCHA (1860-1939), *Nature*, 1899-1900, Gilded bronze with malachite highlights, executed by Émile Pinedo. © Gillion Crowet Donation to the Brussels-Capital Region, 2006, deposited with the RMFAB



Gustave Courbet, *Landscape in Ornans*, Oil on canvas (ca. 1855), Royal Museums of Fine Arts of Belgium Brussels © Digital photography, photo J. Geleyns



Wassily Kandinsky (Moscow 1866-Neuilly-sur-Seine 1944), *Composition on white*, 1920, Oil on canvas, 95 x 138 cm, below left: 'K 20'. Origin: Museum for Artistic culture, transferred in 1926-1928 by the intermediary of the Institute for Artistic culture, Leningrad (Saint Petersburg)



Rogier van der Weyden, *Portrait of Anthony of Burgundy*, 1430-1504 (between 1456 and 1464) © Royal Museums of Fine Arts of Belgium, Brussels, photo J. Geleyns

A major exhibition with international repercussions

***Kandinsky & Russia* (8 March to 30 June 2013)**

In spring 2013, the RMFAB presented an exhibition dedicated to the Russian painter Wassily Kandinsky (Moscow 1866 – Neuilly-sur-Seine 1944), the father of abstract art. More than 150 works from several major Russian museums, including the Russian Museum in St. Petersburg, have enabled visitors to discover his artistic production between 1901 and 1922, i.e. two crucial decades in the career of one of the 20th century's most important artists. It was a first in Belgium and the exhibition proved extremely successful with more than 80,000 visitors. The exhibition also won the Visit Brussels Award for best cultural exhibition of 2013 in Brussels.

Exhibitions and international collaborations

***Gustave Courbet and Belgium: Realism of the 'living art' to the 'free art'* (7 May to 11 August 2013)**

In collaboration with the Centre International pour l'Étude du XIX^e siècle, the RMFAB presented an exhibition entitled *Gustave Courbet and Belgium: Realism of the 'living art' to the 'free art'*, dedicated to the reception of the French artist's work in our country, during the 1850s, 1860s and 1870s. The idea of this original exhibition was to situate the inventor of realism in the history of Belgian art, with a focus on his stays and contacts in Belgium, and to measure his influence on the Belgian realist movement. Furthermore, the exhibition was taken to the McMullen Museum of Art, Boston College in Chestnut Hill (Massachusetts), as part of a presentation incorporating American collections, from 1 September to 8 December 2013.

***Rubens, Van Dyck, Jordaens et les autres. Peintures baroques flamandes aux Musées royaux des Beaux-Arts de Belgique* (Paris, 20 September 2012 to 3 February 2013)**

Within the framework of a partnership agreement between our insti-

tution and the Marmottan Monet Museum, the latter presented the exhibition *Rubens, Van Dyck, Jordaens et les autres. Peintures baroques flamandes aux Musées royaux des Beaux-Arts de Belgique*. This exhibition offered a selection of 41 paintings from the Golden Age of the former Southern Netherlands, which included all genres in which the artists from the north excelled: historical painting, still life, portraits, genre scenes and landscape.

Disegno & Couleur. Italian and French drawings from the 15th to 18th century from the Royal Museums of Fine Arts of Belgium

This exhibition organised by our institution was first held in Maastricht, at the Bonnefantenmuseum (27 November 2012 to 17 February 2013) and then at the Musée des Beaux-Arts in Tours (16 March to 27 May 2013). It presented a selection of drawings from our collections: Italian and French drawings from the 15th to 18th century by artists representative of the major schools of the day. This exhibition, which was presented at the RMFAB from 25 February to 18 May 2014, was also the subject of a publication.

An exceptional research project

The heritage of Rogier van der Weyden. Painting in Brussels 1450 - 1520

Thanks to this four-year research project, it was possible to draw up a comprehensive overview of the pictorial production in Brussels at the end of the 15th century and the beginning of the 16th century, by dealing with the issue from a historical, iconographic, stylistic, technical and economic point of view, as well as the way work was organised and exact copies. Furthermore, this project focused on the study of four major studios, those of the Master of the Prado Redemption, the Master of the Legend of St. Barbara, the Master of the View of St. Gudula and the Master of the Life of Joseph, and also dealt with the main works of other artists active in Brussels at the time. The first results of the research were delivered in a scientific catalogue and an exhibition (12 October 2013 to 26 January 2014), which was forced to

close on 22 November owing to water leaks. Only 13,000 visitors were able to admire the 120 or so precious panels from the 15th century, exceptionally assembled for the occasion from the museum's collections, as well as from 60 large international institutions.

New publications

The Flemish Primitives, VI, The Bernard van Orley Group. Catalogue of Early Netherlandish Painting in the Royal Museums of Fine Arts of Belgium

Bernard van Orley (1487/88-1541), court painter at the court of Margaret of Austria and Mary of Hungary, played an extremely important role in the artistic life of Brussels and in the former Southern Netherlands. The Royal Museums have the largest collection of paintings attributed to the painter and his collaborators. Through the in-depth study of these paintings, it has been possible to clarify how the Brussels studio of the artist functioned. In addition, the publication contains an entirely revised biography, a new vision on the reception of the work of Van Orley and an analysis of the artist's style and technique.

A major acquisition

Jan Fabre. *The Gaze Within (The Hour Blue)*

The RMFAB acquired a work by Jan Fabre entitled *The Gaze Within (The Hour Blue)* (2013). This menacing, enigmatic and superb installation plunges us into a deep blue. Four pairs of eyes - those of a woman, an owl, a butterfly and a scarab beetle - face each other. They look at each other and at us. This work has been given a permanent place on the Escalier Royal in the Musée d'Art Ancien. It was the subject of a scientific publication.

The projects of the Digital Museum

Wide-scale international projects

The participation of the RMFAB in the European Digitising Contemporary Art project (programme CIP-ICT PSP, 2011-2013) meant it was possible to digitise a large part of the contemporary art collection in a relatively short space of time. As a result, the majority of the art collection from 1945 to the present day can be consulted on FABRITIUS, which has high definition digital reproductions.

With their expertise in the field of reprographics, the RMFAB also took part in the DCA project. They were in charge of digitisation. The Digital Museum's team also designed the www.mediapat.be website ('multimedia at the service of heritage'), the new RMFAB's website www.fine-arts-museum.be, and the new Musée Fin-de-Siècle website (www.fin-de-siecle-museum.be).

International collaboration

The MULTITA project, involving the Royal Museum of Art and History (RMAH), in collaboration with the Royal Institute for Cultural Heritage (KIK-IRPA), highlights the collections of the two scientific and cultural institutions, through the creation of a multilingual thesaurus for the museological and digital development of the collections.

National collaborations

Participation in the *Da Vinci* project. The *DaVinci Watermarking project* (Digitale Archivering en Verborgen Informatie voor Controle van Intellectuele eigendomsrechten, 2010-2013) was set up in collaboration with the Etro group (VUB). The aim of this project was to examine whether a watermark that is almost invisible and difficult to erase on raw images would make it possible to trace illegal digital reproductions online. The results of this research project will be published in the course of 2014. |



Jan Fabre, *The Gaze Within (The Hour Blue)* (2011-2013) © Attilio Maranzano

The Royal Belgian Institute of Natural Sciences and its Museum

DYNAMIC MUSEUM OPERATION RESULTS IN A RECORD NUMBER OF VISITORS: MORE THAN 333,000 IN 2013!

Dinosaurs are still in fashion and apparently there is no age limit to their fans. News network CNN put us in the top 10 of the best dinosaur museums. That doesn't mean we should rest on our laurels. We keep the Museum up-to-date and so we renovate the halls and the offering... After the Dinosaur Gallery, the Evolution Gallery, and the halls 250 Years of Natural Sciences and BiodiverCITY, about biodiversity in the city, we are working on a brand-new Gallery of Humankind (opening spring 2015) and Living Planet, a hall about biodiversity and ecology (by 2017).

In temporary exhibitions, originality and a personalised experience take priority. Both the *Prehistory - Do it yourself* exhibition, with its animated live workshops, and the *Baby Animals* exhibition, for a very young public (3-8 years), were challenges for the museologists. *Baby Animals* seemed to fill a gap in the market, with 130,000 visitors in a year's time.

Now and then there are golden opportunities that we don't let pass. We were able to exhibit the 18 kg Antarctic meteorite discovered through a collaboration between Belgian and Japanese researchers (the BELAM project supported by the Federal Science Policy Office-Belspo) for 10 days in our Museum as an exception. And soon perhaps definitively.

To attract a different public, we organised a spooky overnight stay for children in the Museum and two much-appreciated after-work drinks for adults (AperoDino). And we again had an original programme on the occasion of the Brussels evening activities, Museum Night Fever and the Kunstenfestivaldesarts. A fine demonstration that culture-science cross-pollination works.

Research, monitoring, taking inventory... By land, by sea and in the air

We coordinate scientific research on stranded sea mammals, and we were busy last year, with a sad record of the largest-ever number of stranded porpoises (146) on the Belgian coast.



Baby Animals,
an exhibition on children's size.



The Belgica carries out essential research.

Most of the porpoises were the victims of bycatch. The common minke whale that washed up on Nieuwpoort beach died however due to a blockage of the digestive tract, and thus starvation, caused by 400 g of plastic. It's up to us to keep a sharper lookout for pollution...

And so for example we make optimal use of the airplane that monitors pollution in the North Sea and of the oceanographic research ship RV Belgica. The first has recently been modernised; the second is in urgent need of replacement... The financing study for a new Belgica has in the meantime been approved and is being carried out at the moment by the Federal Science Policy Office. We shall see what the 30th anniversary of the Belgica this year brings... Our researchers stay in contact with the Colombian navy, which uses two ships that are exactly the same for scientific research and encounters challenges similar to ours.

Biodiversity in Belgium and around the world

We participated in a so-called Citizen Scientists initiative, in which volunteer biologists and professional researchers join forces. The publication



A common minke whale that washed up on Nieuwpoort beach.

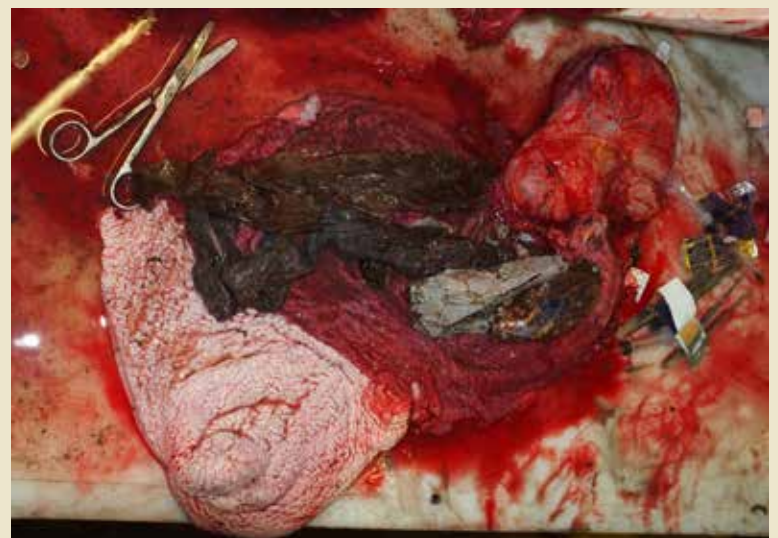


Training in taxonomy of ants, Ivory Coast.

of the distribution atlas for water striders in Belgium is a first example of such a successful collaboration.

At the end of 2013 the second Expert Group Meeting of the Convention on Biological Diversity (CBD), on 'Biodiversity for poverty eradication and development' (EGMBPED2), took place in India, where the coordinator of the DGD-RBINS programme, Luc Janssens de Bisthoven, participated as one of five experts sent by the European region. The workshop formulated 10 recommendations for inclusion in the next Conference of the Parties in South Korea (COP12, October 2014) for a better approach to reducing poverty related to preservation, sustainable management and use of biodiversity and ecosystem services in developing countries.

To become better acquainted with and protect biodiversity in developing countries, programmes are needed that increase familiarity with taxonomy. An example of this is the training, in taxonomy of ants among other things, that Wouter Dekoninck and Thibaut Delsinne gave to researchers in the Ivory Coast.



400 g of plastic caused the blockage of the digestive tract, and thus starvation.



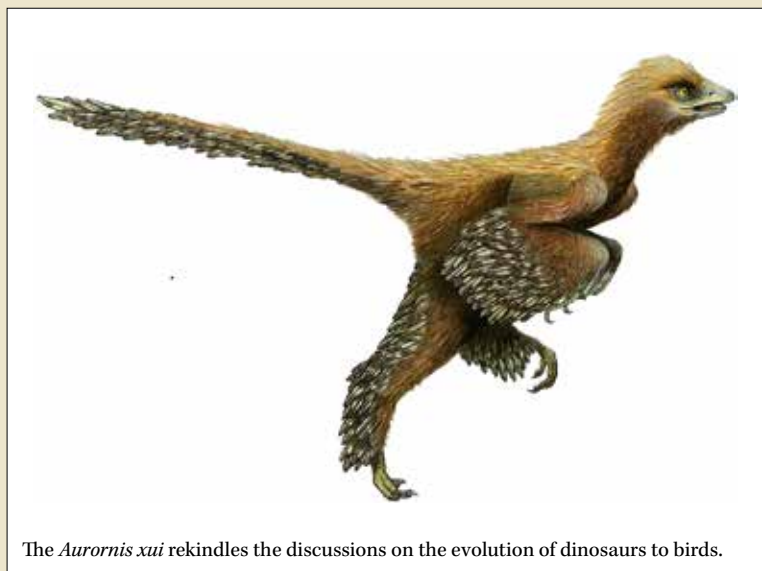
The study of the breeding behaviour of peregrine falcons was awarded with the Prize for Science Communication (Didier Vangeluwe on the left).

Science in the (inter)national media

Palaeontologist Pascal Godefroit and his Chinese, Italian and British colleagues described a new fossil in *Nature*. They discovered *Aurornis xui*, a very primitive bird that lived about 160 million years ago during the Jurassic period, in the rich Tiaojishan Formation in China. The previous discovery of various feathered dinosaurs in that same area rekindled the discussions on the evolution of dinosaurs to birds.

For several years ornithologist Didier Vangeluwe has studied the breeding behaviour of peregrine falcons in their nests on the tower of the Cathedral of St. Michael and St. Gudula in Brussels. He has in fact been rewarded for his efforts with the very first Annual Prize for Science Communication (*Jaarprijs Wetenschapscommunicatie*) from the Royal Flemish Academy of Belgium. But the bird of prey is a citizen of the world. Our colleagues travelled to the Siberian tundra to study the surprising relation between Siberian peregrine falcons and red-breasted geese, which brood together there.

An international team of geneticists and palaeontologists, including our colleague Mietje Germonpré, is providing more insight into the origins



The *Aurornis xui* rekindles the discussions on the evolution of dinosaurs to birds.



Japanese Emperor Hirohito's collection of Hydrozoa.

of the modern dog through a large-scale genetic study. The famous Goyet dog (a 32,000 year old skull) from our collections was also included in the study, which puts the origin of the modern dog in Europe and not in the Middle East or China.

Ecologist and entomologist Maurice Leponce lived on a higher plane for several weeks in Papua-New Guinea, together with a number of international colleagues. Thanks to a motor-driven balloon, he could collect plants and insects there in the usually inaccessible canopy of the forest. He has most likely brought back a previously undiscovered ant genus.

In our own country, a 3.5-million-year-old skeleton of a whale has been unearthed in the building excavation for the Deurganckdok lock under the leadership of palaeontologist Stijn Goolaerts. The find belongs to a group in which very few fossils have been found in Belgium until now, namely the Balaenidae (including the Bowhead whale and North Atlantic right whale).

The BiSpEem project attempts to reconstruct the climate of our previous 'hot' interglacial period, the Eemien, and the beginning of the last ice age by studying bivalves and stalagmites. The core from a fallen stalagmite in the Belgian Remouchamps cave indicates a very constant climate for more than 2000 years. As of 118,000 years ago our climate underwent rapid and significant natural climate changes that heralded the last ice age.

Several solid collaborations with a number of (international) research institutions, and financial support from Belspo, among others, make fieldwork in and outside the country possible. We hope that we can also count on this in the coming years.

And sometimes an exploration of the storage areas yields nice surprises! Around 20 Hydrozoa that Emperor Hirohito collected in Sagami Bay in Japan and sent to Brussels for study in the 1930s were recently rediscovered in perfect condition. This small collection was described in 1938 and 1940 in the RBINS Bulletin by then-conservator E. Leloup. As was agreed over 75 years ago, part of the collection was recently sent back to Japan by diplomatic pouch for formal transfer to the Showa Memorial Institute. |

BEGINNING OF AN IMPORTANT RENOVATION

For the Royal Museum for Central Africa in Tervuren, 2013 was in large part focused on the renovation and closure of the museum. The public still came in large numbers to our last temporary exhibition *Spiders Alive!* (from 18 December 2012 to 28 April 2013). Almost 70,000 visitors attended the exhibition in the four months that it ran. In June the approaching closure really became tangible for the first time; a number of our absolute top pieces left on tour to take part in various prestigious exhibitions in other countries. The world-famous Luba buffalo mask left the museum for the first time since its arrival in Tervuren. This unique piece is the big eye-catcher of the exhibition *Shaping Power: Luba Masterworks from the Royal Museum for Central Africa* in the Los Angeles County Museum of Art (LACMA). In addition, we organised the exhibition *Kongo across the Waters* together with the Samuel P. Harn Museum of Art in Gainesville, Florida. This exhibition can be seen afterwards in Atlanta, Princeton and New Orleans. Other pieces travelled to the Smithsonian National Museum of African Art in Washington D.C. or, closer to home, the Musée Dapper in Paris.

In Belgium, too, our first exhibition on location opened its doors: *Mr Livingstone I presume* ran from 6 June to 11 No-

vember in the BELvue Museum in the centre of Brussels. This exhibition was one of the most successful ever in the BELvue Museum.

In our own museum, visitors fortunately didn't have to do without. All the objects that left on a world tour were replaced by other top pieces from the collection, some of which had never before been shown to the public.

On 1 December the time had really come; the museum closed its doors to the public for a period of over three years. During the closing weekend 15,000 enthusiasts in all made one last visit to the 'old' museum. The programme included workshops, theatre, music, and of course the clearance sale in the museum shop. Meanwhile, the emptying out of the museum was also symbolically started; amid overwhelming interest from press and public, the monumental stuffed elephant was the first large museum object to depart, for Technopolis in Mechelen.

The day after the big closing event, an immediate start was made on emptying out the museum, a job that had to be finished by 17 February 2014 at the latest. This involved among other things moving 1812 ethnographic objects,





The elephant left the museum amid great interest from the press and public.
Photo Jo Van de Vijver ©RMCA



The day after the closing event, the complete clearance of the museum began.
Photo Jo Van de Vijver ©RMCA

126 elephant skulls, 659 buffalo skulls and 1878 antelope skulls, in addition to the disassembly of 14 large dioramas with 260 mammals, 200 birds and 100 fish. But clearing out the museum is more than just emptying the museum halls and cellars. Various services too, like the Education and Culture service, Museology, Building Management, Technical Service and Publication Service, with a total of 50 staff members, have to find new accommodation.

As soon as the museum is completely emptied, you will see the RMCA appear at regular intervals as a Pop-up museum!

In 2013, the museum's closure for renovation was the focus. However, scientific research – which constitutes 75% of the activities within the RMCA – kept going at full force in that period. Almost 300 scientific texts were published in international journals, books and catalogues. In the context of capacity-building activities, almost 100 African scientists were able to participate in training or an internship, or be supported by RMCA researchers for their doctoral thesis.

Conference *Active Volcanism and Continental Rifting (AVCoR-2013)*

The RMCA, the European Center for Geodynamics and Seismology (ECGS, Luxemburg), the Energy, Water and Sanitation Authority (EWSA, Rwanda) and the Goma Volcanic Observatory (OVG, DR Congo) joined forces to organise the colloquium *Active Volcanism and Continental*



Group photo during the *Active Volcanism and Continental Rifting (AVCoR-2013)* conference in Gisenyi, Rwanda. Photo © AVCoR 2013

Rifting (AVCoR-2013) that took place in Gisenyi, Rwanda, from 12 to 15 November 2013. The main objective of this workshop was to assemble experts on the East African Rift from various disciplines to exchange knowledge on the complex relationships between continental rifting and magmatism and on the possible impact of the phenomena they cause on communities. The colloquium brought together 125 participants and was the perfect breeding ground for a dialog between scientists and politicians from the region, an unusual initiative that nonetheless is of essential importance in evaluating the natural risks and keeping them under control.

European project 'Ethnography Museums and World Cultures'

For five years, the European project 'Ethnography Museums and World Cultures' brought together ten European ethnography museums wanting to improve their conceptualisation of and their way of approaching the colonial context. The Royal Museum for Central Africa carried the project to a successful conclusion. The partner institutions came together in scientific laboratories, during workshops and at international conferences. The intention was to find new methods for generating and conveying knowledge on the communities whose material and cultural practices are preserved and studied by the museums.

The collective exhibition *Fetish Modernity* illustrates several of these new aesthetic, political and epistemological objectives. After stopping in Belgium, Spain, the Czech Republic, Austria and the Netherlands as a travelling exhibition, there was a celebratory opening in Stockholm in October 2013. In July 2013 an international conference on the future of ethnography museums was held in the Pitt Rivers Museum. Finally, the RMCA is preparing a publication for a book on the new museum practices that were discussed during the project.

FishBase internship and the taxonomy of fishes

FishBase is the largest online encyclopaedia and the most important scientific resource involving fish around the world. Within this project, managed by an international consortium of scientific establishments, the ichthyology unit of the RMCA is responsible for the data on African freshwater and brackish water fish, thanks to the financial support of the Belgian Development Cooperation (DGD). As every year – since 2005 – five African researchers were able to pursue a three-month internship in the museum's 'FishBase team'. The internship students learned to use FishBase and got theoretical and practical training on the taxonomy of African fishes. |

The Royal Library

Digital is the

new normal

In 2013, 17% of Belgians read their newspapers on a smartphone and 6% even succeeded in reading a book on it. Sales of laptops were quickly surpassed by that of tablets, which flew off the shelves. An icon like Kodak distanced itself from its role as a mass-market photography company after 130 years. Digital is more than ever the new normal.

Users also expect that they can consult any information, anytime, anyplace. With a carefully planned digitisation

policy, the Royal Library wants to satisfy this demand by improving the accessibility of the heritage entrusted to the institution to both the general public and to scientists. But digitisation of the collection is in the first place a way to fulfil the core mission of the Royal Library, i.e. preserving the over 6 million volumes and documents. This policy often relies on national and international collaborations in consultation and together with the Federal Scientific Institutions and the Federal Science Policy Office. The results of the various digitisation projects can be found on Belgica, the virtual reading room of the Royal Library.

The Royal Library as an (inter)national reference

As a Federal Scientific Institution and international reference in the area of collection management and preservation, the Royal Library made its expertise in the area of digitisation of heritage available to its partners on various occasions in diverse projects in 2013. Thus the Royal Library of Belgium collaborated with the State Archives, the Royal Museum for Central Africa, the National Geographic Institute, La Monnaie, the heritage unit of Sint-Truiden, and the Université Libre de Bruxelles.

In addition to these efforts, the Digitisation department conducted in total 205,000 scans from their own collection in 2013. In 90% of these scans the OCR (optical character recognition) process was used, so that specific words and search terms can be specifically sought in the digitised files. The lion's share of these scans was performed on the collection of the Royal Library relating to the First World War. Approximately 14,000 documents, equivalent to 180,000 scans, were digitised in the framework of the Europeana Collections 1914-1918 project.

Europeana Collections 1914-1918

On 31 January 2014 the new European portal website Europeana 1914-1918 (www.europeana1914-1918.eu), which gives access to hundreds of thousands of sources on the First World War, was launched in the Staatsbibliothek zu Berlin. This 'thematic distribution channel' brings together data from three digitisation projects: one for private docu-





ments (Europeana 1914-1918), one for public documents (Europeana Collections 1914-1918) and one for film documents (EFG 1914, a project of the European film libraries). These projects, in which hundreds of specialists from throughout Europe were involved and that are aiming for tens of thousands of potential visitors, were worked on over three years.

The Royal Library of Belgium contributed to the success of this project to a large degree through its contribution to Europeana Collections 1914-1918 (www.europeana-collections-1914-1918.eu). In total ten national and university libraries in all from Great Britain, Denmark, Italy, France, Austria, Serbia and Belgium united under the coordination of the Staatsbibliothek zu Berlin in 2011 with one ambition: to make the rich and unique collections from eight European countries relating to the First World War accessible online. The ten libraries want to make 400,000 documents in total available with the project.

Besides the desire to allow both the general public and researchers to find as wide as possible a range of various documents related to the First World War, the project also aims to open up the platform for the stories that the public itself provides. The partners chose to launch a website to be inaugurated in June 2014, on the eve of the commemorations of the First World War. The portal website aims to make searches easier, with comprehensive references consolidated in databanks that are constructed in the same way for the eight countries involved. If you're looking for information about your region, you can not only find a picture of a German general posing in front of the town hall in your town, but also

photos of the ruins that an Italian infantryman took and that are preserved in Italy. Finally, this portal website offers you the chance to study this period across borders and compare sources originating from all areas that were involved in this conflict.

On the eve of the commemoration of the 'Great War', the Royal Library of Belgium has not only joined forces at the international level in the framework of Europeana; within the Documentation centre another project has been initiated in 2013 that the general public will reap the fruits of in 2014.

On 11 September 2014, the exhibition *Shock! 1914... What if war breaks out tomorrow?* opens in the Royal Library of Belgium. In this exhibition, the State Archives, the Cegesoma and the Royal Library of Belgium reconstruct the chaotic weeks of the summer and autumn of 1914. Day after day the visitor can experience these traumatic events again by means of official messages, the written press and personal testimonies. |



More

Thematic portal site: www.europeana1914-1918.eu

Subproject Europeana Collections 1914-1918: www.europeana-collections-1914-1918.eu

- The contribution of the Royal Library: <http://www.europeana1914-1918.eu> > search > Belgium

E-learning microsite: www.bl.uk/world-war-one

- The contribution of the Royal Library: www.bl.uk/world-war-one > search > Belgium

Virtual exhibition: <http://exhibitions.europeana.eu/exhibits/show/europeana-1914-1918-en> and <http://exhibitions.europeana.eu/exhibits/show/14-18-collections-de>

Transition year for the State Archives

For the State Archives, 2013 was a transition year. A new organisational chart and a budgetary shortage thoroughly shook up the internal organisation. Essential changes were made, with clear choices for:

- constructive synergies with archive creators
- a transversal and thematic approach to scientific research
- service in which the client or citizen is the focus, and digital is the standard
- a high-performance infrastructure of reading rooms and modern storage management
- public activities across borders.

Synergies between archive creators and managers: win-win

Thanks to the reform of the legal framework (Archive Law and implementation decrees, 2009-2011) the position of the State Archives within the archive field has been confirmed and strengthened in recent years. Not only do the State Archives benefit from this, the 'Finance Archive Team' project proves that archive creators win in this development too.

To allow the selection and transfer of the archive of the FPS Finance to the State Archives to proceed faster and more efficiently, the ministers of Finance and of Science Policy agreed to employ three mobile archive teams for three years. The closer collaboration between the FPS Finance and the State Archives allows the work-intensive process of selection, material processing and transfer of the numerous archive files of Finance to be approached in a methodical and results-oriented way (archives of registration offices, mortgage offices, the land registry, etc.). In so doing, the FPS

can moreover fulfil the legal obligations on archive transfer as established in the Archive Law, namely the transfer to the State Archives of archives over 30 years old in good, well-ordered and accessible state.

For the public the collaboration has nothing but advantages too; the systematic approach by the archive teams results in more regular, consistent and well-documented archive transfers, so that the State Archives can make documents accessible more quickly. On 1 February 2013 the mobile teams went to work. A year later the result looks spectacular: FPS Finance has already been able to save 3.2 linear kilometres of space.

In addition to Finance, the State Archives has collaboration agreements underway in archive selection and management with the Public Buildings Administration, the National Geographic Institute and the Penitentiaries Administration.

Transversal scientific approach

The Federal Science Policy Office (Belspo) has financed the Interuniversity Attraction Pole project *Justice and Populations, The Belgian Experience in international perspective, 1795-2015* for five years (2012-2017). It involves collaboration between eight Belgian and three foreign universities, the Centre for Historical Research and Documentation on War and Contemporary Society (Cegesoma), the Royal Military School and the State Archives.

The State Archives hired two fulltime archivists for this project. They are focussing on the transfer of and access to prison archives (Forest, Huy, Liège and Verviers) and judicial archives from the Brussels and Liège regions.

Digital service = the standard

At the end of January 2013, one and a half million images from genealogical sources (parish registries and civil status registers) were put online; the website <http://search.arch.be> is a dream come true for genealogists inside and outside the country.

As for parish registries, in 2014 the databank of the State Archives contains over 90% of the full collection of Belgian parish registries from the *ancien régime*. Quite a few cities,



Archives recently transferred from FPS Finance. © NAB



The new premises of the state Archives in Bruges. © NAB

municipalities and parishes have transferred their parish registries to the State Archives. Others maintain the registers themselves, but let them be described and digitised in the State Archives.

The unique 'parish registries' databank testifies to a great deal of skill and especially teamwork. The financial support of Belspo was indispensable, as was the collaboration of cities, municipalities and parishes. In close collaboration with the entire archive field, the State Archives is striving toward fully digital access to parish registries dating back to 1796/1802 in one uniform databank for all of Belgium.

Confronted with the (financial) boundaries of server capacity, the State Archives is also developing digital reading rooms in the various storage areas across the country in addition to an online offer. In 2013 over 20,000 digital maps and plans could be consulted in the 19 reading rooms.

Reading rooms and storage management in the 21st century

Since 3 January 2013 the new site of the Bruges State Archives (partly new, partly renovated) has been open to the public. And in October 2013 the new Namur State Archives - that can accommodate 35 km of archives! - was also inaugurated. On 15 April 2014, the doors of the reading room in Namur swing open.

Public activities in the world at large

The public activities of the State Archives are aimed at making expertise known and pro-actively contributing to scientific research and social debate. The organisation of a study day in Mons on archives in relation to Ecological History and Sustainable Development is just an example.

The State Archives went international more than ever in 2013 too. UNESCO decided at its general meeting in June 2013 to enter the archives of the old University of Leuven (1425-1797), kept in the State Archives of Leuven and in the archives of KU Leuven, in the *Memory of the World Register*. In November 2013 the State Archives organised the first annual *International Council on Archives* conference. The topic 'Responsibility, transparency and access to information' attracted over 500 participants from over 100 different countries to Brussels.



The new building of the State Archives in Namur on Boulevard Cauchy. © NAB

At the National Archives, around thirty meetings of Sections, Branches and working groups of ICA were held in advance, in addition to workshops on the European archive portal APEX and the digital management and availability of geo-information.

Finally, with over 3000 Facebook fans, the State Archives also definitively went in for social media in 2013; www.facebook.com/rijksarchief and www.facebook.com/archives.etat are active windows on large and small stories from the State Archives. |

		2013	2012
Personnel	Personnel members	265	297
	Fulltime equivalents	217.72	235
Managed archives	In linear meters	288,050	274,632
Annual acquisitions	In linear meters	11,722	10,250
Publications		104 (16,363 pp.)	129 (17,237 pp.)
Reader cards		5854	6834
Working visits		48,480	65,900
Digitally accessed archives (cumulative)	Archive blocks	24,376	23,913
	Archive files	8,708,791	7,826,446
	Accesses	22,755	22,334
Digitised archives (cumulative)	Archive creators	35,722	34,879
	Number of digital images	13,207,386	11,532,369
Website	Unique visitors	469,185	402,336
	Visits	1,027,941	887,392
Newsletter	Subscribers	9317	8468
Archive supervision	Inspection visits	831	721
	Approved selection lists	14	30

Key figures for State Archives, 2012-2013



Available at the State Archives: over 20,000 digitised maps and plans. © NAB

Cegesoma, a Major Player in Public Reflection on the Contemporary History of Belgium

Cegesoma is the Belgian centre of excellence for the history of 20th century conflicts. Together with the State Archives and the Royal Library of Belgium, it is part of the Federal Science Policy's Documentation pole.

Academic Activities, Documentation and Public History

Cegesoma evolves around three main sectors, namely academic activities, documentation and public history. The three branches contribute to the reputation and influence of the institution.

Academic activities include a wide variety of research projects. Early in 2014, the themes for research were: the way in which justice functioned in Belgium right after the First World War, forced labour in Congo during the Second World War, and relations between police and magistrature on the one hand and resistance on the other in Belgium between 1940 and 1944 (these projects stand within the framework of the 'Justice and Populations' Interuniversity Attraction Pole, which includes 14 universities and Belgian federal science institutions). An additional research project studies extrajudicial arrests in Western Europe between

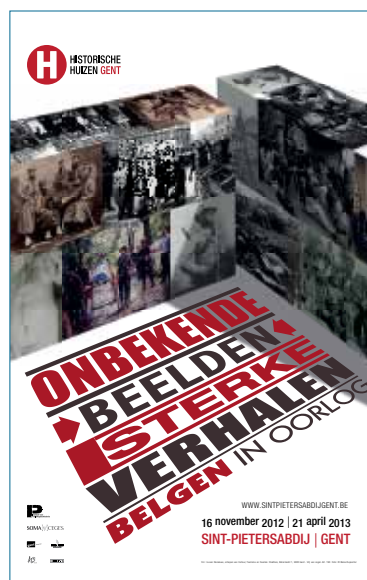
1914 and 1950. Furthermore, an investigation is being carried out on the assassination in 1950 of Julien Lahaut, the president of the Belgian Communist Party, as part of the *La Belgique docile* report, dedicated to the attitude of the country's authorities towards the persecution of Jews. Cegesoma is also a partner in several international research programmes, among which the *EHRI* project (*European Holocaust Research Infrastructure*), which gathers 20 partners from 13 different countries around the compilation of a Holocaust sources database.

Since 2012, Cegesoma has also been responsible for publishing the new *Revue belge d'histoire contemporaine* (RBHC). Besides three French-Dutch bilingual editions (one single and one double), a yearly English edition is issued for foreign readers under the title *Journal of Belgian History*. Finally, besides international symposiums (mentioned below), academic and thematic workshops are regularly held on specialised themes (such as *Digital Humanities* in 2013). Every year, Cegesoma organizes a study day for young historians, inviting recently graduated historians from all the country's universities to come and talk about the results of their research.

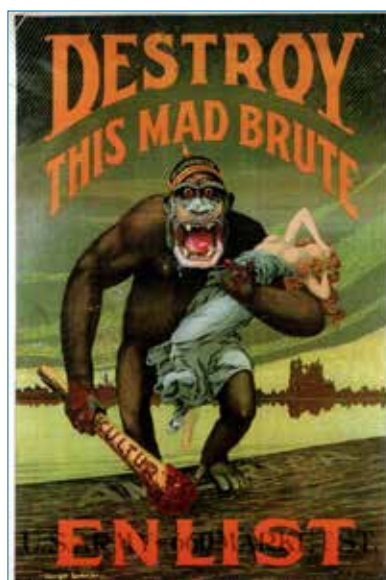




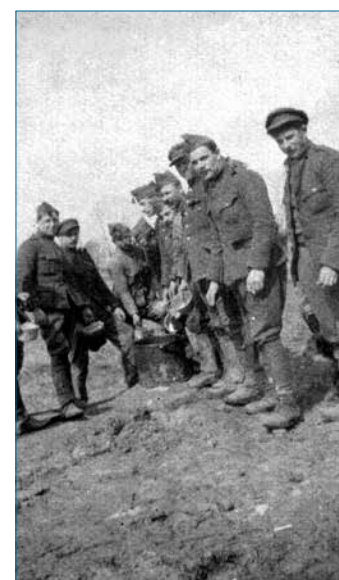
Cover of the *Journal of Belgian History*, 2013 © Cegesoma



Poster of the *Belges en guerre* exhibition © Historische Huizen Gent



American First World War propaganda poster © Cegesoma



Belgian soldiers 1914-1918, eating © Cegesoma

The documentation sector is essentially comprised of approximately 1,500 linear metres of paper archives, as well as 90,000 books and brochures, 4,000 journals and periodicals, and some 300,000 photos. The documentation can be consulted either via the Cegesoma website (in particular, photos and clandestine press from the two world wars), or in the institution's reading room, situated on Square de l'Aviation, 29, 1070 Brussels. Initially focusing on the Second World War, it gradually extended to the entire 20th century.

The expanding Public History sector multiplied its activities in 2013. Worth mentioning are the exhibitions *Images inconnues. Histoires insolites. Belges en guerre* (and its catalogue) held in Ghent from autumn 2012 to spring 2013, as well as *Liège docile*, on the fate of the Jews of the Cité Ardente in 1940-1945, organised in Liège between December 2012 and February 2013. Cegesoma has also been actively involved in the design of the *Bastogne War Museum* dedicated to the Battle of the Ardennes, which opened its doors in March 2014, and the setting up of the *Mons Memorial Museum*, dedicated to the two world wars in Mons, to be opened in 2015. In addition to the monthly conferences, one of the institution's traditions, the team organised a study day on *Juifs et Résistance* on 20 November 2013, in partnership with *Kazerne Dossin*. Also in preparation are: a book about Brussels and the persecution of the Jews, a survey of life in Belgian Jesuit schools between 1945 and 1965, and, above all, a multitude of associated projects linked to the commemoration of the centenary of the Great War.

A Major Project: the First World War

We will first mention the weekly publication of the series of war newspapers (financed by a British publisher), the creation of a website dedicated to Brussels in 1914-1918 (in partnership with the non-profit association VisitBrussels), and the publication of illustrated works on Belgian towns at war. Two exhibitions will also be held in the summer of 2014, one about the press at the beginning of the war (with the Royal Library and the State Archives) and the other dedicated to the royal couple Albert and Elisabeth through archive films. Finally, Cegesoma will also be present through an exhibition entitled *La Grande Guerre en culottes courtes* to be held in Ghent in autumn 2015.

The First World War will be one of the focal points of the Academic activities and Documentation sectors in 2014. The institution is thus involved in two Brain projects (Federal Science Policy) relating to the First World War. The first one, *The Great War from Below*, is coordinated by Cegesoma, in partnership with the State Archives, UNamur, UGent and KU Leuven. It relates to the experiences of various social groups born from the conflict (war veterans, forced labourers, etc.). The second is focused on the memory of war experiences. Led by UCL, it includes researchers from Cegesoma, ULB, UGent and KU Leuven. In partnership with the German embassy, Cegesoma also coordinates a series of conferences associating Belgian and German historians (*Historikerdialog*). An RBHC special issue is also being prepared regarding the tensions in Belgian society in 1914-1918. An international symposium will be held in October 2015 under the title *War and Fatherland*, on the theme of the impact of the First World War on the development of the nation-state in Europe. This event is supported by the whole of Belgian authorities.

Finally, the Documentation sector is concluding *The Belgian War Press* website (which was presented in December 2012 during a study day dedicated to war press). The site already allows users to read the clandestine press of the two world wars online, and soon the censored press of 1914-1918 will also be available. It is also endeavouring to make the most of the current flurry of interest in this period to gather the greatest possible number of documents from private collections (photos, posters, personal diaries, books, journals), in order to save them from destruction and make them available to everyone.

These various examples illustrate the will to prevent Cegesoma from having a solely scientific role. The aim is to live up to the challenges brought about by the issues and debates faced by Belgian society.

For all these projects and the latest information on our activities and collections, please visit our website, www.cegesoma.be, where you can also subscribe to the *Cegesoma Newsletter* and find a link to the institution's Facebook page. |

The Royal Observatory of Belgium

High-quality scientific research and related services were the principal activities of the Royal Observatory of Belgium (ROB) in 2013.

In 2013, ROB planetologists made progress in our knowledge of the iron cores of Mercury and Mars, the smallest terrestrial planets of the solar system. Using data from the MESSENGER space probe in an orbit around Mercury and from the Opportunity rover on Mars they have shown that the outer portion of both cores is liquid and that Mercury's core has a radius of 2000 km. Since the total planetary radius of Mercury is 2440 km, Mercury's mantle is very thin compared to that of the other terrestrial planets. These results have important implications for our ideas about the formation and evolution of the planets and for the development of magnetic fields in the cores.

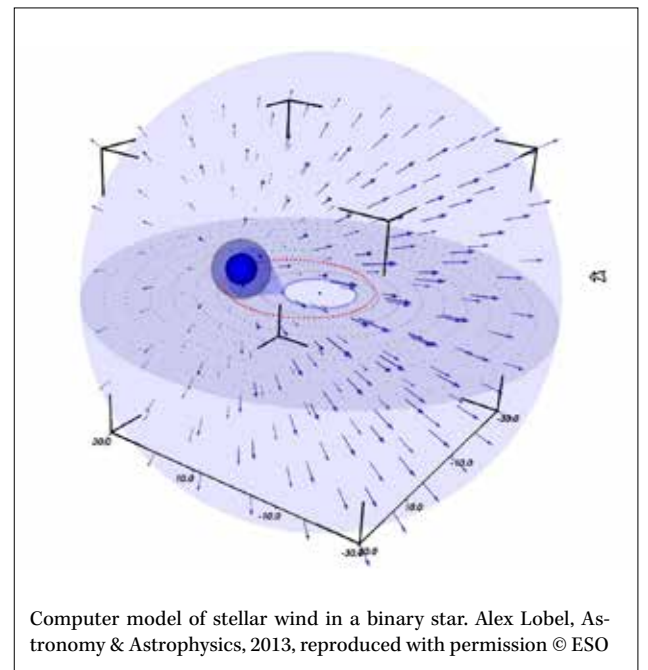
The ESA satellite Herschel has provided images of planetary nebulae; these are the ejected outer layers of evolved stars. An international team led by ROB astronomers

was able to deduce from these objects the properties of the central star and of the dust in the nebula. The largest known star in our Milky Way, the supergiant VY Canis Majoris, has also been studied with Herschel. In the outer layers of this star the presence of numerous molecules, including water, could be demonstrated. Astronomers from the ROB succeeded in modelling the stellar wind of a star with 40 solar masses in a binary star, so that the physical processes in these stars can now be better understood. The observations with the Hermes spectrograph from the Mercator telescope on La Palma were crucial in this study. For this Hermes project the ROB is working together with KU Leuven and ULB.

The ROB continued to prepare the data analysis for ESA satellite Gaia, which was successfully launched on 19 December 2013. This satellite will observe a billion stars and hundreds of thousands of asteroids. The launch was followed together with the press and guests directly in the Planetarium.



The MESSENGER space probe near Mercury (artist impression) © NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Institution of Washington



Computer model of stellar wind in a binary star. Alex Lobel, Astronomy & Astrophysics, 2013, reproduced with permission © ESO

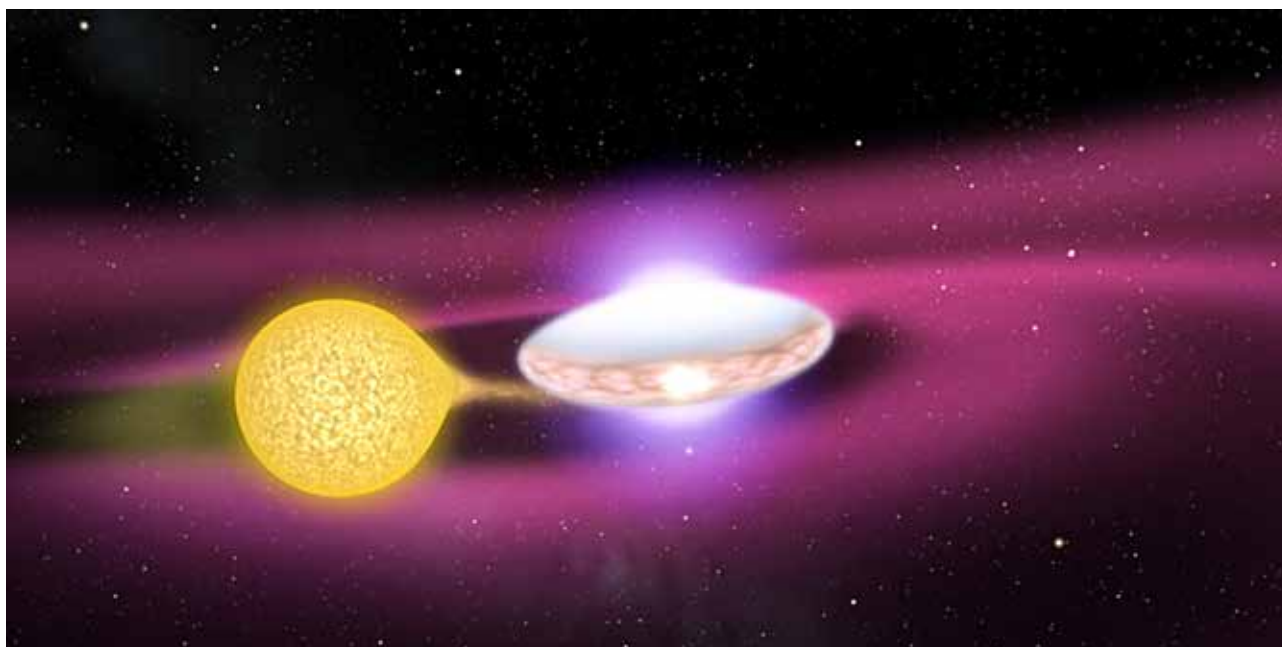


Image from *Secret Lives of Stars*: simulation of mass transfer in a binary star
© Evans & Sutherland

On 3 April 2013 the Solar Terrestrial Centre of Excellence (STCE), in which the ROB, the RMI and the BIRA bundle their expertise in the area of solar research and the effect of the sun on the earth, presented, together with the European Space Agency (ESA) the SSA Space Weather Coordination Centre (SSCC). The SSCC, founded in the framework of the ESA Space Situational Awareness (SSA) programme, is the European nerve centre for space weather. Users get help from experts here with regard to solar weather, the condition of the ionosphere, magnetic disturbances around the earth and the behaviour of energetic particles in satellite orbits. The SSCC together with the space weather forecasters of the Regional Warning Centre (RWC) Belgium also

provided support before, during and after the launch of the Gaia satellite, in the form of space weather reports that were sent to the launch team.

The ROB collaborated in building the EUI (Extreme Ultraviolet Imager) instrument for ESA's Solar Orbiter satellite, still to be launched. EUI will make images of the sun in extreme ultraviolet light. To prepare the science for Solar Orbiter, the ROB organised the Solar Orbiter Science Working Team Meeting in 2013. The engineering model for EUI was completed at the Centre Spatiale de Liège at the end of November.

Almost 400 scientists, engineers, operators and other interested parties from 36 countries worldwide assembled in Antwerp from 18 to 22 November 2013 for the 10th edition of European Space Weather Week (ESWW), organised by the STCE. They considered the issue of how vulnerable our society is and how great its resilience in the event of turbulent space weather.

In 2013 the seismological project SHARE (Seismic Hazard Harmonization in Europe), part of the 7th European Framework Programme, ended. ROB seismologists collaborated on coordination of the evaluation methods for seismic hazard in Europe and standardisation of the databases on seismicity and active faults. Seismic monitoring of the Papan-dayan and Kawah Ijen volcanoes on Java (Indonesia) was improved by better interpretation of the seismic noise and a stricter definition of a volcanic seismological event. The seismology-gravimetry service organised two international workshops to introduce the MSNoise programme, one in Japan and one in San Francisco. Thanks to a new FNRS project, gravimetric measurements were conducted in the Rochefort caves together with the Universities of Mons and Namur to study the relation to hydrology.



Opening of the SSA Space Weather Coordination Centre (SSCC) at the ROB ©KSB-ORB

The RMI was

On January 1st 1833 the Observatory founded by Adolphe Quetelet in Brussels started making meteorological observations. One hundred years ago, on July 31st 1913, King Albert Ist signed the Royal Decree whereby the meteorological service of the Royal Observatory of Belgium became an autonomous national scientific institute, the Royal Meteorological Institute of Belgium, in recognition of its long experience in scientific research and service to the public.

To share this rich bit of our country's history with the public, but also and foremost to celebrate its present and future, the RMI organised various activities throughout 2013.

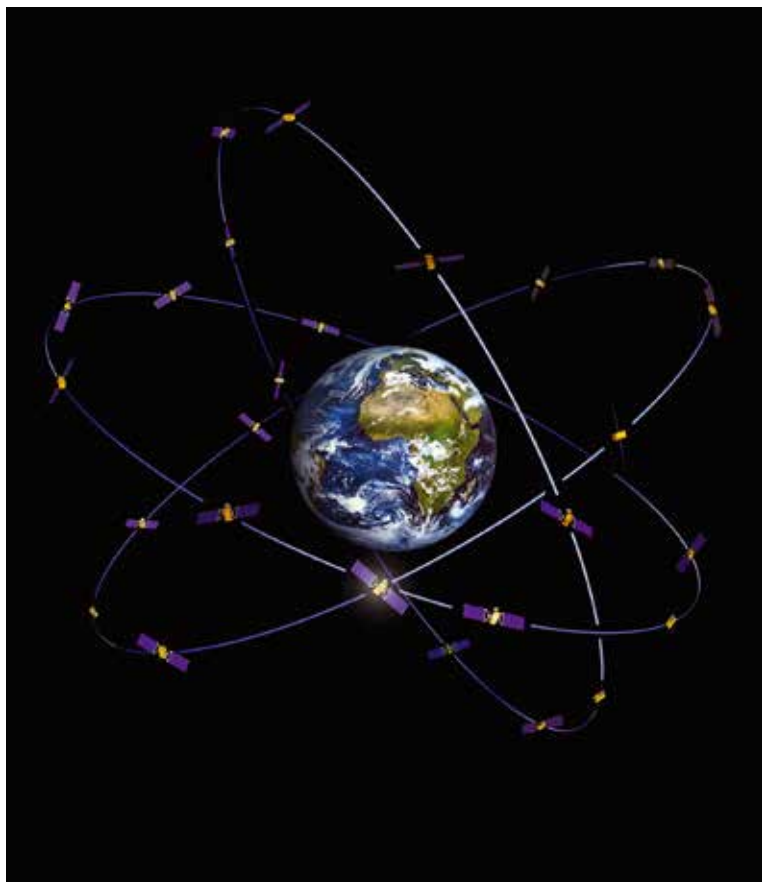


18 May: Radio 2 program 'En nu serieus...' ('And now for real...')

On Saturday May 18th the festive year was opened with Radio 2's live program 'En nu serieus...'. A three-hour live show was hosted by presenters Christel Van Dijck and Michaël Pas along with eight weathermen and -women.

25 and 26 May 2013: open doors at RMI Uccle

On the last weekend of May, the RMI opened its doors to the public. There was pretty much to see: from a virtual weather office to



The Galileo navigation satellites ©ESA-J. Huart

The GNSS (Global Navigation Satellite System) research group of the ROB has installed three new GNSS stations near the Princess Elisabeth base in Antarctica. The data from these stations will help to better understand the effect of climate changes on the East Antarctic ice mass. In the context of the integration of the Belgian GNSS stations into international networks, the ROB organised a workshop in Brussels where new developments in processing GNSS observations were discussed. Scientists from the ROB were involved in producing the first version of a global velocity field of the earth's crust using measurements from almost 2000 GNSS stations. The ROB monitors the ionosphere above Europe in real time using GNSS measurements. Ten events caused by extreme space weather circumstances were detected in 2013.

Together with five other time labs, the ROB is part of the 'Time validation service' for Galileo, the European system for satellite navigation, started in 2013. The ROB is responsible for validation and calibration of the time information these satellites broadcast, so that users of Galileo will receive UTC (the official world time) with an accuracy of 10 nanoseconds.

The ROB planetarium launched a new programme, *Secret Lives of Stars*. With their flashy appearance, turbulent life and tragic end, the stars in the universe hold their own with the stars of the silver screen. All the secrets from the hidden lives of stars, from white dwarves to red giants and black holes, are revealed in a colourful spectacle!

Together with the BIRA and RMI, the ROB hosted over 6000 visitors during the open door days that were jointly organised on 25 and 26 May. |

s 100 years old in 2013!

the climatological park and all sorts of scientific experiments. But the biggest crowd pleaser was the ascension of the weather balloons which, for the occasion, took along instruments or objects on their journeys.



24 June: anniversary postage stamp issued

Bpost took advantage of the anniversary of the RMI to issue a very special stamp with an ink that reacts to temperature. The collection was offered for sale on June 24th.

29 and 30 June: open doors at the Geophysical Centre of Dourbes

One month after Uccle, the Geophysical Centre in Dourbes opened its doors as well. The domain there is so vast that visitors had to be transported with a small train from one activity to another.

17 September: 2 euro commemorative coin

The Royal Mint took the opportunity of the 100th anniversary to strike a 2 euro commemorative coin. A public design contest was organized for this purpose and the official first coining took place on September 17th. Minister of Finance, Koen Geens and State Secretary for Science Policy, Philippe Courard made us the honour of their presence.



19 September: exhibition in the Planetarium

The exhibition *100 Years of Meteorology in Belgium* was inaugurated at the Planetarium of Brussels in the presence of State Secretary for Science Policy Philippe Courard and



the Chairman of the Federal Science Policy Office, Philippe Mettens, on September 19th. This exhibition reflects the meteorological history of Belgium by means of an invaluable overview of meteorological instruments and documents preserved through the years.

26 and 27 September: international scientific conferences

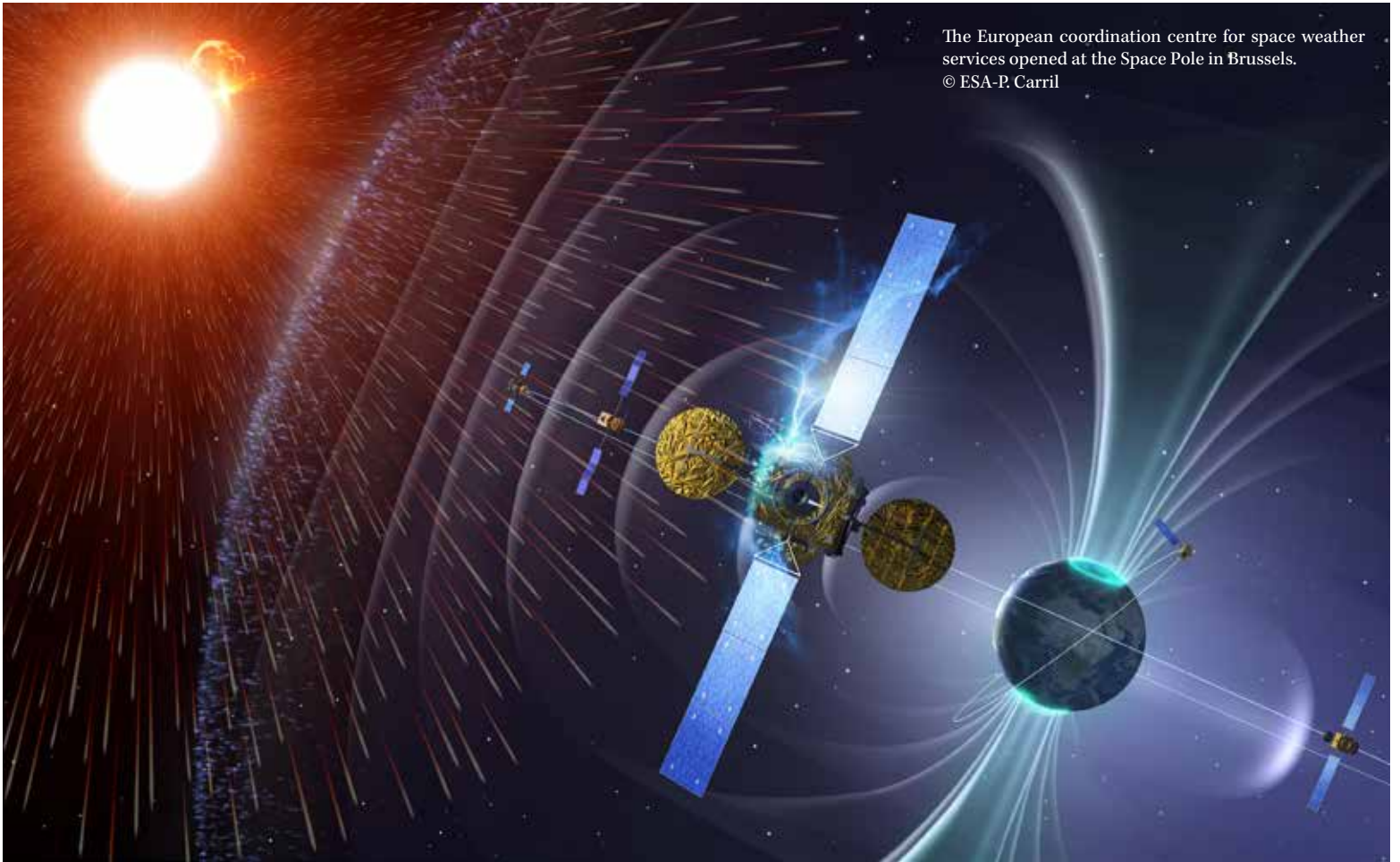
The international scientific conferences of September 26th and 27th treated topics related to contemporary research on atmospheric and climatological sciences. The academic session was opened by Philippe Courard, State Secretary for Science Policy, and Daniel Gellens, acting Director General of the RMI, in the presence of His Royal Highness Prince Laurent. The content of the conferences can be found on www.centenary.meteo.be.



28 and 29 September: public conferences

Conferences for a broader public followed on the next two days, for French speaking audience on September 28th and for Dutch speaking audience on September 29th. They discussed all sorts of topics, including the history of the RMI, weather radars, climate and the involvement of the RMI in research at the Antarctic polar base. Summaries of these conferences can be found at www.meteo.be.

In addition to these various activities, an operational observation station was set up in Mediacité, the big shopping centre in Liège, throughout the year. Moreover, eight new brochures were published containing all sorts of information about the institute. |



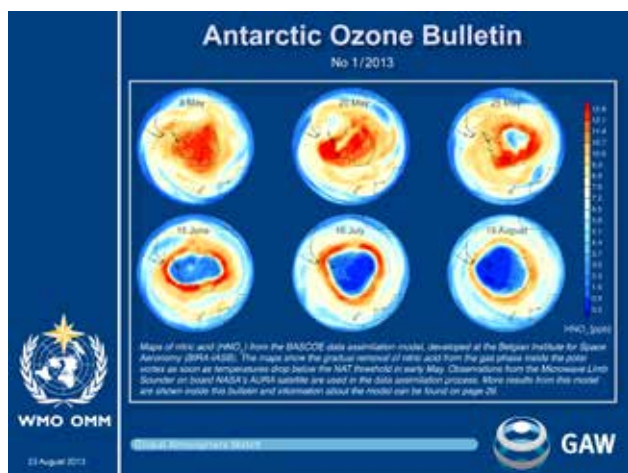
The European coordination centre for space weather services opened at the Space Pole in Brussels.
© ESA-P. Carril

A renowned international partner in atmospheric research

The Belgian Institute for Space Aeronomy (BIRA-IASB) can once again boast about a broad range of new international research projects and collaborations, activities centred on space experiments, and services to the community for 2013.

Ozone layer

At the end of 2012 BIRA-IASB installed its UVB, UVA and pyranometer sensors for the measurement of the total solar radiation in the UV and visible wavelengths at the zero emission Antarctic research station, the Princess Elisabeth base. The observational data are now available at <http://uvindex.aeronomie.be>. These observations are important for research on the stratospheric ozone layer which protects people and the Earth's biosphere from a large part of the Sun's ultraviolet radiation.



BASCOE on the front page of the WMO bulletin with information about the condition of the ozone layer above Antarctica. © WMO

The ozone hole still appears above Antarctica during the local spring every year. Its evolution is closely followed by the World Meteorological Organisation (WMO), a UN agency that is, among other things, charged with monitoring the atmosphere. Every year the WMO Secretariat publishes bulletins with information on the condition of the ozone layer above Antarctica, based on observations from ground stations and satellites. In 2013, for the first time, data from the operational data assimilation model BASCOE were used for better interpretation of the observations. BASCOE was developed at BIRA-IASB; it calculates daily the concentrations of chemical substances in the atmosphere that play a role in stratospheric ozone chemistry and makes these publicly available. Because of its important role in monitoring the Antarctic ozone hole, BASCOE got a place of honour on the front page of the first Antarctic ozone bulletin of 2013.

International foundations

In the framework of a project on atmospheric chemistry and climate research, BIRA-IASB installed two new instruments in Bujumbura in Burundi for measurement of chemical components and aerosols in the atmosphere above Africa. The measurements will contribute to better imaging of African emissions and of the transport of smoke plumes originating from forest fires in Africa to the Indian Ocean.

The international anchorage of BIRA-IASB, which is already prominent in the foregoing activities, is also apparent from the visit of the Indian delegation of the 'Belgian-Indian Committee for Scientific and Technological Collaboration' to BIRA-IASB in May 2013. The aim of the discussions was to investigate the possibilities of collaboration with Indian research centres in atmospheric and planetary research.

Energetic particles

For more than half a century scientists have studied the invisible bubble created by the Earth's magnetic field, the magnetosphere, through space missions. One of the first discoveries in space was that of the existence of two radiation belts, the so-called Van Allen belts occupied by very-high-energy particles, in 1958. In those same late 50s another area in the innermost magnetosphere was disco-

vered: the plasmasphere, populated by low-energy particles originating from the ionosphere. In 2013 a new contribution was made on the connection between these two regions thanks to a team of physicists at BIRA-IASB. It was the first time that researchers could observe these different populations of particles simultaneously with different instruments on a single Cluster satellite.

The new EPT (Energetic Particle Telescope) instrument was also launched in 2013. Only a few months after the launch, EPT provided the first measurements of radiation in the space environment of the Earth at low altitude. EPT is a compact modular spectrometer on board of the PROBA-V satellite which was especially developed in collaboration with BIRA-IASB to detect high-energy particles from space. The first maps of proton and electron streams clearly show the high streams over the South Atlantic region at low altitude.

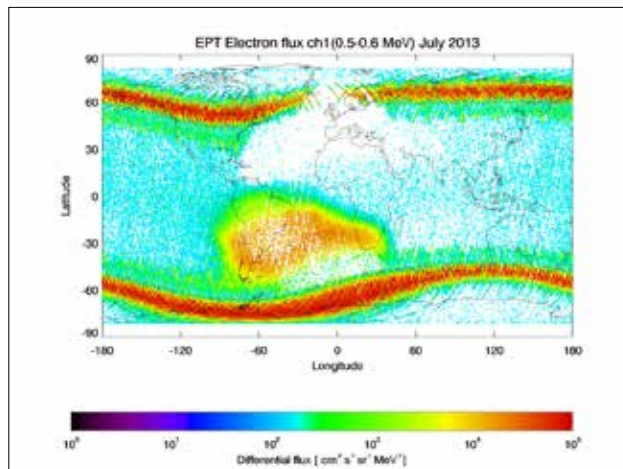
Still in the field of space physics, the European Space Agency ESA and the Solar-Terrestrial Centre of Excellence (STCE) opened the European coordination centre for space weather services at the Space Pole in Brussels in 2013. The so-called SSA Space Weather Coordination Centre (SSCC; SSA stands for Space Situational Awareness) is the European nerve centre for space weather and contains the very first European space weather helpdesk, where users get information and help on solar activity, the condition of the ionosphere, magnetic disturbances around the earth and the behaviour of energetic particles in the vicinity of satellite orbits and aircraft routes. The centre is kept operational by scientists from the BIRA-IASB and the ROB (Royal Observatory of Belgium). For the launch of the ESA Gaia space probe, which will make the largest, most precise 3D map



New instruments in Bujumbura in Burundi for measurement of the chemical components and aerosols in the atmosphere above Africa. © BIRA-IASB (Caroline Fayt)



Satisfied reactions from the numerous visitors to open door days. © BIRA-IASB (Bert Van Opstal)



EPT successfully delivers its first data. The figure shows the flux of electrons with an energy between 0.5 and 0.6 MeV as observed in July 2013 at an altitude of 820 km. © BIRA-IASB (Viviane Pierrard)

ever of the Milky Way, the SSCC was responsible for reporting on space weather conditions during the launch window. In the event of a severe solar eruption, electronic apparatus on board the launch module can be damaged en route by penetrating energetic charged particles. A decision is made on the basis of the space weather reports as to whether the launch will proceed.

Visitors

To increase the visibility of its activities, to inform potential users about the services developed and to promote partnerships with the industrial and academic world,

BIRA-IASB also strives for improvement in the area of communication. For example, the institute had the honour of hosting the enthusiastic - and sometimes amazed - members of the Class of Technical Sciences and the Class of Natural Sciences from the Royal Flemish Academy of Belgium on the Uccle Plateau. Other satisfied reactions could be gathered from the numerous visitors to the open door days in 2013. With a large exhibition on the Earth's atmosphere, planetary atmospheres, climate, air quality, ozone, UV, space physics, the ISS international space station and instrument building, visitors got a picture of the multifaceted work at BIRA-IASB. The simulation of aurora, the lectures, the activities for children and the space quiz undoubtedly contributed to the success of this edition.

All in all, we can say that in the field of aeronomy, BIRA-IASB fulfils a unique role in Belgium with regard to scientific research, service and education. It remains an essential partner in the international community, and it faces the future with great dynamism. But not without first taking a look back, because BIRA-IASB is celebrating its 50th anniversary in 2014! To celebrate this in style, a number of activities are being planned: a website on 50 years of BIRA-IASB, an anniversary publication on 50 years of aeronomy (a book), a special edition of Science Connection, open door days together with the colleagues from the Space Pole, an exhibition in the Planetarium, and one in the Euro Space Centre in Redu. In addition, the institute is organising an academic session and a day for the Space Working Group of the Belgian Senate. |

75th anniversary of the Academia

Belgica in Rome (1939-2014)

In 2014, the Academia Belgica in Rome will celebrate its 75th anniversary. Founded in 1939 when Princess Marie-José of Belgium married to crown prince Umberto II of Italy, thanks to the will of Belgian politicians and scientists, such as Maurice Lippens and Franz Cumont, this institution still continues to fulfil its original missions: to host, form and promote culture.

PROGRAMME OF THE 75TH ANNIVERSARY

4 November 2013 > 29 January 2014

Wunderkammer. Contemporary cabinet of curiosities

Exhibition designed by Antonio Nardone and organised with the support of the Federal Science Policy, the Belgian Embassy in Rome, the Fondation Inbev-Baillet Latour and the National Lottery.

4 April > 3 July 2014

'Torso', Opus 4, no. 2.

Exhibition of the artist Athar Jaber.

8 May > 8 July 2014

The Missing Object. Bricks and Butterflies.

Installation by the artist Kristien De Neve.

8 May 2014

Concert Jazz

Concert organised in collaboration with the national music schools of Antwerp, Brussels and Ghent.

11 - 13 September 2014

Renovatio, inventio, absentia imperii. From the Roman

Empire to Contemporary Imperialism.

Symposium organised in Brussels by the Academia Belgica in collaboration with the Institut Historique Belge de Rome and the Fondation Nationale Princesse Marie-José.

17 - 19 September 2014

Latin in the 19th Century

Symposium organised by Dirk Sacré (Katholieke Universiteit Leuven) and Christophe Bertiau (Université Libre de Bruxelles).

22 - 23 September 2014

Ostia Antica. New studies and confrontation of

research in the western areas

Symposium organised by Claire De Ruyt (Université de Namur), Thomas Morard (Université de Liège) and Françoise Van Haepere (Université catholique de Louvain).

More

www.academiabelgica.it

Every anniversary is a chance to emphasise and repeat the importance of the presence of such an institution in the Belgian and European scientific and cultural landscape. For this purpose, the Academia will hold several activities in 2014 within the framework of its 75th anniversary. The programme of these activities underlines the diversity of the fields of research and culture covered by the Academia Belgica, the high point being the Brussels symposium organised jointly with the Institut Historique Belge de Rome and the Fondation Nationale Princesse Marie-José. |



The official logo of the celebration of the 75th anniversary. Franz Cumont and princess Marie-José on the day of the official inauguration of the Academia Belgica in (8 May 1939).



The Academia Belgica in Rome. © Academia Belgica Roma

WIV-ISP: THE POPULATION'S HEALTH UNDER CLOSE WATCH

Many forms of collaboration exist between the scientific institutions depending from the Federal Science Policy Office and those belonging to other federal government departments. One of these institutions is the Scientific Institute of Public Health, a leading player in Belgium's federal scientific capacity. In the following pages, the reader will find an overview of the recent and ongoing activities of this institution.

The Scientific Institute of Public Health (Wetenschappelijk Instituut Volksgezondheid / Institut Scientifique de Santé Publique - WIV-ISP) is a federal science institution that aims to improve and protect the population's health in Belgium. The WIV-ISP works on several fronts: it carries out scientific research projects (development of detection and diagnostic techniques, identification of strains or food contaminants, etc.), analyses samples (characterisation of germs, quality control of vaccines, etc.) and formulates expert opinions for its partners and the authorities.

Among the latter, one of its main missions is to monitor the population's health. With the support of its partners, the WIV-ISP carries out investigations and coordinates monitoring platforms and networks with regard to diseases, the consumption of medication, eating habits, smoking, etc. The data collected is sent to the authorities, thus informing them of the state of health of Belgium's citizens, allowing them to follow its evolution over time and, ultimately, to adjust their policy whenever necessary.

Let's zoom in on the resources and partnerships that enables the WIV-ISP to ensure the ongoing supervision.

Field research to find out more about the state of health and habits of Belgians

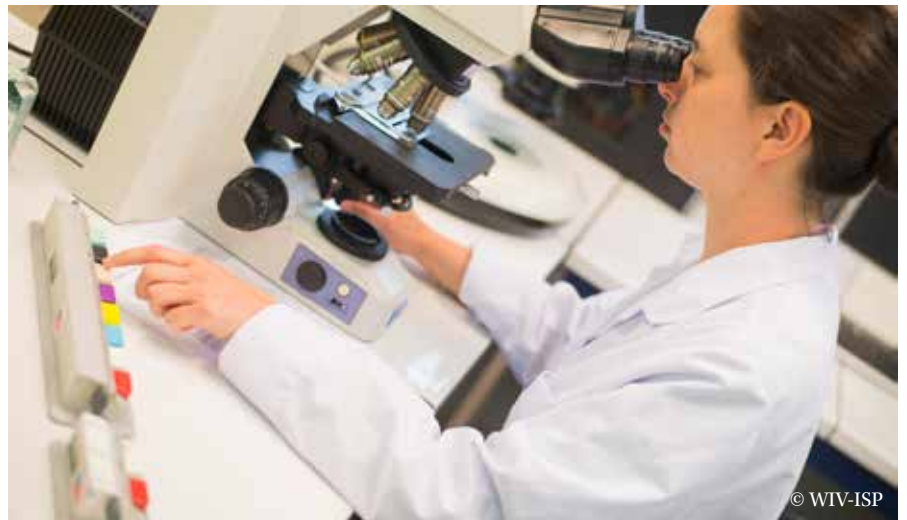
National health survey

The National Health survey allows to continuously monitor the Belgian population's health, and is carried out every four to five years. The most recent one is still on-going and the results will be available by the end of 2014. Through this survey it is possible to identify health priorities, describe the state of health and needs of the population in this domain and, lastly, observe trends over time. It is performed with the support of the Directorate-General Statistics and Economic Information (DGSIE) of the Federal Public Service Economy and the University of Hasselt's statistics centre (CenStat). The survey is financed by all levels of power: the Communities, the Regions and the Federal authorities.

National food consumption survey

Food consumption in Belgium is also the subject of a cyclical survey, conducted upon the request of Minister Laurette Onkelinx, in collaboration with Federal Public Service Public Health, Food Chain Safe-





ty and Environment, the European Food Safety Authority (EFSA) and UGent. Given the close link that exists between our dietary habits and our health, the results of this study are, for the authorities and research institutes, a crucial tool for outlining the policy relating to food and food safety in the future. The survey's data is sent to the EFSA, which maintains a database on food consumption in the EU. For instance, the previous survey carried out in 2004, showed that 30 % of the population is overweight, with 11 % suffering from obesity; 71 % of the population has breakfast every day and 47 % of the population eats fruit every day.

Monitoring networks

Monitoring networks for infectious diseases

Besides these field surveys, WIV-ISP scientists pay particular attention to the monitoring of diseases, mostly, infectious diseases. Owing to the level of contagion of some of these diseases, they represent a public health issue which must remain a priority. If some of these diseases, in our country, aren't correctly diagnosed or treated, risky complications may occur, or even in some cases mortality. All the monitoring information is collected thanks to monitoring networks. These are clinician or laboratory networks, or national reference centres in human and food microbiology. The WIV-ISP benefits in particular from the valuable collaboration of the network of 'sentinel hospitals' and 'sentinel GPs'. Using weekly forms, the latter report to the WIV-ISP on the incidence of infectious diseases among their patients (such as flu, chickenpox or shingles). The information collected is particularly valuable since it is compared with other national registries. Furthermore, this information is sent to the Belgian and European authorities so that they can take appropriate measures if necessary.

'Airallergy', the official pollen monitoring network in Belgium

Coordinated by the WIV-ISP, the Belgian monitoring network for pollen and mould spores in the air, known as 'Airallergy', aims to provide general practitioners, pharma-

ceutical companies and allergy-sufferers with rapid information concerning the presence of allergens in the air. This monitoring network provides reliable and daily indications that help professionals make a diagnosis and inform allergy-sufferers of high-risk periods and regions. This network is mainly financed by the Regions, Bruxelles Environnement (IBGE) and the Flemish Agency for Care and Health. The WIV-ISP also collaborates with a European network which provides an overview of the evolution of the pollen season across Europe.

Monitoring laboratories to warn of epidemics

Through its monitoring laboratories, the WIV-ISP follows the evolution of diseases and consolidates related essential information (characterisation of strains, number of cases, trends, etc.) on a national level. The collection of this data aims to prevent any emerging epidemic and fight these diseases. These laboratories also play a role on an international level, as the collected national data is sent to international networks such as the European Centre for Disease Prevention and Control (ECDC) and the World Health Organisation (WHO). These organisations use this data to map the situation in Europe and worldwide, to measure the evolution of the risks and monitor any spread on a wider scale. On the one hand, this monitoring provides the institute with information on infectious diseases that are transmitted from person to person (such as flu) and, on the other hand, diseases associated with food (such as salmonella), bodily secretions (such as HIV/AIDS and STI), the environment (such as allergies or zoonoses) and care (hospital-acquired infections; MRSA, CPE, etc.).

National registries to track diseases

Chronic diseases

The monitoring of chronic diseases is also one of the priorities that the political authorities have set themselves. Within this scope, Minister Onkelinx inaugurated a Monitoring Centre for Chronic Diseases within the Scientific Council for the Healthcare Department of Belgium's



National Institute of Sickness and Invalidation Insurance (Rijksinstituut voor Ziekte- en Invaliditeitsverzekering / Institut National d'Assurance Maladie-Invalidité - RIZIV / INAMI). Within the framework of this project, the WIV-ISP manages the Belgian Neuromuscular Disease Registry, whose main objective is to improve the quality of care in the reference centres. The institute also participates in research actions financed by the Federal Science Policy (Belspo).

Rare diseases

The WIV-ISP is taking part in a vast project to create an internet platform on rare diseases, which aims to provide structured, verified and updated information for citizens and specialists concerned worldwide. For the national part of www.orphanet.org, the WIV-ISP is working closely with FPS Public Health, Food Chain Safety and Environment. Furthermore, and more specifically, it coordinates, in collaboration with INAMI, the Belgian Registry of Cystic Fibrosis and is responsible for processing the data collected, i.e. demographic and clinical data from the medical files of patients suffering from cystic fibrosis.

Monitoring care for drug addicts

The monitoring of care also relates to treatment offered to drug addicts. The WIV-ISP presides over the TDI (Treatment Demand Indicator) registry. This is a system that is used to record treatment demands relating to an illegal drug or alcohol abuse or addiction problem. It represents

one of the five key epidemiological indicators noted in the European Union's 2009-2012 Drug Action Plan (and, more precisely, the European Monitoring Centre for Drugs and Drug Addiction – EMCDDA), to which Belgium is committed. The information collected is then compared on a European scale in order to better understand drug problems and deal with them.

The WIV-ISP also coordinates a network of more than 40 reference centres and labs at national level (support to the AFSCA and NIHDI) and international level (support to the WHO as the OMCL). The institute also ensures the monitoring of food safety, in support of the FASFC. The institute is certified for the following four areas relating to the safety of the food chain: GMO, microbiology, pesticides and residues. In another sector, WIV-ISP researchers provide support for the Federal Agency for Medicines and Health Products (FAMHP), in particular by monitoring counterfeit drugs whose trade has increased with the advent of the internet.

The WIV-ISP has the necessary means to ensure a continuous and complete monitoring of public health in Belgium. Thanks to its tools and its numerous national and international partners, the WIV-ISP feels the pulse of Belgians' health in order to help establish recommendations in terms of care and thus improve their state of health. |

More
www.wiv-isp.be

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