

e-FRISiency: an asset for Flanders

The knowledge economy is one of the cornerstones of our society. Our great economic prosperity and development is derived for a large part from technical knowledge. Indeed, technical knowledge is increasingly coming to dominate the three traditional production factors of labour, nature and capital. Knowledge unlocks innovation, which in turns spawns new products or services, thereby enabling further economic growth.

That is why encouraging research and development - or R&D for short - is so essential.



It also explains one of the planks of the EU's 2000 Lisbon Strategy: to ensure that Europe is the most knowledge intensive economy in the world by 2010. Encouraging R&D is therefore high on both the national and international agenda. But this comes at a price, of course. In 2005, in Flanders alone, companies, organisations and the government invested over €3.6 billion in R&D, 2.1% of gross domestic product¹⁵.

With so much money involved, the key priority is that it should be used efficiently. In this context, the efficiency and effectiveness of the whole R&D value chain is of relevance: from policy choices and investment decisions, through administrative processes and research to exploitation of results and

measurement against critical performance indicators (CPIs).

IWETO weighed in the balance

An important part of streamlining the R&D value chain is the management of research information: on projects, researchers, research institutions, results such as publications and patents, expertise, equipment, financing sources and so on. Having accurate, up-to-date research information is critical at every stage of the R&D value chain: when making policy decisions, planning and conducting research, implementing and optimising administrative processes and measuring and evaluating research findings.

The Flemish government and Flemish universities were aware of the importance of research information as far back as the early 1980s and set up the Inventory of Scientific and Technological Research in Flanders (IWETO). At that time, IWETO¹⁶ was the first research information system of its kind. Today, however, it no longer meets the standards expected of a modern research information platform: information is gathered retrospectively and only supplied at intervals, the quality has declined and the information is no

longer always up-to-date. Also, the information gathering process takes a lot of time and energy, as it is treated as a separate task at each of institutions involved in the project, and the scope of the information collected is limited: core data such as publications, patents and doctorates are not included. Lastly, IWETO does not exchange data with other information systems.

Flanders Research Information Space

Needing a new system for managing research information, EWI launched the Flanders Research Information Space programme (FRIS)¹⁷. The FRIS concept creates a virtual research information space covering all Flemish players in the field of economy, science and innovation. Within the space, research information can be stored and exchanged in a transparent and automated way. A key feature is that data can be collected at the point of creation: in the operational processes of data providers. For example, information on a research project can be found in the assessment process for a funding application. Collecting information at the operational process level offers major advantages. The data are accurate and up-to-date because they are being used in an operational process. Also, it is not necessary



to establish a parallel data gathering process, so data providers are spared a lot of administrative work.

The three key concepts of the FRIS programme are simplicity, transparency and openness. The development of FRIS has three strategic goals:

1. Speeding up the R&D value chain

Using an **open** architecture creates opportunities for cross-border cooperation and the development of research networks. Industrial players will be able to find partners for innovation projects more quickly. Using international standards enables policy players to position themselves in relation to other governments and to compare themselves with other countries. This significantly enhances the international profile of research projects and institutions.

2. Administrative simplification

By creating a highly efficient data environment, all desired information is entered once and can be reused instantly by all competent parties. This administrative **simplification** means that the budget for scientific research can be put to optimum use. It allows researchers to focus entirely on their area of expertise, namely conducting scientific research. A quick calculation of the combined wage costs of Flanders' 20,000 or so researchers shows that each percentage of their working time spent on administrative formalities costs around €9.5 million: public money that could otherwise have been spent on research.

The institutions where research is conducted are also keen to see the number of research information surveys reduced and the whole process streamlined. Each year, they must fulfil various reporting obligations towards their funders, mostly in connection with international obligations on research information (e.g. EuroSTAT¹⁸ and the OECD¹⁹). Different surveys often use different definitions or classifications, so that existing data cannot be re-used.

3. Measuring for better policy-making

Better consolidation and aggregation of data will allow the government to develop more effective policy, evaluate it more accurately and adjust it more quickly. Scientific institutions need consolidated information in order to make appropriate research choices and use their resources efficiently. **Transparent**

data registration should enable citizens and the government to check where public R&D money has been spent. Each of these strategic objectives contributes to the central objective of greater research efficiency.

Opportunities

There are a number of opportunities favouring implementation of the FRIS programme; indeed, the time is ripe for such an initiative. The technology for exchanging data between institutions is available (web services, service oriented architecture), and all Flemish universities use the European research information standard (CERIF, see inset), which makes it easy to collate data from various institutions and exchange data with other CERIF systems.

There are also successful examples of information systems that operate on the principle of data exchange between players: the Crossroads Bank for Social Security (CBSS), the Flemish Crossroads Bank for Enterprises (VKBO) and the Flemish government's data sharing platform (Magda). The Education Department also has a project in the pipeline to set up a Higher Education database along the same lines as the FRIS programme.

As part of the review of annual reporting legislation for universities, an exercise is under way to simplify and

streamline the supply of statistical data, the main aim being to cut down on administrative work. The universities also want to use reporting as a full-blown policy instrument, which dovetails perfectly with the principles of the FRIS programme.

Next steps

The first half of 2008 will see the launch of a new research portal, whose first service will be an upgraded version of IWETO whereby universities supply CERIF2006-compliant data based on a fully automated process. This new procedure will allow universities to supply data much more frequently than before, with no extra administrative work.

This service is only the first part of the FRIS programme. Over the coming months and years, the research portal will roll out a range of new services as part of the research information space (see Figure 8). The possibilities are numerous: a white guide (who does what?), library of publications by a particular researcher (digital library), a service for updating and reusing researchers' CVs and provision of information on patents, to name but a few.

Implementing FRIS calls for something other than a simple project-based approach. FRIS is not about develo-

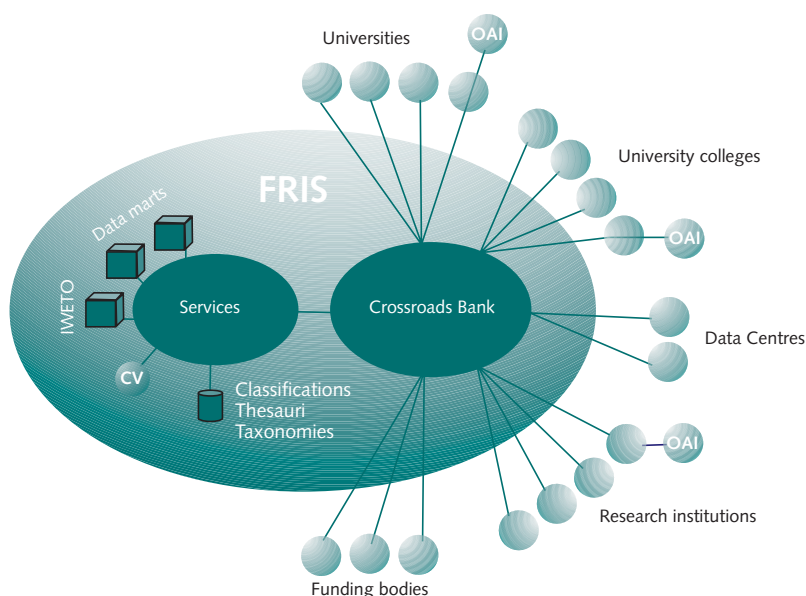


Figure 8: Schematic representation of the Flemish Research Information Space (FRIS)

CERIF: the Common European Research Information Format

CERIF was developed to provide a generic vision of an R&D information model. Two key principles underpin the project:

- Information on publicly funded research projects must be made public, in accordance with the principle of open government.
- It must be possible to exchange information on research projects across national borders, research being a supreme example of international information.

The model enables the various research information objects - researcher, project, research organisations, publications, financing, equipment, etc. - to be kept in their full context. Thus, for instance, we can establish the relationship between a project, its financing source and the generated output. Or answer the question: "Who does what at which institution and where does the funding come from?"

This information can be used by e.g.:

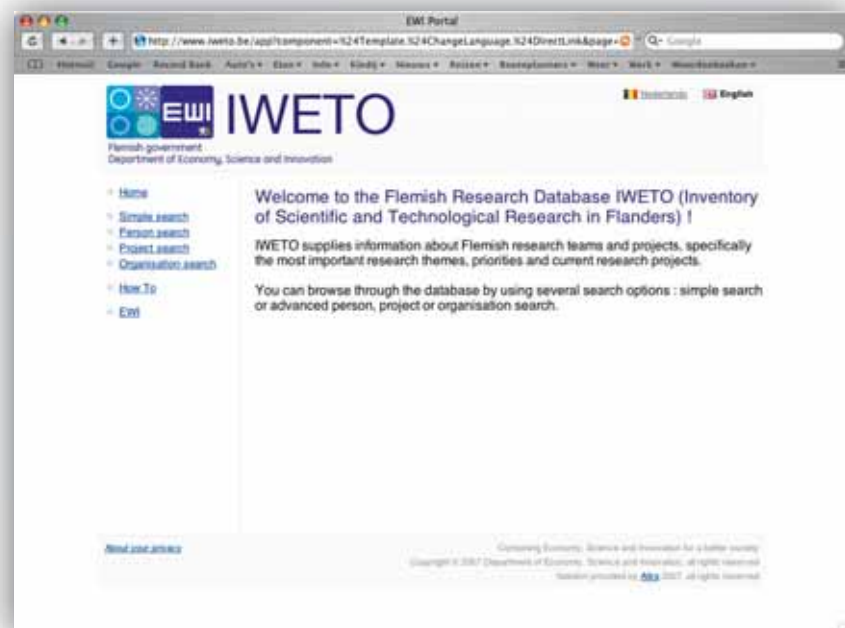
- researchers (to find partners, identify rivals, establish cooperation networks, etc.);
- research policy staff (to estimate performance and output);
- research managers (to develop a research strategy and establish priorities);
- publishers (to find reviewers and potential authors);
- intermediary organisations (to trace inventions and ideas that could lead to knowledge transfer);
- the media (to communicate R&D results in a socio-economic context);
- the general public.

All information is internationally compatible, regardless of language or characters. The model can easily be expanded. The CERIF2006 version includes some major improvements, such as the introduction of a semantic layer.

This data model was developed with the support of the European Commission in two phases: from 1987 to 1990 and from 1997 to 1999. The EU recommends, but does not require, that Member States use this standard. Since 2002, follow-up and management of the CERIF standard have been the responsibility of EUROCRIS (www.eurocris.org), a non-profit organisation set up to promote current research information systems (CRISs).

ping one application: it is a *change programme*, in which the involvement of Flemish government players is key. Openness and integration bring change aplenty in their wake and the success of FRIS will depend entirely on cooperation between the players concerned. We would therefore urge all stakeholders to contribute to this ambitious programme and play their part in making this fresh ['fris' = 'fresh' in Dutch] new approach a success.

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15 Totale O&O intensiteit in Vlaanderen 1993-2005: 3% nota. Policy Research Centre for R&D Indicators, 19 March 2007.

16 www.ewi-vlaanderen.be/iweto

17 www.ewi-vlaanderen.be/fris

18 ec.europa.eu/eurostat

19 www.oecd.org