

# A European perspective for research

Michael Wilson advances the need to foster a collaborative spirit within the EU...

The European Commission has been planning for several years to move towards a European Research Area (ERA) to overcome the problem that the European centres of excellence are scattered across the continent and all too often, their efforts fail to add up in the absence of adequate networking and co-operation. The ERA will be a research and innovation equivalent of the 'common market' for goods and services brought about by regrouping all Community supports for the better co-ordination of research activities and the convergence of research and innovation policies, at national and EU levels.

In order to foster the networking and co-operation required by the ERA, pan-European research organisations are required that persist longer than individual projects or research programmes. ERCIM – the European Research Consortium for Informatics and Mathematics – is such an organisation that aims to foster collaborative work within the European research community and to increase co-operation with European industry. Leading research institutes from 16 European countries are members of ERCIM.

ERCIM is legally established as a European Economic Interest Group (EEIG). An EEIG can be considered as a joint venture endowed with legal capacity across the countries of Europe. One of the characteristics of an EEIG is its ancillary role relative to its members, in that the EEIG does not undertake the activities of its members, but activities that are ancillary to them. Therefore, ERCIM does not undertake research itself, but ancillary activities addressing co-operation, strategic planning and technology transfer.

ERCIM has one member institute per country. Currently, 16 countries are represented in ERCIM. A member institute must be a leading research establishment in its country, with excellent links to both national and international research communities. All ERCIM members are national centres of excellence, independent of specific commercial ties, they have a strong involvement in the research programmes of the European Union and joint projects with both small and medium size enterprises and large industrial companies.

ERCIM was founded in 1989 by INRIA, GMD (now merged with Fraunhofer-Gesellschaft, Germany) and CWI (Centrum voor Wiskunde en Informatica, the Netherlands), to build a European not-for-profit consortium dedicated to the advancement of information technology and applied mathematics.

The membership and geographical reach of ERCIM has gradually grown to its current 16 member institutes, which are: AARIT in Austria, CCLRC in the UK, CNR in Italy, CRCIM in the Czech Republic, CWI in the Netherlands, FLN in Luxembourg, Forth in Greece, FHG in Germany, INRIA in France, NTNU in Norway, SICS in Sweden, SARIT in Switzerland, SRCIM in Slovakia, SZTAKI in Hungary, TCD in Ireland and VTT in Finland. Gerard Van Oortmerssen, Director of CWI, is the current ERCIM President, and Bernard Larrouturou, INRIA's CEO, acts as ERCIM's General Manager.

The main activities that ERCIM undertakes are intended to foster co-operation between researchers in the member institutes, and more widely, between researchers in the countries that they represent. These include:

- The annual Cor Baayen award for the outstanding research contribution by a young European researcher;
- Sponsorship of workshops and conferences on topics key to the ERCIM research strategy;
- Fellowships for PhD students and post-doctoral researchers to spend time in two or three ERCIM institutes;
- The freely distributed ERCIM News quarterly newsletter, which presents brief summaries of ongoing research projects in the member institutes and the countries that they represent;
- Working groups established to address issues key to the ERCIM research strategy;
- Management of scientific projects undertaken across ERCIM member institutes.



ERCIM has also established official relationships with other bodies, including the National Science Foundation in the USA and the European Science Foundation, to develop a common research strategy for the Informatics and Mathematics area. One of the main instruments for this development is a series of joint NSF-EU workshops, whose reports are widely distributed to research funding bodies and research policy-makers.

The scientific fields of competence within the ERCIM member institutes are very broad, covering all of: algebra, analysis and geometry, combinatorics, number theory, control and system theory, stochastics, numerical mathematics and differential equations, hardware, software, theoretical computer science, information systems, computing methodologies, computer applications, fluid dynamics, electromagnetism, operations research, and information and communication technology. Among the research topics of priority to ERCIM, those addressed as special themes in recent issues of ERCIM News are: cognitive systems, embedded systems, semantic web, e-mathematics, information security, e-government, ambient intelligence, human-computer interaction, Grids: e-science to e-business, computer graphics, bioinformatics and biocomputing, robotics, web technologies, and control and system theory.

Perhaps the most important current topic is the future European information infrastructure itself. Many of the ERCIM member institutes established their country's original digital research networks, which have subsequently been passed to commercial management. They are now concerned with the development of the next generation of infrastructure. Three technologies are under development: web services, the Grid and the semantic web. These have been promoted as three visions supported by three different technologies. ERCIM institutes are active in research in all three. Current results show that the technologies are converging to become a single interdependent technology, where the Grid incorporates the Open Grid Services Architecture (OGSA) built on web services, while the rich machine understandable descriptions required to support the semantic web are being included in both web services and the Grid, in order to provide not only descriptions of services themselves but also the quality measures and constraints required on those services for them to be usable in practice by business.

To further the development and adoption of these technologies on 1<sup>st</sup> January 2003, ERCIM took over the role of European host organisation for the World Wide Web Consortium (W3C) from one of its member institutes, INRIA in France. The W3C was created to lead the web to its full potential by developing common protocols that promote its evolution and ensure its interoperability. It is an international industry consortium jointly run by the MIT Laboratory for Computer Science (MIT LCS) in the USA, Keio University in Japan and now

ERCIM in Europe. W3C is leading the implementation of the Semantic web vision and the standardisation of web services technologies. Services provided by the Consortium include: a repository of information about the worldwide web for developers and users, and various prototype and sample applications to demonstrate use of new technology. To date, nearly 450 organisations are Members of the Consortium. "The ERCIM Directors were already aware of W3C. ERCIM member institutes have been active in W3C working groups, and several act as W3C Offices", noted Gerard van Oortmerssen. "As a network of IT research centres, ERCIM encompasses over 10,000 researchers. W3C will benefit from this reservoir of expertise. For ERCIM, this change brings an opportunity to enhance co-operation on a global scale." Benefits of this change will also follow for W3C, as explained by Tim Berners-Lee, W3C Director, "For W3C, it means having one headquarters – <http://www.w3.org/> – supported by three global partners – MIT, Keio University and now ERCIM. With the move to ERCIM, there is the potential for considerable growth and synergies of web technologies across Europe."

The transfer of research results is one of the ERCIM institutes' main assignments today. The creation of hi-tech companies by researchers is an effective way of achieving such transfer. The links these companies maintain with their 'mother' research institution, which in a certain way 'labels' the companies, has been identified as an important factor in guaranteeing their survival. A death rate of 10% instead of 50% for the general case has been observed for such companies. Over the last years, ERCIM members have played a pioneering role in creating small and medium hi-tech companies. ERCIM is represented in 14 European countries and its members have spawned over 100 companies.

The creation of the ERA will be led by the European Commission through actions in the 6th and 7th Framework Programmes. But to ensure that it becomes a practical reality, pan-European institutions will be required in many research disciplines. ERCIM may be seen as one example of such an institution where its legal status, choice of activities and links to other organisations could be seen as a model for other disciplines to follow.



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