



# Investing in Innovation for Growth & Jobs

Building the Knowledge-Based Economy

University Partnerships in Europe  
Developing European Talent  
Delivering Tomorrow's Innovations



# Committed to Open and Collaborative Innovation

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We've only scratched the surface of what information communication technology (ICT) can do to improve people's lives and drive growth and opportunity for their societies. The basic technologies of computing, such as processing power, network capabilities, and storage and graphics, are continuing to grow at amazing rates. Software and ICT are key to transforming these new capabilities into empowering products and services.

We know that innovation is the heartbeat of our industry. Steve Ballmer says: "If we aren't innovating fast enough, big enough, and new enough, we won't succeed."

It is also clear that innovation is increasingly central to Europe's future success by driving competitiveness, job creation, and overall living standards.

That's why we have taken an open and collaborative approach to innovation working with academic, industry, and government partners to produce technologies that serve society, business, and the ICT industry.

Across Europe, we demonstrate our commitment to innovation through collaborative programmes such as the European Science Initiative, which aims to accelerate fundamental innovations in science and computing through the pursuit of novel avenues of research by Microsoft and key research bodies across Europe. And we invest in pure and applied research and development (R&D) in multiple areas with a particular emphasis on security and interoperability.

Our R&D-related facilities in the region support more than 1,000 staff—in Denmark, Germany, Ireland, and the United Kingdom—and cover the key stages of software development, from the earliest concept to product implementation. We have a range of partnerships with universities and local governments across Europe and are participating in collaborative projects under the European Union Research Framework Programme. We also fund a range of practical initiatives to support Europe's computer science research talent.

Some of these investments are yielding benefits today with software breakthroughs in critical areas such as security, reliability, mobility, and health. Others will transform the way we use computers years from now. But they all stem from our investments in research and innovation, our optimism about the future of computing, and our commitment to push the state of the art forward.

"With more than 1,000 employees in research and development roles throughout Europe, Microsoft is working to address the evolving needs of its European customers, and contribute to technical advancement across the region."

**Jean-Philippe Courtois,**  
President,  
Microsoft International



## In Europe, more than 1,000 Microsoft employees work in R&D.

**The company operates numerous facilities in the region dedicated to technology innovation and software development:**

### **Microsoft Research Centres**

whose mandate is to develop new technologies through long-term "blue sky" research as well as applied, product-focused research—U.K.

### **Microsoft Development Centres**

where Microsoft products are developed and enhanced—Denmark, Ireland, Serbia

### **Microsoft Institutes**

research centres of excellence that Microsoft has established in collaboration with leading research and academic bodies—France, Italy

### **Microsoft Innovation Centres**

where the company works with industry partners and governments to share expertise and speed time to deployment and time to market—Denmark, Germany, Spain

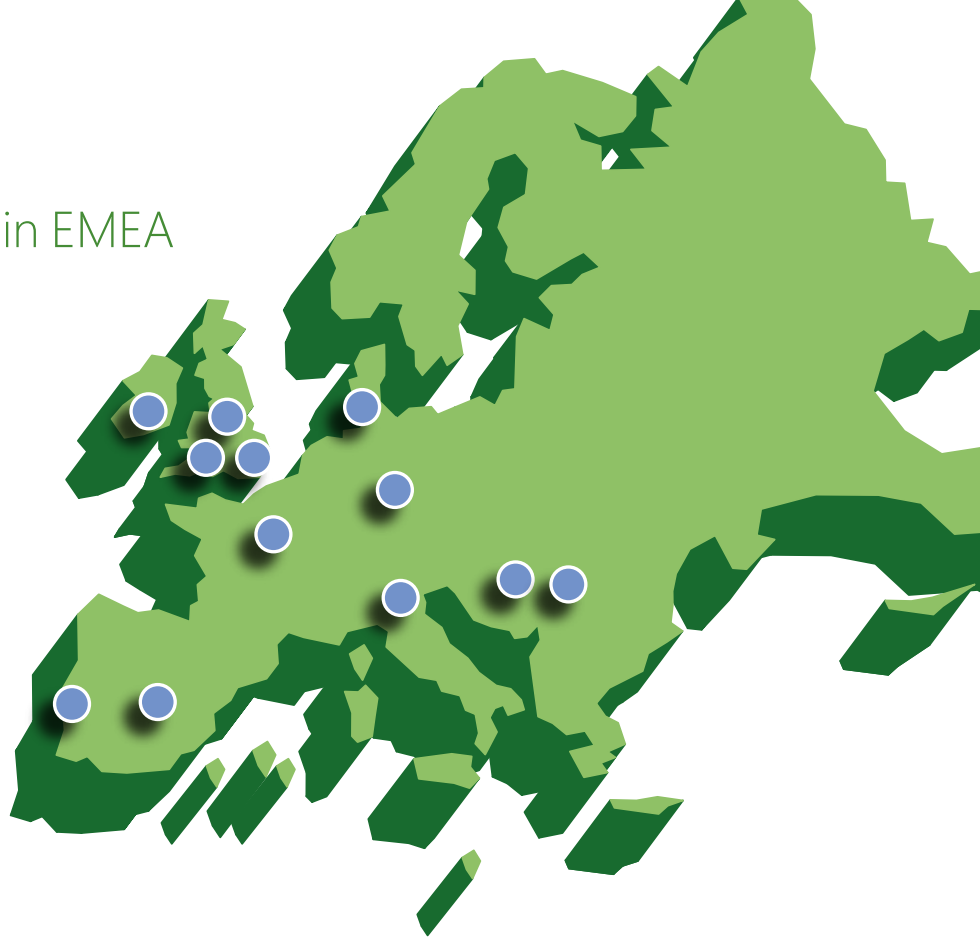
### **Microsoft Technology Centres**

where enterprise customers can test their applications and obtain support and advice from Microsoft engineers—France, Germany, U.K.

# Microsoft R&D Facilities in EMEA

“The European Science Initiative represents a continuation of Microsoft’s longstanding commitment to innovation in Europe. By promoting investment, broad participation, and critical advances in the European Science research priorities, we feel certain that the scientific community, European industry, and government will—in partnership—help release Europe’s full potential.”

**Jean-Philippe Courtois,**  
President, Microsoft International



Microsoft EMEA Facilities	Innovation Stage	Activity Focus	Partner Approach	Who Benefits?
Microsoft Research Cambridge (MSRC) (U.K.)	Invention	Basic and applied research	Internal, with numerous academic collaborations	The open research community and Microsoft customers, through innovative products
Microsoft-University of Trento Centre for Computational and Systems Biology (Italy)	Invention	Basic research, advanced development	Collaborative, through research communities and institutes	The open research community
Microsoft-INRIA Institute for Computational Science (France)	Invention	Basic research	Collaborative, through research communities and institutes	The open research community
European Microsoft Innovation Centre (EMIC) for Collaborative Research (Germany)	Incubation	Applied research, advanced development	Contribution to collaborative public-sector research	Society, through government-defined research priorities
Microsoft Innovation Centres for ISV Development—Aragón (Spain), Castilla y León (Spain), Copenhagen (Denmark), and Varazdin (Croatia)	Implementation	Partner engagement	External, supporting partner development	Local IT industry, through direct support from Microsoft engineers
Microsoft Development Centre, Copenhagen (Denmark)	Implementation	Product development	Internal product development	Microsoft customers, through innovative products
Microsoft Development Centre, Sandford (Ireland)	Implementation	Product development	Internal product development	Microsoft customers, through innovative products
Rare (U.K.)	Implementation	Product development	Internal product development	Microsoft customers, through innovative products
Microsoft Development Centre for the Tablet PC, Belgrade (Serbia and Montenegro)	Implementation	Product development	Internal product development	Microsoft customers, through innovative products
Microsoft Development Centre for Speech and Natural Language, Porto Salvo (Portugal)	Implementation	Product development	Internal product development	Microsoft customers, through local-language software
Microsoft Technology Centres (MTCs)—Munich (Germany), Paris (France), and Reading (U.K.)	Deployment	Customer and partner engagement	External, supporting customer and partner development and deployment	Local enterprise customers, through direct support from Microsoft engineers

# University Partnerships in Europe

“An open and collaborative approach exists at the heart of the research we’re conducting with Microsoft Research. Developing this laboratory in France will fuel the exchange of new ideas and support the achievement of our shared goals while adhering to the levels of scientific excellence INRIA is renowned for.”

**Gilles Kahn**, Chairman and Managing Director, INRIA, The French National Institute for Research in Computer Science and Control

The academic community is an essential partner in cultivating talent and advancing the science upon which our industry depends. Our university partnerships programme is focused on the future of computing and seeks to be a catalyst for innovation in research and curriculum in leading academic institutions across Europe. This is achieved through a variety of initiatives—including funding university research projects in specific areas, working with faculty to develop curriculum, and making source code available to support teaching and research through our Shared Source Programme.

## Microsoft European Science Initiative

Launched in 2004, this is a new strategic research initiative focused on creating, leading, and accelerating fundamental innovation in ‘new kinds’ of science and computing, primarily through collaboration with the European science community in ERO partnerships. The initiative aims to encourage increased innovation, productivity, and growth to help underpin Europe’s knowledge-based economy. It also encompasses a range of programmes to contribute to Europe’s intellectual capital, including a PhD

scholarships programme, a post-doctoral fellowships programme, and a series of scientific workshops.

The Microsoft European Science Initiative objectives will be achieved through numerous mechanisms, ranging from collaboration with key individuals and groups throughout Europe, to the establishment of a network of research centres of excellence.

The three core research programmes supported by the initiative are:

### New Computing Paradigms

This research programme explores new ways to take computing beyond its current forms. It addresses fundamental problems in computer science through the exploration and application of lessons drawn from nature, chemistry, and biology.

### Computational Science

The aim of this programme is to create, in collaboration with the scientific community, a new generation of computational tools for accelerating advances in science by enhancing the day-to-day productivity of scientists.



### Intelligent Environments

Research into new applications for the emerging world of 'ambient intelligence', where sensors, wireless networks, and interactive, embedded computing are invisibly and seamlessly woven into people's everyday life and the social environments in which they live.

Two centres of excellence have been established to date:

#### **Microsoft Research-University of Trento Centre for Computational and Systems Biology**

Launched in February 2005, the Microsoft Research-University of Trento Centre for Computational and Systems Biology, is a joint venture between Microsoft, the Italian central and local governments, and the University of Trento. At the Trento Centre, researchers will focus on creating the next generation of computational tools so that biologists and others working in the life sciences can better understand and predict complex processes in biological systems, which could lead to new and faster insights into the origin of disease, new therapies, and better vaccines.



### Microsoft-INRIA Institute for Computational Science

In April 2005, the French Ministry of Research, Microsoft Corp. and INRIA, the French research institute, agreed to create a new joint laboratory in the Paris region. Research at the Microsoft-INRIA Institute for Computational Science will investigate two key areas of computing and science. The first area is the application of mathematics to improve software and systems security, which will extend ongoing, collaborative work between Microsoft Research and INRIA in the foundation of programming languages and proving of theorems. The second area is the acceleration of scientific advancement through the development of new software tools for the management and analysis of highly complex scientific data.

### Students Vie for the Imagine Cup

Drawing nearly 17,000 young contenders from more than 90 countries, the Imagine Cup is a Microsoft-sponsored competition designed to demonstrate the opportunities that technology makes possible. Microsoft provides resources, exposure, and technical support to students as they develop their entries, which must incorporate Microsoft products. In 2004 the Imagine Cup was awarded to a team from France with a digital home project called SmartCenter.net. Winning the cup encouraged the team to launch their own company. One-third of the teams that made the final rounds and more than half the global winning teams were from Europe. The 2005 winners were Team OmniMusic from Russia. OmniMusic lets musicians join a community, meet musicians of similar skills and interests, perform live in a distributed environment, and broadcast the performance via IP multicasting. When asked about his experiences at the Imagine Cup, winning team member Nikolay Surin said: "The most exciting, really inspired project that dissolves boundaries between all cultures is the Imagine Cup itself."

## Developing European Talent

To support the vital role of scientific research and innovation in building Europe's knowledge-based economy, the Microsoft European Science Initiative includes a career development programme:

#### **European PhD Scholarship Programme**

Up to 30 awards are made annually to some of Europe's brightest scholars to undertake research at the intersection of computing and the sciences in European institutions.

#### **Fellowship Programme for Early-Career Scientists**

Through this fellowship, up to five promising post-doctoral scientists who are establishing a track record of world-leading research in emerging science and technology will receive support and funding.

#### **European Scientist of the Year Award**

The Microsoft European Science Initiative will sponsor this award to recognise the achievements of an individual who has made a fundamentally important contribution to science and society in Europe.

#### **Scientific Workshops**

An annual workshop series established to bring together students, researchers, government, and industry to discuss key scientific and societal issues and topics arising from the Microsoft European Science Initiative's research agenda.

# Delivering Tomorrow's Innovations

"Collaboration with Microsoft EMIC in European research projects provides the right innovative atmosphere that is needed to turn scientific visions into practical reality. We are esteeming this partnership based on skill, openness, and passion as a valuable support, helping to foster European excellence in R&D."

**Dr. Michael Boronowsky**, Managing Director, Centre for Computing Technologies (TZI), Universität Bremen, Germany

## MSRC in Brief

Microsoft Research Cambridge (MSRC) was Microsoft Corporation's first research laboratory to be established outside the United States. The lab was set up in July 1997 with three researchers. Today, more than 80 researchers from across the world are engaged in fundamental computer research at the lab. MSRC was established to be a centre for innovation and computer science research across Europe, the Middle East and Africa (EMEA) and employs and partners with some of the brightest and most creative minds to further science through research. All projects focus on fundamental research to push the boundaries of computing, challenge convention, and ultimately further science. Key partnerships to date include Imperial College London, INRIA in Paris, University of Pisa, University of Trento, Technical University of Berlin, University of Utrecht, and University of Bologna.



MSR Campus

## Samoa: Formal Tools for Securing Web Services

Web services enable automatic interactions between computers over standard Web protocols. For example, Web services support financial transactions between businesses and banks over the Internet. The security of such communications is vital but can be elusive. The Samoa project applies techniques from concurrency theory and automated theorem proving to try to verify security protocols used with Web services. Our work has discovered a range of attacks and countermeasures and has affected both Web services standards and their implementations in Microsoft products. Our formal tools are being used to verify aspects of proposed standard protocols, as well as to find typical errors in particular Web services installations.

## Educational Software for Multiple-Input Devices

Look at any computer in a school or a rural kiosk in a developing country. Even in the wealthier schools, you'll see a group of children crowding around a single display, because there aren't enough PCs for them all. Usually, the dominant child controls the mouse and the keyboard, and the greatest gains accrue primarily to that child. We are working to provide a mouse to each child, each with a separate cursor displayed on the monitor. We are building sample educational applications based on this paradigm, attempting to understand how educational software will have to be redesigned to support multiple inputs. Applications can be either competitive in nature or prompt children to work collaboratively. This work raises interesting questions regarding human-computer interaction in educational settings, addressing technological, pedagogical, and user-interface issues. We are working with children in low-income settings as a test audience for these applications.

## Text-Free User Interfaces

Computers are reaching the deep rural interiors of many developing nations. But functionality is limited by the fact that the target users, many of them adults, may not be literate in any language. We are designing user interfaces and experiences that make computers usable and less intimidating to those who are illiterate or semi-literate. This work is based on interaction and usability studies with low-income and low-literacy communities. The project is designed to develop general guidelines for creating text-free user interfaces. Interfaces include components such as audio and icons, tailored for cultural contexts. The first sample application supports the use of maps. A second application provides employment information to domestic household workers.

## TrueSkill™

TrueSkill™ is a new ranking and matchmaking system premiering in Xbox 360™ Live services. It uses a mathematical model of uncertainty to address weaknesses in existing ranking systems such as ELO. The system always knows "how much it does not know" about the skill of each player. Bayesian techniques enable TrueSkill™ to identify player skill with near-optimal speed. For example, a new player joining a million-player league can be ranked correctly in fewer than 20 games. TrueSkill™ is applicable to all game types, for any number of teams, and for any number of players per team. It can predict the probability of each game outcome. This gives greater flexibility for competitive matchmaking, such as the ability to devise skill-balanced teams without requiring similar skill levels or a similar number of players per team.



XBOX360



“Innovation at Microsoft is a global effort, bringing together the best minds from around the world and putting them to work to build the technology of the future. EMIC is the first Microsoft facility focussing on collaborative applied research. Based in Aachen, it works closely with European academic and industry partners. Working together is essential because we need to deliver solutions that work on different platforms and are well suited for European needs.”

**Pierre-Yves Saintoyant**, Director of the European Microsoft Innovation Centre

### HomeNote

HomeNote consists of a touch-sensitive flat-panel display that can receive and display communications such as e-mail, text, and photo messages. Deployed in places such as a home kitchen, this creates new, interesting styles of communication between the inhabitants of that household. The first version of HomeNote is based on Tablet PC hardware with GSM connectivity. HomeNote is an interesting prototype device because it explores a new genre of communication.

### Whereabouts Clock

The Whereabouts Clock is a display for a kitchen wall that, using mobile phone data, displays the general whereabouts of family members. The use of the “clock” metaphor is deliberate, because it implies important things about its design. It is designed for the home, to be attached to a wall in a useful place, such as a kitchen, where it becomes part of routine family life, much as a clock does. It can be seen only when in the home, not remotely, which means only people entitled to be in the home—family and friends—can see the device. The interface is designed to let a family see information at a glance. In this case, a person in the kitchen can see at a glance where their loved ones are. The display is always on, persisting in the periphery of vision. Like a clock, it displays only coarse-grained information. It shows only that a family member is at home, at work or school, or out, because precise location isn’t necessary to plan a meal or to know someone is on the way home or at school.

### The Picture Bowl

The Picture Bowl means that content stored on a digital device can be seen or heard simply by placing the device in the bowl. Through a simple gesture, this content also can be copied easily and left in the bowl when the device is removed. For example, photos or video on a mobile phone can be viewed by placing the phone in the bowl. The photos or video then can

be left in the bowl by holding them down with a finger and removing the phone. The Picture Bowl is designed to address aspects of media storage identified during observations of home life. Members of households often place things such as photos and children’s artwork into temporary places before eventually acting upon them. In the digital world, there is no direct equivalent of these places. Existing solutions for handling digital content such as photos or music can be cumbersome and insist on a formal type of organisation. As digital still and video cameras, music players, and mobile phones proliferate, we need simple, easy ways to handle digital content. The use of bowls and drawers are initial solutions for how to do so.

### Wearit@work ([www.wearitatwork.com](http://www.wearitatwork.com))

This FP6 project, led by TZI Bremen, a research Institute of the University of Bremen, is aiming at the development of a pan-European software and hardware platform for wearable computing in which professionals can be mobile and at the same time fully integrated into the surrounding IT infrastructure. The project will result in four applications: production, complex HMI, maintenance, and emergency. EMIC is responsible for the activity field 4.1 integrated information services of activity line 4 “European wearable computing framework.” It is led by HP and contributes to work related to the link between the wearable and stationary platform.

### MOSQUITO: Context-Aware Access Control ([www.mosquito-online.org](http://www.mosquito-online.org))

This FP6 project on Mobile Workers’ Secure Business Applications In Ubiquitous Environments is led by SAP. The vision is for mobile workers have secure, trusted, and ubiquitous access to business applications. The project will provide the technical infrastructure required so that workers and their clients can perform daily business processes collaboratively and safely according to determined security policies.

### EMIC in Brief

Opened in 2003, EMIC is a focal point for Microsoft’s participation in collaborative research and development projects, such as those sponsored by the European Commission (EC) and national governments in Europe. Most of the projects EMIC is engaged with are driven by the EU’s 6th Framework Programme (FP6). Research costs for FP6 projects are split equally between the EC and the contributing companies, so Microsoft is responsible for funding half of the work. EMIC research loosely applies to these environments: enterprise platforms (mostly security and privacy), eHome and automotive platforms (mostly Web services); and mobile phone and wireless (mostly pervasive networking and mobile application development). EMIC partnerships include:

- Companies such as Atos Origin, BAE Systems, BT Exact, SAP AG, Siemens Informatica S.P.A, and Telecom Italia.
- Academic partners such as the University of Aachen (RWTH), the University of Stuttgart, and Politecnico di Milano.
- Regional governments including Lombardia, Italy and Region Aquitaine, France.

## **i For More Information:**

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For media and background information, please visit:  
[www.microsoft.com/emea/presscentre](http://www.microsoft.com/emea/presscentre) or contact the  
Microsoft EMEA Press Office on **+44 870 243 0515**.

"The goals of the Lisbon Agenda, to harness technology for social and economic progress, are goals that Microsoft shares. We recognise our responsibilities as a corporate citizen, and we are listening carefully to our government partners and working hard to support their efforts with responsive technologies and programmes. We are committed to continuing and furthering these efforts."

**Bill Gates**, Chairman and Chief Software Architect, Microsoft Corporation