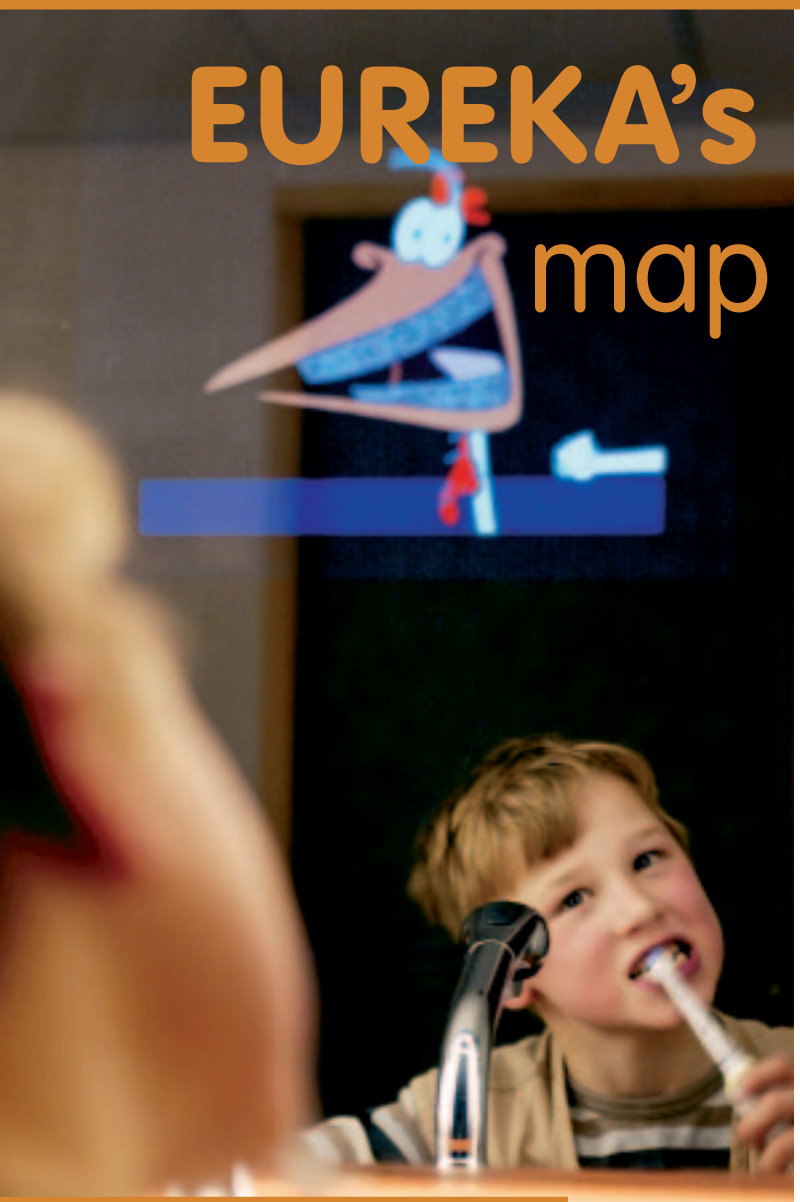

EUREKA's ICT clusters map out the future

The way consumers access information and entertainment is to take a quantum leap forward. Using roadmaps to guide them, EUREKA's cluster programmes are helping steer European ICT towards a competitive future by ensuring the right products hit the market at the right time.

Europe's information and communication technology (ICT) industries face a monumental challenge when it comes to predicting and developing technologies, products and services required to satisfy the demands of a fast-moving and intensely competitive market. The industrial focus of EUREKA's clusters has given the sector a head start by assembling all the key players to articulate their visions and draw up 'roadmaps' to accomplish them.

"The roadmap process encourages interaction which is vital now technologies are so complex and cross-disciplinary," says ITEA Director Kees van Mourik. "In the past, for example, wireless technology was concerned with data communication. Today it is used everywhere, from cars to consumer appliances."

ITEA's vision is about spreading the use of digital software technology at home, in business, on the move, in services and in software creation itself. Its first technology roadmap on software-intensive systems was published in 2001 following a two-year exploration of how Europe should respond to its two key challenges: enormous growth in the complexity of software and

Tomorrow's consumers will have the benefit of compatible systems and brands that respond intelligently to their moods and desires.

Photographs courtesy of Philips Research.

ITEA 0003 AMBIENCE
Creating intelligent environments

Winner of ITEA's 2003 Achievement Award (see page3), project AMBIENCE has made significant advances towards one of the IT industry's most far-sighted and far-reaching goals: the creation of user-sensitive environments that respond intelligently to speech, habits, gestures and emotions. AMBIENCE has already demonstrated concepts for 'ambient intelligent' products and networks and is investigating architectures, methods and tools to further their development. "AMBIENCE is at the far end of ITEA's roadmap, looking at what applications are really going to appeal to people and learning how to integrate many different technologies into real systems," says Evert van Loenen of lead partner Philips.

ITEA 00002 HOMENET2RUN
Home connections

ITEA's vision of a networked world in which consumers have greater freedom to access information, communication and entertainment services moves one step closer with HOMENET2RUN. The project has built technological bridges between wired and wireless networks, turning the concept of the interconnected home into reality. It also improves and extends European standards to shape, and benefit from future global developments.
"HOMENET2RUN is taking ITEA's vision to the next level by 'gluing' together PC and audio-visual clusters in a way that will mean consumers can buy different brands without worrying that they will end up with an incompatible network," explains project leader Frank Van Tuijl.

embedded systems and the ever-widening R&D funding gap between Europe, the US and Japan. "Europe must exploit its strengths rather than try to compete with established US leaders like Microsoft and IBM," says van Mourik.

Now half-way through its eight-year programme, and with 49 projects to its credit, the cluster is succeeding in its mission to 'leapfrog' the gap in software-intensive systems and prepare standards suitable for global adoption. Next April sees the publication of the second technology roadmap. "A roadmap is a living document which must respond to change: in the last two years there have been many developments and we must adapt to and reflect these," says van Mourik. ITEA has also been working closely with the microelectronics cluster MEDEA+ to ensure their respective soft- and hardware visions are compatible. "We need to know what microchip capabilities to base our plans on. Everything can change very quickly and if, for example, the amount of memory available in two years' time is going to be half what we expect this will affect our developments."

Focusing on the end-user

MEDEA+ has been successful in stimulating Europe's leadership in chip technology and made regular use of roadmaps as a strategic tool. The programme has employed two parallel roadmaps in 2003: the EDA roadmap, which addresses the most challenging issues in electronic design automation, and the Applications Technology Roadmap, which was launched at the MEDEA+ Forum in November. The latter roadmap jumps ahead to 2012 to create a vision of what kind of applications and devices users would like to have then and works back to fill in the technologies needed to meet these requirements.

A technology roadmap's main benefit, according to Otto Laaff of MEDEA+, is "to provide information to make better technology investment decisions by identifying promising new technologies, technology gaps and ways to leverage R&D investments by industry and public authorities. It also reveals strengths and links within industry and governments and locates potential 'white spots' or roadblocks – technologies crucial to the development of future applications but which don't exist at present."

MEDEA+'s core roadmapping team identified four significant application environments: 'within reach' – everything that relates to a person; 'stationary' – fixed devices in the home or workplace; 'on the move' – technologies optimising mobility, mainly automotive, and 'common infrastructure' – the backbone supporting these ▶

New cluster CELTIC fills the telecoms gap

Telecommunications is battling both a business downturn and a pace of development which could exceed investment capacity, prompting the initiation of a new strategic initiative. Co-operation for Sustained European Leadership in Telecommunications (CELTIC) was endorsed by EUREKA members at the Poitiers meeting in October. Eighteen countries are currently interested in participating.

"There are a number of existing telecoms R&D programmes in Europe, but these tend to focus on the medium- to long-term," explains CELTIC's Jacques Magen. "Meanwhile, the current difficult business climate means that R&D efforts within major companies are reduced to looking solely at the next six to 12 months. CELTIC will allow us to fill the gap and look at techniques, systems and services for two years' hence."

If CELTIC can enable Europe to rise to the tremendous technological and commercial challenges of the new digital age – the convergence of telephones, televisions and home computers and the development of business models and services that work equally well for companies and their customers – the associated economic benefits will come to Europe.

MEDEA+ A404 SSAE
In-car sophistication

Europe needs to play on its strengths and add value for vehicle manufacturers through microelectronics-enabled systems for intelligent navigation, interactive communication and many other options. Project A404 SSAE (Silicon Systems for Automotive Electronics) is fast-tracking the development of smart chipsets to deliver this novel functionality. "There was a clear need for a clever, globally-applicable answer to how best to enable in-car networking," says MEDEA+ Director Gerard Matheron. "Our automotive industry roadmap is all about such low cost, high volume system-on-chip solutions; these will create extra opportunities for Europe to strengthen its position in an important domain."

EURIMUS SIODIL
Making its mark

Using the latest laser diodes, SIODIL has successfully prototyped a novel product-marking system, small enough to integrate into a production line, for the food and beverage, automotive and packing industries. "Testing and refining the design has helped us reduce the per unit cost of the equipment," says Luis Arruga, technical manager of Spanish lead partner, MACSA ID SA. "The innovative aspects of the microsystem will improve the performance and quality of the product and allow us to compete with the newest technology on the market."

PIDEA ALMA
Connecting to worldwide markets

New and improved ways of connecting components through circuit boards and cables will enable Europe's electronics industries to optimise their potential. Project ALMA's low-cost microelectronic module for frequency switching between different networks has a potentially huge market among the world's mobile phone providers. "ALMA is a good example of how PIDEA is achieving progress in terms of the cost and performance of products, and gaining access to high volume markets, by developing and using advanced I&P technologies," says Franz Bechtold of PIDEA.

application environments. "Priorities have been developed for each one, and more than 300 enabling technologies and technological challenges have been identified as the basis for future applications," reports Laaff. "The next stage will be to pursue joint technology initiatives, preferably in pre-competitive trials – a second phase of the MEDEA+ programme would be ideal for this."

Targeting high volume markets

Focusing on development of industrial microsystems, EURIMUS II constantly monitors the changing economic and technological landscape to ensure its vision of the market and of its roadmap responds to new opportunities.

"At this stage EURIMUS II has established its strategy with the work done by NEXUS [the European thematic network for micro- and nanotechnologies funded by the EU's IST initiative] on both market analysis and the product technology roadmap," says Chairman Gaëtan Menozzi. "NEXUS issued a market analysis in 2001, the evolution of product volumes, cost and turnover and a roadmap in September 2003. This looks at system evolution in different applications, sub-systems and MEMS-based components. The roadmap targets existing applications in potentially high-volume markets such as biomedicine, in-vitro diagnosis, telecommunications with radio frequency MEMS and optical coms."

"Europe must exploit its strengths rather than try to compete with established US leaders."
Kees van Mourik, ITEA

The roadmap, however, goes in two directions. In one lies the development and deployment of ever-smaller, smarter, cheaper microsensors across industry; in the other, the creation of integrated microsystems combining microsensors with microtechnologies. Regardless of which direction one takes, the route to profitability lies, according to Menozzi, in focusing on applications rather than the technologies themselves. "Unlike the US, we get close to the market through extensive analysis of product evolution, looking at what products and systems could exploit microsystems and identifying killer applications."

Keeping the future flexible

The roadmap devised by PIDEA (Packaging and Interconnection Developments for European Applications) reflects what is required of the industry – comprising a collection of small companies – by its larger customers. "Over 80% of interconnection and packaging (I&P) is sub-contracted business, so we have to be aware of what is needed by our customers tomorrow and the day after," says PIDEA's Franz Bechtold.

PIDEA's first phase has seen 34 projects bring new products and technologies to the market. The programme, which has been extended, has varied its vision for the future. Prompted by a market downturn in telecommunications, PIDEA extended the scope of its work to other domains such as automotive, medical and security. "The challenge we face is to restructure European I&P technology," says Bechtold. "We are also working out how to add value through use of state-of-the-art technologies."

E! 3187 CELTIC (2004-2009)

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E! 3190 EURIMUS II (2004-2008)

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• EURIMUS SIODIL (1999-2001)
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E! 2023 ITEA (1999-2007)

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• ITEA 00002 HOMENET2RUN (2001-2003)
Total cost: 33 m€
Countries involved: NL, BE, DE, FR, IT
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• ITEA 00003 AMBIENCE (2001-2003)
Countries involved: BE, FI, FR, GB, GR, IT, NL
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E! 2365 MEDEA+ (2001-2009)

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• MEDEA A404 SSAE (2001-2004)
Countries involved: BE, FR, DE, IT
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E! 1888 PIDEA (1998-2004)

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• PIDEA ALMA (1999-2002)
Total cost: 14 m €
Countries involved: FR, DE, IT
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Second phase of EURIMUS announced

EURIMUS II received the green light at October's High Level Group meeting in Poitiers. Capitalising on the success of predecessor EURIMUS, the new five-year programme has a budget of 500 m€. It will focus its efforts on two specific types and sizes of projects: developing generic MEMS products with an average project size of 5 m€ and large projects, ranging in value from 20-50 m€, focusing on MEMS-based systems and enabling technologies.

"Recent years have seen Europe develop a strong position in domains such as aeronautics, defence and automotive – we must consolidate this position," says Chairman Gaëtan Menozzi. "We should also address promising high-volume markets such as IT peripherals, biomedical and telecoms in which we have until now played a minor role."