

BRINGING EUROPEAN INNOVATION TO A WORLD MARKET



The environmental challenge for technology

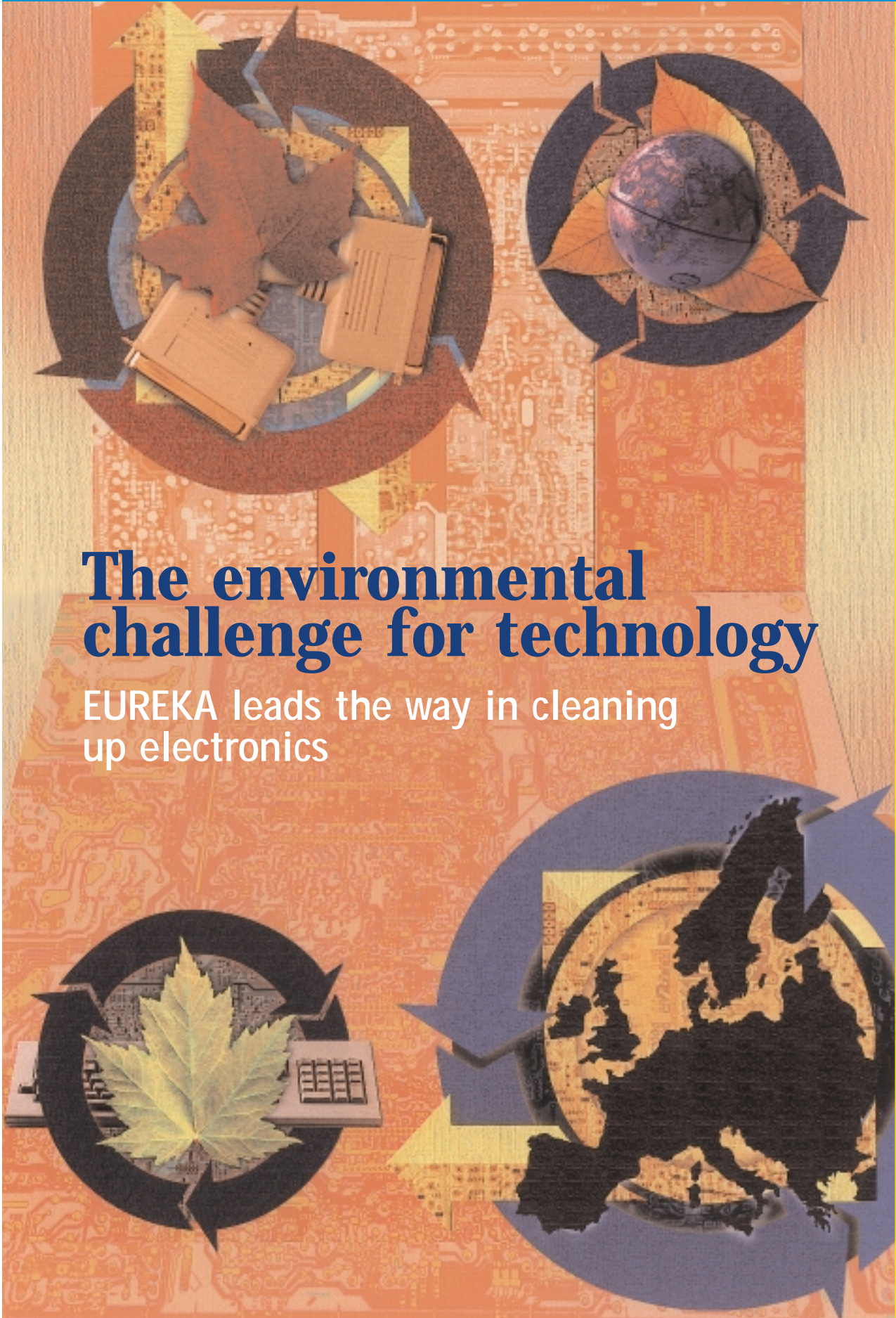
EUREKA leads the way in cleaning up electronics

EUREKA NEWS

49

October 2000

European Innovation Area, *p 2*
Detecting forgeries, *p 6*



Complementing the Research Area with innovation

New German website

The German EUREKA Office has recently relaunched its website, with the content reorganised and new services, such as downloadable documents, available for users. In addition, the whole site is now also available in English. See: <http://www.dlr.de/EUREKA/>

EUREKA wants to see a European Innovation Area in partnership with the European Research Area (ERA) proposed by the European Commission in January this year. With the Commission's proposals receiving wide-ranging support across Europe, EUREKA suggests establishing a complementary initiative to ensure that the results of European research derive maximum benefit for the European economy.

In a formal response to the Commission's communication, Heikki Kotilainen, Head of the EUREKA Secretariat, welcomes the Research Area proposals and underlines how EUREKA's own proposal would complement the ERA. According to Kotilainen, EUREKA has a unique network across Europe and an understanding of innovation through its decentralised approach and direct contacts with industry.

Among the ideas put forward for a European Innovation Area are:

- Developing closer links between the EUREKA

network and the EU's network of Innovation Relay Centres, in order to help small companies work on collaborative projects;

- Improving the links between industry and universities, so as to identify innovative potential in European universities and provide support to keep it in Europe;
- Enhancing local initiatives and links, and motivating policy-makers at local level, since it is at local level that creativity and initiative can play the key role in driving innovation.

In the discussions on the ERA throughout this year, EUREKA has consistently supported the proposals, seeing itself as a gateway to the ERA for industry, small and large. With these new proposals emphasising innovation, EUREKA hopes to consolidate this position, and Kotilainen is looking forward to a fruitful dialogue with the Commission. ■

EUROTOURISM – new technologies for tourism

Tourism is one of the most important economic activities in the world, employing some 115 million people worldwide, and growing every year. Europe is currently the most visited region, accounting for nearly two-thirds of all tourist arrivals (currently almost 400 million per year). While the total number of tourist visits in Europe is expected to continue to grow strongly in coming years, Europe's share of the worldwide tourist market is falling. As the European market becomes less competitive on prices, it is vital that it positions itself as a high quality destination – for visitors from within and outside Europe.

Integrating new technologies into all areas of the European tourism industry will both help to develop and maintain consistently high quality, and help reduce costs. Furthermore, it can also assist in ensuring that the development of tourism is environmentally sustainable.

EUROTOURISM is a strategic action within EUREKA which aims to encourage the take-up of existing technologies within the tourism industry, and foster the development of new technologies which can benefit tourism specifically. EUROTOURISM, in partnership with the Spanish Chair of EUREKA, is organising a major brokerage event in Santander, Spain, from 23 to 25 November. This will bring together tourism and leisure organisations and technology providers, who will be able to discuss new and existing technologies in the field and consider possible business opportunities. The event will also see the existing virtual discussion groups (accessible on the Web – <http://www.eurotourism.org/>) meeting in thematic workshops to discuss specific themes. These cover the themes of sustainability; improving working processes; new products and services; Information Society applications; cultural heritage; and new business models and concepts. For further information, see right-hand column. ■

The Guggenheim in Bilbao, one of the latest generation tourist attractions



Measuring the results of EUREKA projects

European companies are world-leaders in the fast-developing digital communications industry, and many European standards have been adopted worldwide. EUREKA's flexible structures mean that it has supported much work in this field, with major projects totalling over €1,600 million in 15 years contributing to the development of digital television standards, for example. This is one of the fields examined in EUREKA's fifth Annual Impact Report, presented at the Hannover Ministerial Conference, demonstrating the high value of EUREKA participation to industry.

Another assessment of the value of EUREKA is shown in the fact that over half of participants cited the "prestige of the EUREKA label" as a reason for participation. With the great majority of EUREKA participants successfully developing new products or processes as a result of participating in a project, and over half achieving a positive commercial impact by the end of the project, the evaluation panel is clear that EUREKA is successfully helping companies in innovation. They also present a number of recommendations to develop the Initiative, in particular looking at ways in which EUREKA could develop a role in facilitating access to private funding.

To obtain a copy of the Annual Impact Report, please contact the EUREKA Secretariat: eureka.news@es.eureka.be



Developing EUREKA News

Regular readers will have noticed the changes in EUREKA News this year. We have introduced a new style and reorganised the content. Next year we intend to complete the change from a quarterly to a bi-monthly publication, bringing you more regular news on EUREKA activities. Inside this issue you will find a short questionnaire designed to find out what you think of the newsletter and how you would like to see it develop. We would be grateful if you could take the time to complete and fax back your questionnaire to us. As a little incentive, all the questionnaires returned will go into a draw and one lucky reader will win a bottle of champagne.



Shell plant producing hydrogen in Malaysia

Partnership for a better environment

European and American companies working in the environmental technologies field have the chance to meet their counterparts in Amsterdam on 29 and 30 November, at a US-European partnering event organised by the Dutch EUREKA Office. Some 75 companies from each continent are expected to attend, making it a great opportunity for organisations working at a high level in environmental technologies to discuss ideas and possible business opportunities. The organisers have set up an innovative Internet registration system (<http://www.et3m.net/>), and once registered, participants can access details of all participants on a password-protected website. Using this site they can also register interest in meeting with particular participants, setting up a schedule of meetings in advance of the event. One key workshop during the event is being organised by Royal Dutch/Shell who are considering a new initiative in sustainable hydrogen, and will be looking for other companies, and potential partners, active in this field. A second workshop is being organised by Unilever in the field of sustainable agriculture and foodchain management.

For further information, see right-hand column. ■

AGENDA

Telecom 2000 – exhibition and brokerage event

- 6-9 November 2000, Tel Aviv, Israel
- Udo Mannes
Israeli EUREKA Office
Tel. +972 3 511 81 11
Fax +972 3 517 76 55
udo@matimop.org.il
<http://www.matimop.org.il/telecom2000/>

IST 2000 – EU Information Society Technologies conference

- 6-8 November 2000, Nice Acropolis, France
- Christine Simeone
EUREKA Secretariat
Tel. +32 2 777 09 70
Fax +32 2 770 74 95
christine.simeone@es.eureka.be
<http://istevent.cec.eu.int/>

Moulds and dies for the new century (brokerage event)

- 21-22 November 2000, Marinha Grande, Portugal
- Rui Tocha
CENTIMFE
Tel. +351 244 545 600
Fax +351 244 545 601
rtocha@centimfe.com
<http://www.centimfe.com/be/default.htm>

EUROTOURISM 2000 – brokerage event on tourism and leisure technologies

- 23-25 November 2000, Santander, Spain
- Emilio Iglesias
Spanish EUREKA Office
Tel. +34 91 581 56 07
Fax +34 91 581 55 86
eurotourism@cdti.es
<http://www.eurotourism.org/>

US-Europe partnering event on environmental technologies

- 29-30 November 2000, Amsterdam, the Netherlands
- Gaby Offermans
Dutch EUREKA Office
Tel. +31 70 361 05 34
Fax +31 70 361 03 55
g.offerfans@senter.nl
<http://www.etm3.net/>

Brokerage event on sensor technology

- 3-5 December 2000, Helsingor, Denmark
- Kristian Johnsen
Danish EUREKA Office
Tel. +45 35 46 63 92
Fax +45 35 46 63 01
kjo@efs.dk
<http://www.sensortec.dk/>

Europartenariat – exhibition and brokerage event

- 3-5 December 2000, Palermo, Italy
- Christine Simeone
EUREKA Secretariat
Tel. +32 2 777 09 70
Fax +32 2 770 74 95
christine.simeone@es.eureka.be
<http://www.europartenariat.it/>

For the average consumer, the environmental damage resulting from the manufacture and disposal of their household electronic goods is too far removed from their experience to be of significant interest. The European Commission is now working on encouraging the integration of environmental best practice into fundamental levels of design and manufacture. And with a new Directive on the environmental management of waste from electrical and electronic equipment (WEEE) expected to come into law in the next year or two, CARE projects are playing a vital part in getting manufacturers up to speed.



As the European Union prepares new legislation that will mean a better deal for the environment throughout the life cycle of electronic equipment, EUREKA is once again ahead of the game – the umbrella project CARE has been aiming to do just that ever since its launch in 1993.

EUREKA cares for the environment

With Nokia, Motorola, IBM, Philips, Siemens, Sony and many other big electronics companies under the umbrella, CARE has achieved a critical mass that is expected to carry the project on beyond its scheduled finish date of 2004. Research institutes and small companies, covering all sectors from technology development, production, dismantling and re-use to waste collection and disposal, also have a big input, and the EUREKA format gives businesses of all sizes a unique opportunity to work out solutions to mutual problems. Furthermore, the projects involve participants from across Europe, ensuring that the Central and Eastern European countries will also benefit from their developments.

Dr Bernd Kopacek, managing director of the Austrian Society for Systems Engineering and Automation, lead partner of the umbrella, considers the lines of communication opened by CARE as the secret of the project's success. "Tens or hundreds of research organisations have an interest in take-back logistics and there was a duplication of research," he said. "The major achievement of CARE is networking. There is a much clearer picture of what has to be done, what has already been done and who can do what in the future."

CARE began as a single project in Germany and has snowballed as other countries recognised the importance of getting involved. "In 1993 there was much discussion about the WEEE directive in Germany, but not so much on a European Union level," said Kopacek. The original project had ten participants, but over the next 18 months over 100 more partners signed up and CARE was reformed as an umbrella in 1995 to oversee the large group split into smaller projects. With projects ranging in size from around €800,000 to over €3 million, CARE is the largest environmental research platform in electronics in the world, focused on closing the loop to make it possible, and even profitable, for companies to recover end-of-life electronics equipment for recycling or re-use.

A factory to take products to pieces

While some parts of printed circuit boards are fairly straightforward to recycle, one CARE project aims to save much more of the original component than drops of molten metal. The partners in E! 1592 are about to open a disassembly factory, where companies can come and get the most out of end-of-life products. "If

you break electronic waste down to its materials content you have to produce components out of materials, using a lot of energy," said Kopacek, also lead partner of this sub-project. "In this demonstration plant we can re-use components in the highest stage, which is much better." This might mean that a computer chip is re-used in anything from a camcorder to a television set. Kopacek expects the repair centres of large electronics manufacturers to be the disassembly plant's number one customers. "If a company prints circuit boards and the layout is wrong they have to scrap it, but with our technology they don't. We extract the components which they can mount on new circuit boards," he said. Another important market will be the electronic waste collected from large users such as banks and government. The disassembly factory will extract re-usable components and sell them to the large producers.

Ensuring components are worth re-using

At the moment only ten per cent of electronics waste is disassembled in the EU, and Kopacek hopes that the interface of E! 1592 with other CARE projects will boost this figure. Re-use will only increase if manufacturers know the component is reliable, and part of the work completed under another sub-project (E! 1689) gives that all-important guarantee. It has established some basic criteria for predicting the remaining lifetime of components, and with a guarantee that the part is not going to fail for a number of years the disassembly factory will be able to sell components for re-use at a higher price.

"The useful lifetime of integrated circuits is around 30 years, but they are usually discarded in a fraction of this time," said Mr Peter Jacob of the main partner, the Electrical Engineering Reliability Laboratory in Switzerland. E! 1689 found that the level of "leakage" current from low power circuits can be used to predict their remaining lifetime. One of the project's main achievements is to increase the re-use of components in so-called high-end electronics. Low-end goods, such as birthday cards that sing a greeting or toys that talk, have relied on re-used components to keep costs down, but today, re-used components are also found in video equipment or telephone answering machines.

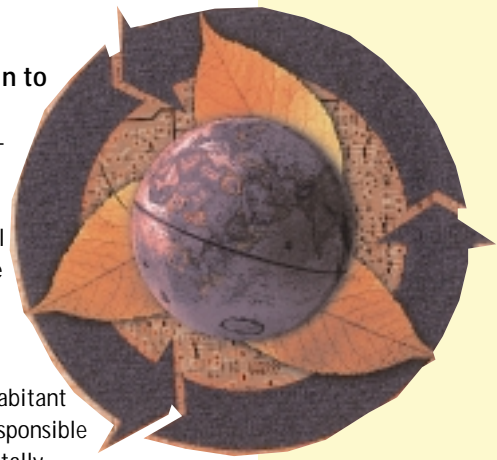


Reversing the supply chain to recycle

As well as facilitating more re-use, the collection of electronics waste from consumers will soon be a legal imperative for producers – the WEEE Directive will require EU Member States to recover at least four kilogrammes of electronic waste for every inhabitant every year. Industry will be responsible for collection and environmentally sound disposal. At the moment there are separate systems for distribution and disposal of products, and the completed CARE sub-project E! 1279 was designed to integrate the two. Closing the circle between producer and consumer in this way would have economic and ecological benefits as producers exploit new market opportunities, while recycling costs and traffic volumes go down.

Despite a consensus among industry that such integration would be beneficial, Franz Ruef of the main project partner Telesis Beratungs could not find the volunteers to get such systems up and running. "We made a feasibility study then worked out some pre-pilot systems. All participants said it would be very nice to have this information, but when we asked who could start a pilot project we went into the next long discussion," he said, adding that management costs and the companies' different interests had been problems. Although the project was not as successful as hoped, through EUREKA Ruef canvassed opinion and made contacts that have helped his company to secure funding for a new, related project.

EUREKA has helped Europe set the global pace in the field of eco-friendly electronics, and CARE gave interested parties a chance to talk with the rest of the world at the Electronics Goes Green 2000+ conference, which took place in mid-September. CARE projects were presented at the conference in Berlin, which compared the state of European research to that completed under ECODESIGN in Japan and ISEE in the US. The conference was a platform for the launch of the truly global projects that are necessary for effective environmental management. "Because our topic is a global one we have to act globally, because no producer will make a product just for Europe," concluded Kopacek. "Our goal is that in a few years time the environment is not a special topic any more – as quality was ten years ago and now quality is part of the normal game. We want to achieve this in the next five years for the environment." ■



E!1874 SUPERVISION AUTO
1997-98
total cost: €370,000
countries involved: NO, DK

The Super Vision Automatic machine



Counterfeit money has been in circulation all around the world for almost as long as the real thing. Financial institutions face a constant battle to filter out fake notes as the technology available to counterfeiting gangs becomes ever more sophisticated.

With the help of EUREKA funding, a partnership between a Norwegian and Danish company has given its customers – such as banks and money exchange agencies – the opportunity to stay one step ahead by quickly and efficiently detecting forged currency.

Arctic Heating AS of Norway is a company with experience in building machinery for handling paper while Bellcon I/S in Denmark has expertise in optical components and ultraviolet light technology. Together they have built an automatic device which examines the thickness, print colour and other characteristics of US dollar bills, easily the most common target for forgers worldwide.

As high quality modern photographic and printing equipment is readily available to forgers, it was a major technological challenge for

the two partners to detect reliably all the different types of fake dollars in circulation. "The development costs of the project far exceeded the original budget and without funding from EUREKA it would not have been possible to complete the work, or at best the final product would have been greatly delayed," said project leader Per Kristian Petterson of Arctic Heating.

However, the partners were able to demonstrate and launch their technology at a trade fair in March 2000. Since then 50 units have been sold and a further 100 are in production. The device can handle 300 banknotes a minute, separate out forgeries and be pre-set to deliver the required number of genuine notes.

"Although the Super Vision Automatic was developed for detecting and handling US dollar banknotes it can be adapted to deal with almost all currencies by relatively simple redesigns of the detector systems and without changing the basic structure of the machine," Mr Petterson explained. The two partners are currently working on a variant which will handle the new euro banknotes due to enter circulation in 2002.

Replacing batteries for good

E! 1542 AUTO QUARTZ WATCH
1996-1998
total cost: €4.2 million
countries involved: NL, CH,
DE

Time is running out for the tiny button batteries containing mercury oxide used to power quartz wrist watches and other small electrical devices. Concerns about the environmental effects of such highly toxic materials has led manufacturers of battery-powered products to search for clean alternative energy sources. With the help of EUREKA funding, a group of five companies have put themselves at the forefront of this movement.

The typical lifespan of a conventional battery-operated quartz watch is about 14 years while the button batteries used to power them will usually last no more than two years. So the owner of such a watch will not only use seven batteries before it has to be replaced, the casing also has to be opened several times allowing dust to enter its delicate mechanism.

Kinetron, the Dutch manufacturer of precision electromechanical products, had the answer as long ago as 1990 when it patented a microgenerator which would harness the kinetic energy produced during normal movement of the wrist to generate electrical energy. Unfortunately, the system relying on a 14-pole magnet, induction coil, spring coupling, capacitor and integrated circuit was sophisticated

and expensive – so it was only available for use in watches at the luxury end of the market.

But EUREKA funding, boosted by venture capital funding, allowed the company to carry out research into a low cost version which would be suitable for the mass market of watches in the €60 to €70 price range. Working with the largest supplier of watch movements in Europe, ETA SA of Grenchen, Switzerland and other partners in Switzerland and Germany, they were able within four years to tackle the formidable technical problems in mass producing and assembling the micro-generator.

The first product to incorporate the Autoquartz system was launched on the market by Swatch in 1999. Since then the device has also been used in watches produced by other well known brands such as Omega, Rado and Longines. Within five years the partners expect to be manufacturing around 20 million units a year. But it is not only the watch industry that it likely to benefit from this technology. Similar devices have applications in a wide range of useful products such as hearing aids and heart pacemakers.



A project for success

EUREKA – Europe's market-oriented R&D initiative

EUREKA can help anybody with ideas to develop new high technology products or systems, whether a small company, a large company or a research institute. Even individuals with good ideas are welcomed by EUREKA, which can help them to get their research moving. EUREKA has a network covering 29 countries in Europe, and more working in partnership, making it truly international. Designed to benefit European industry, EUREKA is a very flexible structure, which makes it so good at helping different types of organisations in many different situations.

How EUREKA can help you

EUREKA is best known for supporting research projects, but through its network across Europe, it also offers a wealth of advice and informal assistance to researchers and companies. If you are planning a research project, the EUREKA national office in your country (find it on the web at <http://www.eureka.be/>) is there to discuss your research ideas and advise you on possible ways to take them forward. And in contrast to commercial services which may charge you for advice, the EUREKA national offices are supported by public administrations, so not only are they close to research policy-making in each country, but they also offer these services free of charge.

Turning your ideas into reality

Once you're ready to transform your ideas into practical research or development, you may be able to get EUREKA support for your project. If you've already discussed the ideas with your national office, then they will be able to tell you at what stage to apply and give you an indication of whether your project is likely to attract funding. In many cases, EUREKA support includes funding, but since the funds come from the member countries, all funding decisions are made by individual countries, on the basis of their own rules.



Supporting that first step

Thanks to the network, the staff in your national office will be able to put you in contact with companies working in the same field in your own country and in other countries. They can help you find out what work has been done in your field and advise you on possible funding opportunities. Across Europe, EUREKA organises events regularly, covering many different technological fields. Here you can meet potential partners and discuss opportunities for cooperation or business arrangements. Or you can simply catch up on the latest developments in your field. EUREKA also attends events organised by other organisations, where you can meet a friendly face, able to advise you on the spot. Find out what events are coming up, on EUREKA's website: <http://www.eureka.be/>

Opening new horizons

A EUREKA project need only meet a set of simple criteria. It is open to any market-oriented developments and should involve at least two partners from at least two member countries, which are organisations independent of each other. Participants must also be able to demonstrate that the skills and knowledge brought by the partners are not readily available within the one country.

Networking for innovation

As a European collaborative initiative, this requirement for partners from different countries to work together is essential. But if you have good ideas but no partners EUREKA can help you find the right partners, rather than see your ideas lost through lack of support. As well as the brokerage and partnering events organised throughout Europe, EUREKA also maintains a database of organisations seeking partners for projects, in which you may be able to find an organisation in your field. You can access this database on the EUREKA website: <http://www.eureka.be/> These tools are backed up by the wealth of informal contacts within the EUREKA network, through which your national office can discuss your ideas with others and may discover potential partners.

It's also possible that there may already be a EUREKA project working in the same area as your idea. In this case, rather than duplicating efforts, it is easy to join the ongoing project. All you need is to agree with the existing partners how you can contribute to the work and join up.

BRINGING EUROPEAN INNOVATION TO A WORLD MARKET

Greenpeace on electronic waste



David Santillo

The European Union proposes to make companies in the sector take responsibility for reducing the environmental impact of waste from electrical and electronic equipment products. Companies must control or avoid the use of certain hazardous materials in their products and take back and recycle the product when its working life is over. EUREKA News talked to Dr David Santillo of the Greenpeace Research Laboratories at the University of Exeter, UK, on the implications of this legislation.

E! News: Why is this legislation important?

David Santillo: It reflects a huge change in attitudes by those responsible for environmental law. In the past legislation usually focused on pollution coming out of chimneys or waste water pipes during manufacture. Now it has been realised that products themselves can have an equally important impact on the environment when they are being used and when disposed of after use. It is estimated that our bodies contain residues of between 300 and 500 industrial chemicals many of which did not exist 100 years ago. Less than 25% of those residues are the result of pollution during manufacture, so a substantial proportion of the contaminant burden we carry undoubtedly results from exposure to chemicals released from products during or after use. Legislation such as that proposed for electronic goods will begin to address the link between chemical manufacture, use in products and public exposure.

E! News: What are the main pollution problems associated with the electronics industry?

DS: As with other industrial sectors, the sources and fates of pollutants are diverse and complex. Particular concern has been raised over the halogenated flame retardants, especially the polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs). These are added to plastic casings to prevent fires in televisions, computers etc. when they overheat or short circuit. Heavy metals are also used extensively by companies in the industry. Lead is used in solder, cadmium is a component of batteries and mercury is used in lighting equipment. All of these share the characteristics of the most important industrial pollutants – they are highly toxic, they degrade slowly (if at all) in the environment and they tend to accumulate in the tissues of living organisms.

E! News: Are these pollutants also released by other industries?

DS: Yes, this is certainly not a problem that is exclusive to the electronics industry – they are all used widely by companies in other sectors, such as cosmetics or furnishings. International organisations and governments, particularly in the Nordic countries, are putting pressure on companies to cut down the amounts of these extremely harmful substances getting into the environment or to replace them with non-hazardous alternatives.

E! News: How do these pollutants get into the environment – and where do they go?

DS: Compounds like PBBs and PBDEs are not completely bound up in the materials to which they are added. Small, but significant, amounts will become vaporised as the equipment heats up or as the materials degrade over time. These residues may be breathed in directly or become attached to dust which gets onto our food. As these compounds are not readily destroyed in the environment they can become distributed very widely through the environment and build up in the food chain. Researchers at the Dutch Oceanographic Institute recently reported finding residues of brominated flame retardants in the fat of sperm whales. It is an indication of how far the contamination can spread if it reaches animals that feed almost exclusively in the ocean depths.

E! News: Whose responsibility is it to develop alternatives?

DS: In many cases there are existing alternatives although these are often more expensive at present. Another possibility is to redesign equipment to prevent the risk of fires occurring. All companies which are using toxic materials should be looking not simply to reduce the amounts they need but to find alternatives. One of the problems in the past has been a responsibility gap between the chemical companies that actually make these materials and the industries that use them in their products. There will be increasing pressure to bridge that gap, not only as a result of stricter regulations but also because the general public is increasingly concerned about the effects of these compounds.

E! News: So this legislation will provide opportunities as well as challenges for industry?

DS: Yes, there are undoubtedly companies with the expertise and resources to come up with acceptable solutions – although these may not necessarily be the market leaders in the electronics industry at the moment. European governments have taken the initiative in attempting to reduce the environmental problems caused by these compounds. European companies can also take the lead in developing new products which do not contain hazardous materials. There is little doubt that there will be increasing consumer demand for goods designed to have minimal adverse impacts on our environment.

ILLUSTRATION: PHILIP DISLEY

EUREKA is a European network for market-oriented R&D. Its aim is to strengthen European competitiveness by promoting market-driven collaborative research and technological development. The EUREKA initiative enables industry and

research institutes from 29 member countries and the European Union to collaborate in a bottom-up approach in developing and exploiting innovative technologies.

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