

# Innovation & Technology Transfer

2/01

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Innovation

in Six Accession Countries

## Eastern promise

### Plus

- Enterprise policy tackles the business environment
- Statistics on innovation and enterprise creation
- Technology transfer spawns new quality control body
- Innovation Relay Centres find a wider role in the regions

... and more



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# Innovation & Technology Transfer



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## Innovation – Climate Change?

A climate conducive to innovative activity has economic, social and institutional dimensions. Firms are more inclined to innovate when profits are rising and sales growth is in prospect; innovation is easier when business and investment communities are willing to bear and manage risk; and the interactions on which innovation depends can flourish freely only when systems and structures to link potential partners are in place.

A fourth dimension is equally critical, but has sometimes been overlooked – that is, the framework conditions which support or discourage entrepreneurship, risk-taking, and collaboration. These conditions are embodied in legislation, regulatory and tax regimes, and professional and institutional codes of practice which have usually been designed without consideration for their impacts on innovation. They nevertheless affect profoundly both the investment decisions of companies and the career choices of individuals. If the framework conditions are wrong, many companies never explore new technological opportunities, and many potential entrepreneurs never leave their jobs in research institutes or large firms.

The BEST initiative (see page 3) is tackling head-on the issue of the framework conditions for business, and for technology-oriented SMEs in particular, in the European Union. Improving these conditions is now a cornerstone of EU enterprise policy. Meanwhile, in the 13 accession countries, six of which are examined in this edition's dossier article, it is also becoming clear that measures to stimulate and support innovative activity must be accompanied by co-ordinated efforts to improve the framework conditions for business.

## Erratum

The December 2000 edition of ITT contained an article entitled 'Microwave Winner', in the Innovation/SMEs Programme section. The last sentence of this article should have read "... by providing the knowledge to develop the world's first microwave drying technology of this kind."

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# The BEST is Yet to Come



*In 1998, BEST (the Business Environment Simplification Taskforce) made 64 recommendations on improving conditions for business, especially SMEs. Reports released at the end of 2000 assess progress. EU competitiveness is improving, they say, but not nearly so fast as in the US.*

**T**he drive to make the EU the world's most competitive and dynamic knowledge-based economy within a decade, backed by European Union leaders at the Lisbon summit in March 2000<sup>(1)</sup>, promises to liberate small and medium-sized enterprises (SMEs) from the fetters of red tape. A recent package of reports on competitiveness from the European Commission encourage Member States to improve performance by learning from each other. Identifying, refining and applying the best policy ideas from across the EU will generate a much more supportive business environment, they say.

Some of the reports measure progress on the 64 BEST recommendations, which identified legislative and administrative problems restricting the development of SMEs. They covered means of improving entrepreneurs' access to finance, creating more favourable conditions for research and innovation, and upgrading public administrations, education and training, and conditions of employment and work. The Commission reacted with an action plan to promote entrepreneurship and competitiveness, which called for actions and regular progress reports in each of these areas.

## Innovation in the action plan

Access to long-term finance is one of the greatest problems for young or expanding companies.

European SMEs tend to rely on costly – and risky – short-term loans. The Commission's action plan promises support for seed capital funds investing in smaller innovative companies, and the creation of more networks of 'business angels' and other informal investors. High-growth companies spend 40% more on process innovation and new product and service development than low-growth ones. Patent protection is six times more expensive in Europe than in the US. The plan includes the creation of an affordable Community patent valid throughout the EU<sup>(2)</sup>, as well as help for companies to find appropriate finance for the exploitation of research results.

Ideas about innovation support have been progressively refined in recent years<sup>(3)</sup>. The Commission is now urging Mem-

ber States to benchmark national innovation policies and spread good practice. Priorities include lowering the administrative cost of doing business, and stepping up information exchange on sources of finance and best practice in technology transfer. Young, innovative companies should have easier access to Community research programmes and results. If the EU is to benefit from innovation, awareness of its economic and social importance must also be raised among governments, industry, academia and the public.

## Better, not the best

The Commission's paper 'Better, but not yet the best'<sup>(4)</sup>, which gives an overview of the reports' findings, notes that despite improvements in EU performance, the competitiveness gap with the US is still widening. In the last four

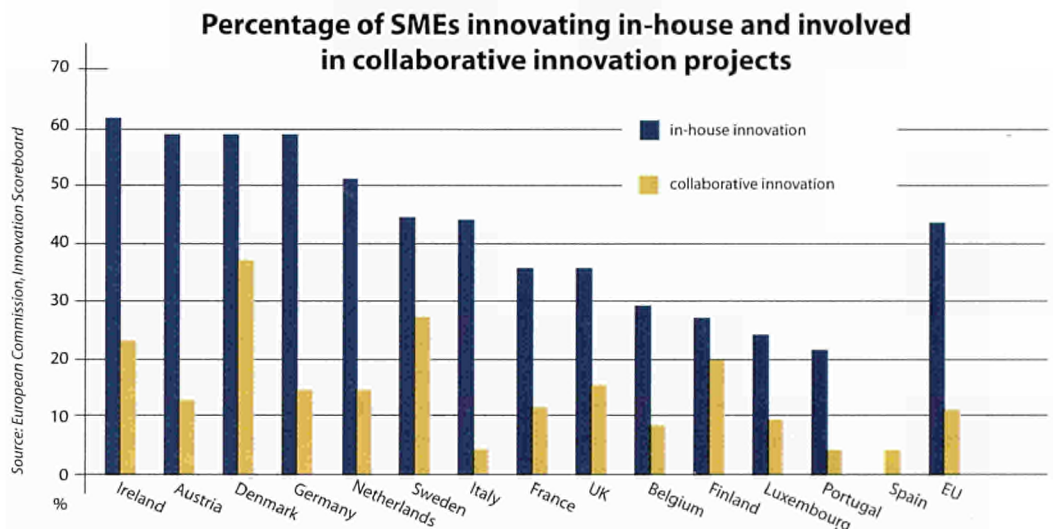
years, EU GDP per head grew by 2% per year, labour productivity by 1.3% and employment by 1%. In the US over the same period, GDP per head rose by 3.4%, labour productivity by 2.2% and employment by 1.9%. The main problem in the EU, says the Commission, is a lack of dynamism in business, industry and administrations, too much reluctance to invest in new technology, and too much delay. ●●●

(1) See 'Radical Response to a Quantum Shift', edition 4/00.

(2) See 'Single EU-wide Patent Within Reach', edition 6/00.

(3) COM(2000) 567 final. The full text of the Communication was published in the November special edition of Innovation & Technology Transfer. It can also be downloaded from <http://www.cordis.lu/innovation-smes/communication2000/home.html>

(4) 'Better, but not yet the best', SEC(2000)1942.

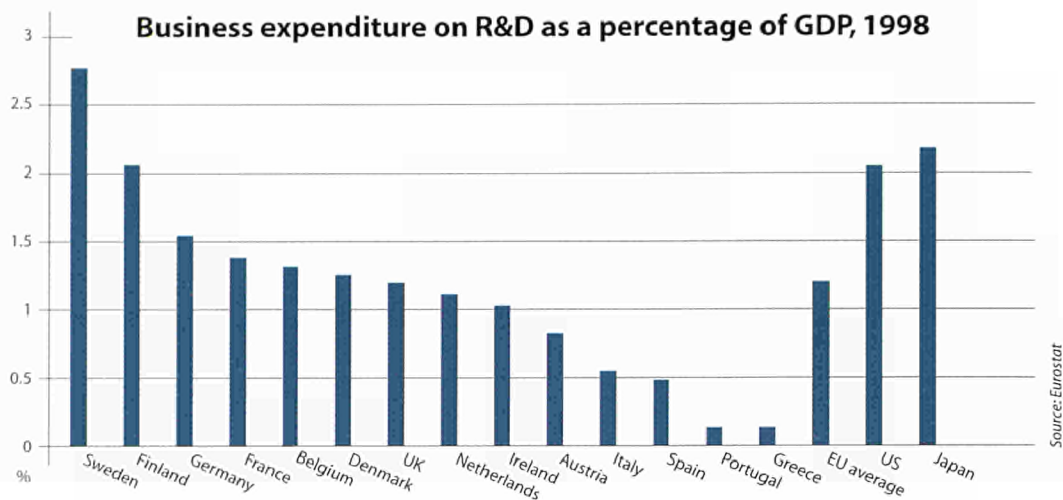




There is room for optimism, however, and the paper gives many examples of best practice. France leads in science and engineering education, Denmark has the least obstructive procedures for setting up businesses, Ireland is strong in high-tech exports and the UK leads in quality assurance. The Commission is now piloting studies to assess the business impact of legislation. It has already established priorities for 2001, with a focus on the take-up of new technologies and services – among them the 11 BEST projects (see box). A new Enterprise Policy Group, with high-level representatives of the Member States and the business community, will advise the Commission.

Also within the package of reports<sup>(5)</sup>, two scoreboards present indicators of Member States' performance. The innovation scoreboard<sup>(6)</sup> reveals significant differences in national strengths. Some of the smaller countries score above average on most indicators – the best performers are Sweden, Finland and Denmark, while Germany appears to

be the most innovative among the larger countries. But the Commission warns that if small economies are concentrated in a few highly innovative sectors, they may not hold as great a lead over larger, more diverse economies as the scoreboard suggests. The enterprise policy scoreboard is more general and includes indicators for entrepreneurship and access to markets, as well as innovation. Both scoreboards will be updated regularly.



## Competitiveness

The competitiveness report looks at EU business and industry performance, comparing it with that of the US and focusing on investment, patterns of ICT uptake, and growth in services and e-commerce. Much faster competitive improvement is needed to prevent the EU slipping further behind the US, it says.

The report on best practice activities gives a comprehensive view of EU competitive strengths and weaknesses. Areas already assessed include financing of innovation, licensing and permits for industry, especially SMEs, simplification of business registration procedures, and support for growing companies. New projects are currently under way in information society skills, the industry-science interface, administration of start-ups and business incubators.

A key measure for improving the business environment as a whole, especially for SMEs, is the Multiannual Programme for En-

terprise and Entrepreneurship 2001-2005<sup>(7)</sup>, one of whose key objectives is to facilitate SMEs' investment in new information technologies. Applying best practices, reducing the regulatory burden and supporting the uptake of new technologies throughout the EU should continuously enhance its overall competitiveness. ●

## The 11 BEST Projects

Projects in the following 11 areas are being undertaken in 2001 to enhance understanding and identify best practices. Their findings may be disseminated via BEST projects or Commission recommendations to Member States.

- developing business angel networks
- benchmarking the red tape involved in business start-ups
- refinement and benchmarking of business impact assessment
- improvement of legal, tax and administrative measures for business transfers
- evaluation of economic impact of conformity assessment
- promoting entrepreneurship among women
- improving education and training for entrepreneurship
- reducing skill shortage in ICT
- improving business support services – advice, information (for example, on the single market and public procurement)
- benchmarking the management of incubators
- benchmarking national policies in support of e-commerce

(5) *Benchmarking enterprise policy: First results from the scoreboard, SEC(2000)1841; European competitiveness report 2000, SEC(2000)1823; Report on the implementation of the action plan to promote entrepreneurship and competitiveness, Vols 1 and 2, SEC(2000)1825; Summary of results of best-practice-related activities in the field of enterprise policy, SEC(2000)1824.*

(6) See special edition of November 2000.

(7) See [http://www.europa.eu.int/comm/enterprise/enterprise\\_policy/multi\\_programme/overview.htm](http://www.europa.eu.int/comm/enterprise/enterprise_policy/multi_programme/overview.htm)

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# Good Times Around the Corner?



*Economic indicators suggest that conditions in Europe today are very similar to those in the USA five years ago. There, a long period of sustained growth was driven by information and communication technologies (ICTs). The same could now happen in Europe.*

Europe's economy is in good shape – and that's official. In its review of the economy in the year 2000<sup>(1)</sup>, the European Commission points out that, despite reversals due to factors such as the Asian financial crisis, growth in the EU has experienced a strong upturn in the last three years, reaching a peak of 3.5% in the first half of 2000. Employment is benefiting as a result – employment growth is expected to be around 1.25% over the next two years, implying the creation of around 4 million new jobs. The unemployment rate is expected to drop to 7% by the end of 2002, the lowest figure for 20 years.

Part of the reason for this robust performance is Europe's decreasing dependence on oil, due to such factors as the substitution of alternative energy sources and the shift in economic activity towards services rather than energy-intensive industries. This has insulated it somewhat from the effects of wildly fluctuating crude oil prices. And a culture of stability is emerging – expectations of low inflation are now entrenched, and are reflected in a reduced tendency to detrimental inflationary spirals.

## 'New economy' for a new century

Many economists are postulating a new model – the so-called 'new economy' – to explain Europe's new-found prosperity.

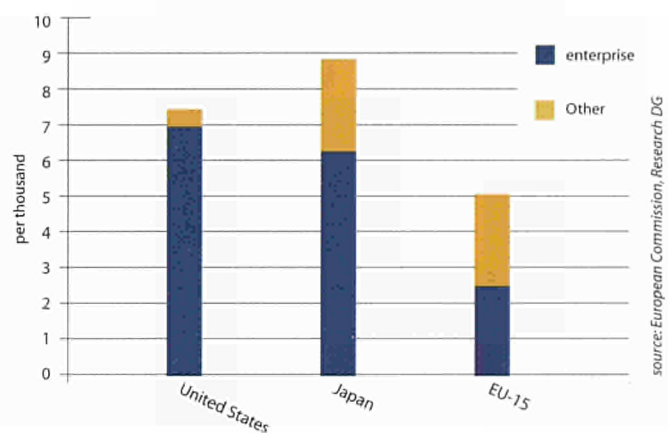
The definition of this new economy emerging from economic research is one of permanent increases in productivity, reduction in structural unemployment, low inflation, and more stable output growth. For them the scenario is strikingly similar to the conditions prevalent in the United States during the late 1990s, which were responsible for its phenomenal growth in that period.

So, is Europe entering an equivalent phase of economic expansion, and what other factors are at work? The jury is still out on whether we can match recent US growth performance. Some indicators suggest that Europe is lagging behind the USA by around five years, so we may just be entering a period of rapid growth – it is simply too early to tell. But many experts agree that if this does happen information and communication technologies (ICT) will be among the major factors of growth performance.

The increasing use of ICT by business and the public sector contributes to lower production and transaction costs and raises productivity. Evidence suggests that the production and use of ICT products and services accounts for around three-quarters of the growth in US GDP witnessed over the last five years.

It is clear that Europe is behind the USA in embracing ICT – in 1999, expenditures on ICT in Europe and the USA were 7% and 8% of GDP respectively. Expressed as expenditure per capita, this

Research scientists and engineers per 1,000 labour force



means that levels in Europe are just 60% of those in the USA. Figures for the EU's ICT sector point to a contribution of 0.5%-0.7% to output growth in the second half of the 1990s – similar to that in the USA before 1995, again pointing to a gap of around five years.

## Boom or gloom?

It therefore seems that Europe could be on the verge of a US-style boom. But does it have the technical and human resources to succeed, and is the business environment sufficiently supportive? Further, do the Commission and Member States have a role to play in encouraging RTD and innovation in the ICT sector? In the Research DG, ICT is considered a well-established industry.

Priorities are oriented towards promising long-term scientific and technological areas. ICT is among the high-tech and knowledge-intensive activities, so it is taken into account at the same level as other EU priorities. The fact that there is a Directorate-General specifically responsible for the information society shows that the Commission is conscious of the importance of this sector. Technical developments take place at breakneck speed, but firms are now able to organise their own RTD programmes. They do not need administrators to tell them what to do. ●●●

(1) *European Economy No 71. 2000 Review*, downloadable from [http://europa.eu.int/comm/economy\\_finance/document/review/2000reviewen.htm](http://europa.eu.int/comm/economy_finance/document/review/2000reviewen.htm)



*Increased use of alternative energy sources has helped to shield Europe from the worst effects of oil price volatility.*



But Europe may have a problem. Across the various high-tech sectors, there are fewer industrial research scientists and engineers (RSEs) in Europe than in either the USA or Japan – respectively, 2.5, 7 and 6.3 per thousand labour force (see figure)<sup>(2)</sup>. In the Research DG's view, the problem is not confined to ICT – most high-tech industries

are suffering. Member States recognise this and are trying to encourage more students to study technological subjects at university level. But there is no immediate 'supply and demand' solution. It takes between five and six years to train a researcher, so efforts today will only bear fruit in the medium term.

## Include me in

Europe is, of course, a very different place from the US, and there is no guarantee that a given set of economic circumstances will produce a similar result here.

European values are, historically, more inclusive than American ones. Europe may not choose to follow the US path, preferring to promote social cohesion by ensuring that the knowledge-based society is open to all. As Swedish Minister for Education and Research Thomas Östros stated in a recent interview<sup>(3)</sup>: "What drives employment is the

knowledge-based industry. Resources in research and education are the most important growth-stimulating instrument today. Education can create a flexible labour market and contribute to entrepreneurship." ●

*(2) Science Technology and Innovation, Key Figures 2000 (EUR 19396).  
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*(3) See <http://cordis.lu/rtd2002/news/news.htm>*

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e E U R O P E



# A Moving Target

*Commissioner Erkki Liikanen launched the eEurope initiative in December 1999. Its objective was to encourage European society as a whole to take the change to an electronic way of life seriously.*

Ministers adopted the e-Europe 2002 Action Plan in Feira last June, and at Nice in December the Commission reported back on success so far. The initiative seems to have come at the right time, because its call for urgent action has been taken up across the board, not just by the European Union and Member State governments, but also by private firms and third countries such as Norway:

- The revision of the telecommunications framework and the legal base needed to support e-commerce have been put on a fast track.

- Specific initiatives are under way – among other things, to standardise smart cards, create European internet content, increase internet use in education and bring into being the .eu domain name.

- A benchmarking process has started to allow Member States to compare progress and identify and emulate best practice.

But adaptation is a continuous process, and new targets have been set. Europe now needs to find a method of turning accepted best practice into implementable policy. It also needs more secure information sys-

tems, and to realise productivity gains it must give public support to research which will create commercial opportunities. The process must be extended into the accession countries (with a further initiative called eEurope+).

Finally, Europe needs more than ever to build a single electronic market for its SMEs – which means that Member States must quickly transpose the e-commerce and e-signature directives into national legislation. ●

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# The Risk Business

*Europe's entrepreneurs often have trouble finding sufficient risk capital to establish innovative, flexible start-up SMEs. The situation is slowly changing as European and Member State institutions try to improve the business environment and encourage risk capital investors.*

**I**t requires courage and drive for an entrepreneur to take an innovative idea from the laboratory and turn it into a commercial reality. In many cases, the road from concept to viable business is long and rocky. The rewards can be enormous – Bill Gates started Microsoft in one room. But there are also pitfalls. One of the major problems facing entrepreneurs is finding sufficient risk capital to establish a financially viable company.

Small and medium-sized enterprises (SMEs) are viewed as key to the future of Europe's economic growth, prosperity and job creation. But changes to the business and legislative environment are needed, if fledgling firms are to have access to the investment they need. Some of the news is encouraging. In 1999, the amount of cash invested in European start-ups by venture capital funds increased by 100% as against the previous year – but the increase in the United States in the same period was twice as great.

## Tax jungle

How can Europe improve its performance? Its cultural diversity – in other contexts a source of strength – presents a number of obstacles to the rapid expansion of an innovative start-up: the variation in national tax laws – in particular those covering tax on the capital gains from start-up investments, and the possibility of double taxation on dividends from companies active in more than one Member State; restrictions



on levels of investment by pension funds and other institutions; and the often crippling costs of EU-wide intellectual property protection.

There is light at the end of the tunnel, however. In a report<sup>(1)</sup> to the Parliament and the Council of Ministers on the implementation of the 1998 Risk Capital Action Plan, the Commission highlighted three key strategies which, in its opinion, Member State legislators should adopt to improve the risk capital investment environment:

- ease quantitative constraints on institutional investors, allowing more freedom of investment choice, while ensuring protection of the members and beneficiaries;
- soften bankruptcy laws to allow entrepreneurs a second chance, while safeguarding the interest of creditors;
- develop a more friendly fiscal framework for investors and entrepreneurs.

## Ringing the changes

"There is much to be done, but we are making progress," says Delphine Sallard of the Commission's Directorate-General for Economic and Financial Affairs. "Following adoption of the Risk Capital Action Plan, the Commission organised a high-level conference on this subject in November 1998. Since then, important measures have been taken at Community level, while we have seen Member States becoming much more aware of the need to improve the legal and fiscal frameworks. This is

rarely easy. Tax legislation, for example, is always politically sensitive, and takes time. But we are optimistic. There has been a definite change in attitudes to the risk investor, while the recent emergence of second and third stock markets for smaller firms is helping to provide an exit route at the end of the seed capital process, which is a significant motivation to investors."

*(1) Progress report on the risk capital action plan, COM (2000) 658 final, which is available at [http://europa.eu.int/comm/economy\\_finance/document/financialmrkt/rc\\_progress\\_en.htm](http://europa.eu.int/comm/economy_finance/document/financialmrkt/rc_progress_en.htm)*

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# Eastern

*The planned enlargement of the European Union is political opportunity, both for current Member States and for accession candidate countries. The priorities of the accession process are combating unemployment, budget deficits, market liberalisation, and harmonisation with the EU. It is also essential to strengthen the innovative capacity of the accession candidate countries if they are to participate fully in European prosperity and to offer a solution to the pressing problems*

**K**nowledge-based innovation will be the principal driver of industrial renewal and economic growth in Europe in the coming decades, and is now a central focus of enterprise policy in the Member States as well as at EU level. Progress towards accession has exposed the overmanned, outdated and bureaucratic state-run industries of the central and eastern European countries (CEECs) to entirely new competitive pressures. What part can innovation play in the necessary but painful adjustments being made by the CEECs

and the other applicant countries? What are their governments doing to foster innovation as a source of new competitiveness and employment, and to identify and remove the barriers which impede it?

In May 2000, the European Commission's Directorate-General for Enterprise commissioned a study to assess the current climate for innovation in six candidate countries – Cyprus, the Czech Republic, Estonia, Hungary, Poland and Slovenia<sup>(1)</sup>. "The Commission services attach a great deal of importance to this

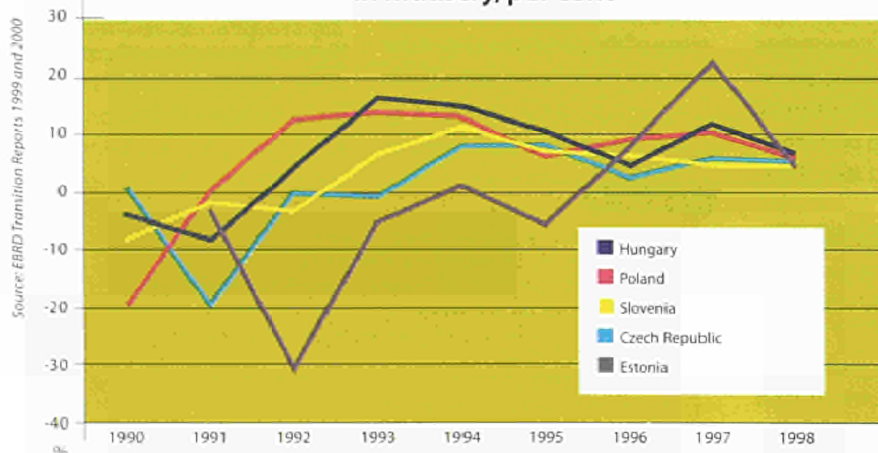
work," says José-Ramón Tíscar of the Innovation Policy Unit. "The final report, which will be available in September, will identify and analyse key issues in each country and outline a range of policy scenarios. We expect it to stimulate serious debate in these countries, and to give their policy-makers a powerful tool for assessing and specifying additional measures in this field."

(1) See also 'Stars Rising in the East', edition 4/00.

## 1. Innovation – and other Priorities

*Only slowly are human and financial resources being focused on innovation in the accession countries.*

**Figure 1: Changes in labour productivity in industry, per cent**



The Innovation Policy study is being carried out by a consortium of three organisations led by the Belgian consultancy Aide à la Décision Économique (ADE), with the support of a panel of expert representatives from each of the six countries, who come either from government or industry. Alasdair Reid, who heads the study team, is keen to stress the diversity of the situations in these countries. "It would be a big mistake to try and treat them as a homogenous group," he says. "The issues we highlight will be different in each case – it might be bankruptcy law in Slovenia, and intellectual property rights in Hungary, for example."

The five CEECs at least do face a number of broadly common problems, however. In the



# Promise

*an economic as well as a and for the 13 candidate of inflation and budget EU standards. But it will these fragile economies if the long term. It may even of industrial restructuring.*

early 1990s, privatisation and liberalisation (see 'Estonia Calling') created turmoil in their economies, from which all are now recovering. Inflation has stabilised below 10%, levels of unemployment are comparable to those in the EU, while economic output is growing at similar or higher rates – though from a very much lower base.

In all six countries the potential of innovation as a source of further growth is now beginning to be recognised. But innovation cannot be addressed independently of wider changes in the business and legal framework, which form the central features of the present environment both for innovation activity among enterprises, and for the formulation of innovation policy. The accession countries are still in the process of developing the institutional mechanisms of a liberalised market economy. As the November 2000 transition report of the European Bank for Regional Development (EBRD) points out, this framework is critical for the growth of a private business sector. "Bankruptcy laws and competition policy may seem a long way from innovation, but are in fact key determinants of the capacity to innovate," says Reid.

## Policy overload

Meanwhile, adoption of the EU's *acquis communautaire* is forcing public authorities to deal rapidly with a large number of legislative and policy changes, often without enough skilled staff to do so effectively. Innovation is not one of the chapters of the accession negotiations, so very limited resources have ●●●

## Innovation-related EU programmes for accession countries

**F**or the ten candidate countries of central and eastern Europe, the **Phare** programme is currently the main channel for financial and technical co-operation with the European Union. Phare offers assistance in the form of grants for projects addressing institution-building (support for national and regional administrations, and regulatory and supervisory bodies) and investment (to bring industries and infrastructures up to Community standards). Specifically, Phare includes support for:

1 **regional development** – funds are used to help attract the strategic investors needed for effective industrial restructuring through the financing of small-scale infrastructure, retraining, and credit schemes promoting investment in human and intellectual capital

2 **support for small and medium-sized enterprises (SMEs)** – the SME Facility, which operates on the basis of co-financing with the EIB, the EBRD, commercial sources, and financial institutions in the EU and the candidate countries, aims to provide equity, loans and guarantees for SMEs

In addition, all candidate countries may participate in a total of 30 **Community programmes**, on the same terms as Member States. As far as innovation is concerned, these include in particular the Fifth Research Framework Programme (including its Innovation and SMEs programme), and

the new Multiannual Programme on Enterprise and Entrepreneurship (2001-2005), which focuses on improving the business environment and will contribute to improving conditions for start-ups and SMEs.

In particular, the EU supports the Innovation Relay Centre network<sup>(1)</sup> with a full member in each of the candidate countries, whose regions will also join the Innovating Regions in Europe (IRE) network<sup>(2)</sup> in 2001. Thirty new regional innovation strategy (RIS-NAC) projects will be launched in the newly associated countries during the year.

(1) See this edition, page 21.

(2) See this edition, page 27.

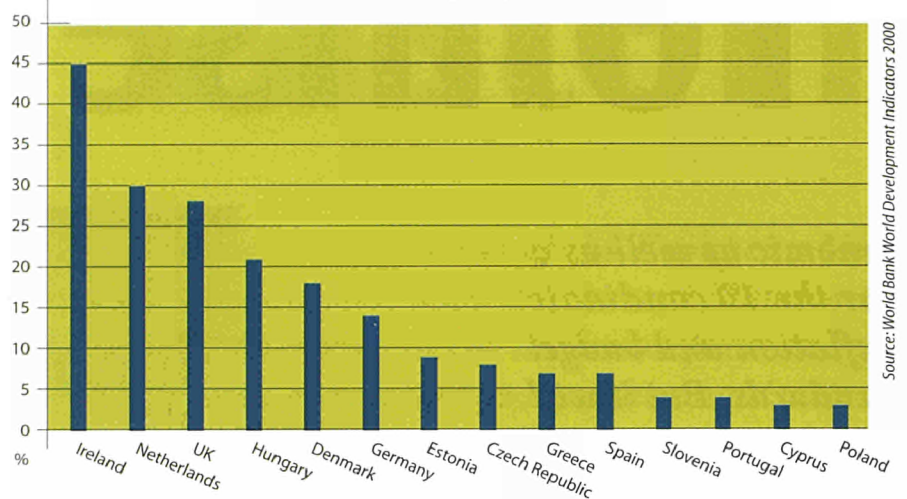
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been devoted to making or implementing policy in this area. In the CEECs, the EU's Phare programme (see 'Innovation-related EU programmes for accession countries') has promoted innovation as one of a range of business development issues, and has led to transfers of know-how from the Member States as well as providing financial support for new schemes. "But the legislative agenda tends to be driven by the social and employment consequences of restructuring," Reid explains. "It has been hard for decision-makers to focus on measures to support the creation of innovative start-up firms while many of their largest employers were going bankrupt."

**Figure 2: High-tech exports as a percentage of all manufacturing exports, 1998**



## CASE STUDY

# Estonia Calling

*One Estonian company's innovative approach to a previously disregarded market sector has won it a significant share of the country's mobile phone business.*

In central and eastern Europe, as in the European Union, the telecommunications industry is both an essential part of modern life and highly competitive. "Good telecommunications have been critical to the speed of our country's development since independence," says Toomas Peek (pictured above), chairman of cellular phone operator Q GSM (Tele2).

All network service providers share the same technical basis, the capabilities of the phones themselves being decided by the manufacturers. Since new developments quickly become standard features in this fast-moving industry, operators seldom gain lasting technological advantage over each other. For relatively late entrants like Q GSM, innovation is particularly important as a means of winning customers.

## Finding the market

"You cannot just copy another country," Peek explains. "You have to adapt to local economic circumstances." Looking to the example of Orange in the UK and with a marketing

manager with Danish telecom experience, Q GSM has done just this. It was the first Estonian operator to offer subsidised handsets and free minutes in their packages – both revolutionary approaches at the time.

With a low-cost entry level and the option of prepaid vouchers, Q GSM's locally innovative pricing strategy has helped cellular communication in Estonia on the same basis as in the rest of Europe. Four years ago, mobile phones were used almost exclusively by business. Today, the penetration of the cellular market is over 40% of the population.

Pricing is only part of the story. Q GSM recognised that extending mobile phone ownership to ordinary people required a very different approach to marketing. A comprehensive strategy developed brand awareness and enabled them to make rapid inroads into the embryonic mass market. Though the competition have also benefited from the expansion of consumer numbers, initial complacency allowed Q GSM to build up a strong brand image. In under four years it has become the second-equal largest national operator.

## Accession and the future

Deregulation and new laws have produced compatibility between local legislation and technical standards and those of external markets. At an international level, telecommunication must of necessity be co-operative, and Peek predicts even wider collaboration with European companies.

In Estonia as elsewhere, internet usage is an important aspect of the industry. Online banking is one sector tipped for significant expansion and this demands good access and connectivity. As a result, Peek sees wireless access protocol (WAP) cellular phones and their successors as another potential arena for the Tele2 approach.

His philosophy is not limited to his own country. Tele2 recently became the third operator of mobile phones in Lithuania, where the same methods are expected to prove just as successful. "An attractive product is important, but novel marketing approaches are also vital," Peek says. "You have to build a critical mass of customers for the business to be viable."

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## 2. Stars in the East – But How Many?

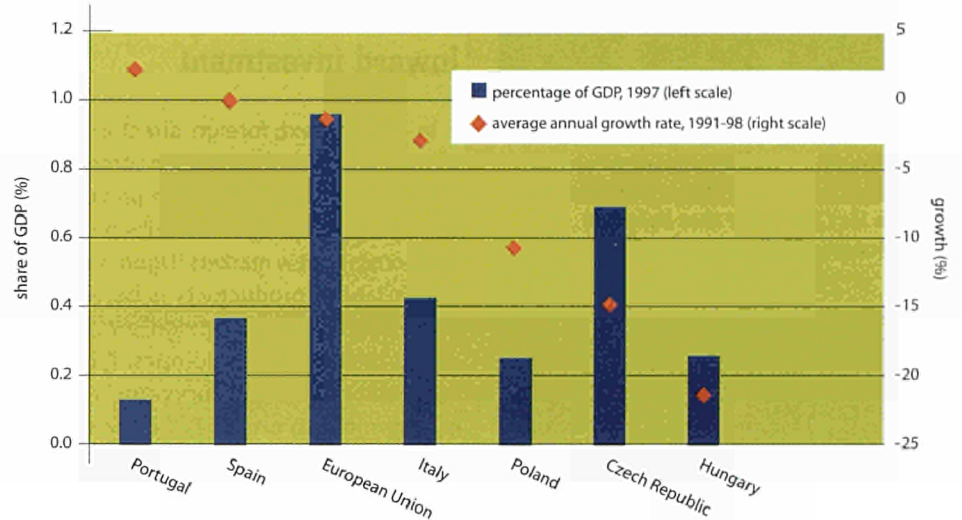
*Lack of reliable data on innovative activity among firms in the accession countries is a major obstacle to effective policy-making.*

"It is a bit of a black hole," admits Alasdair Reid. "Poland and Slovenia have carried out exercises similar to the Community Innovation Survey(2). These indicate that innovation is more concentrated in a small number of large firms than in the EU, but their results are incomplete and not fully comparable with CIS data." For Cyprus, the Czech Republic, Estonia and Hungary, macroeconomic statistics offer the only indicators of innovative activity. "We know from the EBRD transition report that economic growth in the central European and Baltic countries is being driven by the quite large numbers of individual entrepreneurs and new small companies which they now have. But of course, only a tiny proportion of these are high-tech innovators," Reid continues.

"Data on investment in R&D is generally not bad, but measurement of the economic outputs of research – for example, the proportion of turnover derived from sales of innovative products – is rather poor," adds José-Ramón Tíscar. "The active participation in the EU's Fifth Research Framework Programme of high-tech firms from central and eastern Europe is very welcome. But it is important not to be misled by this into thinking that the candidate countries have significant populations of innovative SMEs."

**Figure 3: Financing of R&D expenditure by enterprise**

Source: OECD Science, Technology and Industry Outlook 2000



### Shortage of capital

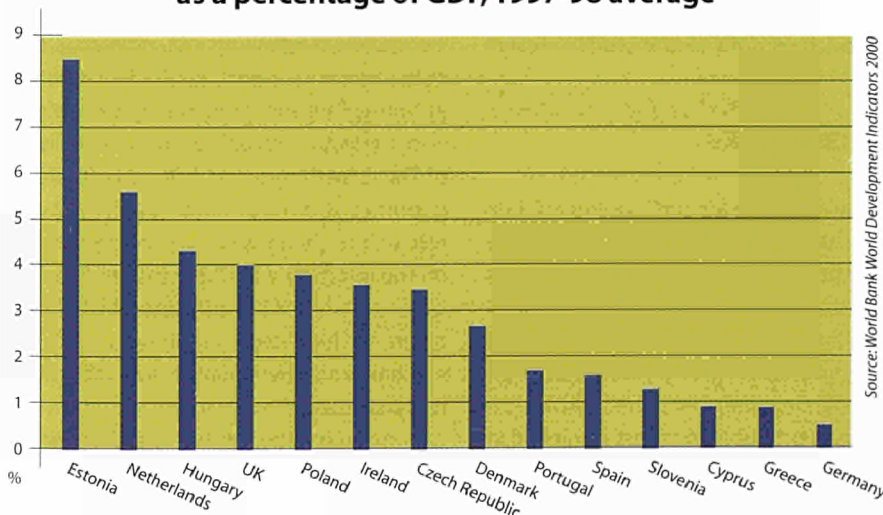
Analysis of the available data by Reid's partner Dr Slavo Radosevic of University College London shows that, after a period of 'transitional recession' during the initial phase of post-communist reforms, industrial labour productivity has grown rapidly in all five CEECs (Figure 1). It remains far below the EU average, however. Moreover, a slowdown in the rate of improvement since 1997 suggests that lay-offs and the closure of uncompetitive plants are unlikely to yield further gains. Investment in

modern technologies is therefore becoming increasingly vital as a source of competitiveness. CEEC exports, which grew very rapidly in the early 1990s, largely on the basis of inexpensive goods produced by labour intensive industries, now include a growing share of high-tech products (Figure 2).

However, both public and private sector investment in research and development in the CEECs saw a drastic reduction following the collapse of communism, and remain depressed. As a proportion of GDP, R&D expenditures in Slovenia and the Czech Republic are around 70% of the EU average. In Estonia, Poland and Hungary, levels are similar to those of Spain, Portugal and Greece, while Cyprus' R&D funding and academic and industrial research infrastructures are historically weak. Of particular concern is the low level of research spending by enterprises which during the 1990s fell far faster in the CEECs than in EU Member States (Figure 3).

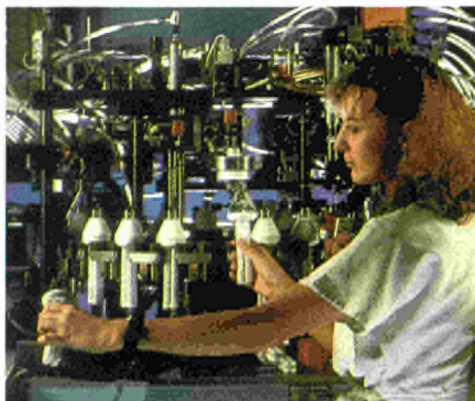
In its recent Communication *Innovation in a knowledge-driven economy*(3), the European Commission made clear that meeting the challenge of innovation is first and ●●●

**Figure 4: Inflows of Foreign Direct Investment (FDI) as a percentage of GDP, 1997-98 average**



(2) See 'A New Breed of European Entrepreneur', edition 2/00.

(3) COM(2000) 567 final. The full text of the Communication was published in the November special edition of *Innovation & Technology Transfer*. It can also be downloaded from <http://www.cordis.lu/innovation-smes/communication2000/home.html>



*GE Lighting operates eight plants in Hungary. Foreign investment is boosting productivity and technological know-how in the CEECs, but close links with domestic SMEs are essential.*

•••  
foremost the responsibility of enterprises, rather than of public authorities – and it is keen that the costs of industrial restructuring in the accession countries should be borne primarily by the private sector. But their financial sectors remain seriously underdeveloped. This poses a particular problem for innovation policy, since the availability of venture capital and liquid equity markets is a prerequisite for

self-sustaining innovative business activity. Bank lending rates are high. Venture capital investment is broadly equivalent as a share of GDP to that in the EU cohesion countries. But at €32 billion, the 1999 capitalisation of Poland's stock market – the most developed in these six countries – is only half that of Portugal's, which is the smallest in the EU.

### Inward investment

In this context, foreign direct investment (FDI) by EU, US or other foreign companies has been critical as a source of improvements in technologies, management skills, productivity and access to new markets (Figure 4). In all five CEECs, labour productivity is between 50% and 200% higher in foreign-owned enterprises than in domestic ones. Providing a sufficiently stable and supportive regulatory environment to attract FDI is a major challenge for innovation policy.

But the study's expert panel believes that a better understanding of the relationship between FDI and innovation – and in particular of its impact on the innovative behaviour of domestic SMEs – is also needed. If they are to avoid creating two-speed economies, policy-makers must maximise interactions between

foreign and domestic firms, nurturing spillovers of new technology and modern management practice, warns Radosevic.

In 1999, for example, Hungary introduced an 'Integrator' programme, which was designed to improve the competitiveness and innovative capacity of Hungarian SMEs by supporting networking and joint development between large firms and groups of potential suppliers. The multinational General Electric Lighting, which has eight plants in Hungary employing 11,000 staff and exporting 95% of their output, is an enthusiastic participant in the scheme. "For GE, the goal is to improve the quality of our local supply base," explains vice-president for technology development, Miklos Csapody. "However, the funding for innovation goes directly to the five SMEs we are working with, while GE helps to specify the projects and supports their implementation with advice and training."

## 3. Paper Thin

*If rhetoric about innovation is to be converted into action, industrial and research policy must be better co-ordinated.*

In the CEECs, responsibility for innovation is typically split across a number of ministries, although competence and resources have recently been concentrated in single agencies in both Estonia and Hungary. Only in Estonia, Hungary and Poland have the governments defined policies or strategies addressing innovation as a discrete policy area. In Cyprus it is dealt with as part of industrial policy, in Slovenia under the heading of technological development, and in the Czech Republic in terms of both industrial and research policy.

Even where government strategy papers on innovation do exist, they have often not been followed up with budgets and practical action to implement the planned schemes. The co-ordination of existing research and enterprise policies is critical, but CEEC governments have traditionally invested heavily in research and the research lobby remains powerful, while

coherent groupings promoting the interests of innovative enterprise have not yet been formed. "Policies are rarely built with an explicit concern for the real needs of business innovation," according to the study's expert panel.

### Revitalised links

Nevertheless, there are positive signs. All six countries have begun to establish science parks, technology centres and business incubators, and are starting to give attention to clustering and supply-chain networks effects as key components of regional innovation systems.

"Hungary is probably the most advanced in this respect," says Reid. "In Slovenia industrial R&D clusters are emerging around the two major cities. Poland is more diverse, due to its

much greater size – among a number of regional initiatives, Phare projects have encouraged the development of regional innovation support infrastructures." Estonia, meanwhile, is following a Scandinavian model of innovation support, taking Finland's Tekes as a blueprint, and is beginning to develop science parks, for example around the University of Tallin. With support from the Phare programme, the traditional Czech focus on research is giving way to a greater emphasis on the interface with industry (see 'On Firmer Ground'), while in Cyprus support is also being given to high-tech incubators and other mechanisms to encourage spin-off from the research base.

In Hungary, the relationship between the research base and industry is improving rapidly, according to Csapody. "Ten years ago, universities functioned more or less indepen-

dently of industry's real requirements," he says. "Today, companies are increasingly entering into contracts with universities to supply graduates with the skills and qualifications that they need." GE Hungary itself has a four-year contract with four universities to provide project-based scholarships for PhD students and fourth and fifth year undergraduates, who work with GE teams and undergo additional management and financial training. ●

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## CASE STUDY

# On Firmer Ground

*The Czech Republic has a long industrial history. Strong innovation and engineering traditions persist, but the reforms of the 90s left the country without a clear innovation policy – until now.*

"Innovation is the only way for our country to survive exposure to international competition," says Dr Karel Klusacek, Director of the Czech Academy of Sciences Technology Centre and President of the Czech Society for the Promotion of Technology Transfer. "Co-operation is essential if the wider European community is to compete globally, and we need to be an equal partner."

Innovation, engineering and export are strong Czech traditions, and all industrial companies once had significant in-house R&D capabilities. But not all of the previously state-owned Industrial Research Institutes were able to survive in the free market, and a number collapsed.

Although a slow recovery is taking place, Klusacek blames the combination of poorly planned privatisations and more urgent problems of public health, industrial restructuring and defence thinking for the present state of innovation policy.

## Impacts of accession

European Commission initiatives have already opened the way for co-operation on regional innovation strategy (RIS) between Member States and applicant countries. In addition to this, a national technology fore-

sight exercise began last year to define the priorities for research. "Such a study had never been performed here," Klusacek explains, "so in the past, too many teams and projects were competing for limited funding."

"Accession will exert a strong influence on future innovation policy," he continues. "We must be able to meet the new challenges of competition and seize the new opportunities of collaboration." As a member of the Innovation and SMEs programme committee, he recognises that European priorities may impose limits on Czech R&D activities, but believes that the benefits of a clear policy framework easily outweigh this constraint.

## Working with SMEs

The Technology Centre in Prague which Klusacek manages is self-financing. It is strongly committed to assisting small and medium-sized enterprises (SMEs) by facilitating co-operation and technology transfer, and he is determined to look outside the country to achieve this. Enertec 2000, for example, organised jointly with Austrian, German and Slovakian partners, brought together 50 energy sector SMEs for over 130 pre-arranged exploratory meetings.



*A meeting between a Czech energy sector company and potential German partners at Enertec 2000.*

Previous brokerage events have led to the joint development with German partners of new technologies for the textile industry, and co-operation with a Cypriot firm to exploit the fuel potential of petroleum waste sludge.

"SMEs can produce results fast, but they cannot afford to waste time. You have to offer something with a clear commercial benefit," Klusacek emphasises. "Being well prepared is the key."

He has practical experience of the way that the lack of a clear national innovation strategy can impede companies seeking to innovate, and welcomes the current effort via the RIS to produce one. "The future is looking brighter. An established policy framework gives you firm ground under your feet when approaching potential partners."

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# Figuring it Out

*Governments now see innovation as a key determinant of performance in more visible areas such as economic and employment policy. But what innovation is, and the factors that encourage it, are only now becoming clear.*



## The Innovation/ SMEs Programme In Brief

Part of the EU's Fifth Research Framework Programme, the 'Innovation and participation of SMEs' programme promotes innovation and encourages the participation of small and medium-sized enterprises (SMEs) in the framework programme. The Programme Director is Mr G.C. Grata (Innovation Directorate, Enterprise DG).

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*From left to right: Herbert Steinwender (UNICE), Theo Roelandt (Dutch Ministry of Economic Affairs), Keith Smith (STEP Group), Harald Sonnberger (Eurostat).*

**L**ast November, nearly 200 economists, statisticians and policy-makers from 25 countries gathered at the Sophia Antipolis science park near Nice to bridge the gap between theory and practice at the conference *Innovation and Enterprise Creation: Statistics and Indicators*, jointly organised by the European Commission's Directorate-General for Enterprise and its statistical service, Eurostat.

What really went on in Archimedes' head just before he jumped out of his bath? The more you look at it, the more wonderful and less explicable the process of innovation becomes. If we are to promote innovative thinking effectively, we must first understand it. Badly designed incentives can lead to massive waste of resources – if governments simply encourage researchers to spend more, they risk getting the expenditure without the intended results.

Our current understanding of what causes innovation is far from adequate. Perhaps this is unsurprising – it is a relatively recent arrival in the economist's lexicon, and as the Commission's

Jean-Noël Durvy remarked, the innovation industry does not have at its disposal the kind of resources that are spent on agricultural statistics. But what should we measure – and how?

Eight workshops examined different aspects of innovation measurement.<sup>(1)</sup> How to tackle the service sector? How innovative are traditional manufacturers? How to get a handle on inter-firm collaboration? What is the impact of outsourcing, employee involvement, financial incentives, technical standards and factory location? How to enable regional administrations to free up innovation potential? What can we learn from scoreboards?

### Old ideas of what's new

It was Professor Keith Smith of the Oslo-based STEP Group who set out the parameters. Our current data are all in one way or another flawed approximations. Neither high R&D spending, nor a high rate of scientific publications, leads automatically to innovation, and not all innovations are patented. Nor should we confuse

innovation with new technology. The more traditional sectors of the economy, such as food processing, spend little on research directly, but make use of complex knowledge inputs and are continuously innovating on a very large scale.

Ironically, the central problem is that the definition of innovation has not kept up with the times. The figures that everyone works with focus primarily on manufacturing industry, and omit what is now the greater part of our economies – the service sector. They look at new products rather than organisational change. We should not make the mistake of imagining that the world consists only of what we can measure.

Indicators, as Professor Lena Tspouri of Athens university said, need to be robust, feasible and relevant. They are robust if their value cannot be contested, feasible if the data are available at reasonable cost, and relevant if they bear a direct relationship to policy objectives. Finding indicators that meet these three conditions is not easy. "There is often a trade-off, and the choice of indicators is

*The conference venue –  
CICA, Sophia Antipolis.*



a political question," she said. "The technical tools are there – what is needed is to give the politicians the mandate to apply them."

But there are also more practical difficulties, including that of data incompatibility. The quality of the data improved markedly between the first Community Innovation Survey (CIS1) in 1993 and CIS2 in 1997, but is still far from ideal. Furthermore, data needs to be gathered more frequently than once every four years. And though researchers would dearly love to have access to low-level data, confidentiality considerations often prevent this.

### High-tech – no panacea for jobs

Deeper analysis seems to belie the common assertion that knowledge-intensive industries are the motors of growth. Figures quoted by Professor Smith show that between 1980 and 1995 in the United States the share of high-tech in manufacturing output grew from 10.5% to 15.8%. But what is often overlooked is that over the same period manufacturing itself shrank from 21.5% to 18.5% of the economy. The net growth in the high-tech sector is less than 1% of GDP. What is more, in 11 of 15 OECD countries surveyed, high-tech employment is actually falling. So to pin hopes of near-full employment on the high-tech industries would be a serious mistake. We have to look for innovation everywhere.

The medium-term intellectual

challenge is to identify the systems that support growth. What are the complex knowledge bases at firm, industry and economy levels? How does knowledge flow between industries? But time is short. Pragmatically, we must look at what works – survey what everyone is doing, and emulate the best we can find. This benchmarking technique was recommended by the Lisbon summit a year ago, and has already been put into practice in the form of the *European Innovation Scoreboard*<sup>(2)</sup>.

### Better decisions across the board

The importance of innovation must also be brought to the attention of new audiences, so that improved information is applied in practice to result in improved policy-making. Europe's business association UNICE has taken a welcome step not just in conducting a wide-ranging survey of innovation from the employer's perspective, but in marketing it energetically. Their third benchmarking report *Stimulating Creativity and Innovation in Europe* was launched at the high-profile European Business Summit in Brussels last June<sup>(3)</sup>. But the link between science and policy-making remains as tenuous as ever. There is still a lot of room for debate as to whether policy measures such as tax reductions will stimulate innovation.

If we are not to lose our way as we move into the knowledge-driven economy, we need mile-

stones by the roadside. Large regional aid budgets are at stake. Eurostat is working on new indicators such as 'employment in knowledge-intensive sectors', which are intended to complement the results of the forthcoming third Community Innovation Survey (CIS3). In parallel, UNICE intends to benchmark the 'new economy' this year. The job requires not just scientific precision but the imagination and courage to dare to measure the immeasurable. As Rémi Barré, Director of the Observatoire des Sciences et Techniques in France summed up: "Like biotechnologists, innovation theorists must learn to live with controversy – to realise that they are useful to society even though they know next to nothing." ●

(1) The papers presented are at <http://www.cordis.lu/innovation-smes/src/statconf5.htm>

(2) See the special edition of November 2000. Further information is also available at <http://www.cordis.lu/trendchart/>

(3) See 'Freedom with Responsibility', edition 5/00.

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# Institutional Framework for a New Technique

*A Danish method of eliminating dry rot in buildings has many advantages over traditional chemical controls and has been taken up with interest in Norway. As it leaves the fungus in place, total control must be guaranteed. The technology transfer has led to development of a Norwegian quality control system.*



*The rot sets in. Dry rot invades structural timber.*

**D**ecay in buildings due to attack from the dry rot fungus, *serpula lacrymans*, is common in Europe. It causes breakdown of timber and even spreads through brickwork and masonry behind plaster. The result is a serious loss of structural strength.

Traditionally, control has been by removal and replacement of the infested timber and brickwork, followed by chemical treatment of the remaining materials. Workers at the Danish Technological Institute, Taastrup have developed a much less invasive method of treatment, using heat to kill the fungal mycelium within the structures and leaving it in place. There is no need to replace wood and brickwork attacked by the fungus, unless it has become structurally unsafe. The heat treatment method is much quicker and cheaper, and avoids the destruction of often culturally important buildings.

The only problem with the heat treatment method is that it has to be totally effective, or it fails. If any of the fungal mycelium remains viable, it quickly spreads again and the infestation is soon as bad as before. Therefore a quality control system for the method was developed in Denmark, to ensure complete and effective eradication.

## Norwegian take-up

The primary aim of the Innovation project, Heatcon<sup>(1)</sup>, was to establish a model for the transfer of the Danish heat treatment method to Norway. Project coordinator Anne Pia Koch of the Danish Technological Institute says that one of the main reasons the Norwegians were so interested in the technology is that the Municipality of Oslo had a lot of important historic buildings in need of treatment. The Municipality had already adopted general policies for building renovation, which required that the methods and materials used should have minimal effect on the environment, so the heat treatment was ideal. "The Institute trained five Norwegian contractors to do the heat treatment and a building surveying company to do the project planning," says Koch.

However, working on the transfer of the heat treatment process to Norway revealed the absence of any form of quality control, so essential for this system. "We dis-

cussed this with the Norwegian partners and explained how important it was for them to back the technology with an effective quality control system," Koch recalls. "This would also help to raise awareness and improve the quality of work in treating decay in general."

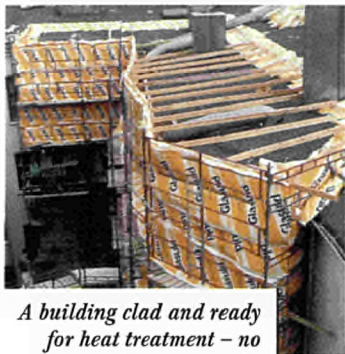
## Quality control body

With the advice of the Danish Technological Institute, a group of independent Norwegian heat contractors (KVH) has been set up to oversee the quality of heat treatment for dry rot control. They have established a quality control manual and ensured its compatibility with other regulations in Norway. They are in touch with the Danish quality control body to exchange information and experience. "However, we did not try to impose the Danish system, but to make them think about what they wanted in Norway," says Koch.

The KVH will also have the power to carry out inspections. If a heat treatment is found not to be of the required standard, it has to be done again at the contractor's expense. The next time such a contractor uses the method he might be subject to an independent check on his work. The ultimate sanction is to remove him from the group. This would not stop him using the heat treatment method, as the control is voluntary, but he could no longer claim compliance with the qual-

(1) Project IN1049 – Transfer of heat treatment technology as a means of controlling the dry rot fungus, *serpula lacrymans*, in buildings.





*A building clad and ready for heat treatment – no need to tear out the decayed timber.*

treatment method in Norway was the presence of a major customer in the negotiations. The Municipality of Oslo had already experienced the technique – brought in specifically to rescue a major renovation project which was almost finished when serious dry rot was discovered in the roof. Using heat treatment made it possible to complete the project without having to redo the work at massive cost. Introduction of the method was also supported by architects in control of the maintenance of major state and royal buildings.

The Danish Technological Institute believes that the heat treatment process has a strong future. Given its initial success in Norway, approaches have been made to some other countries including Germany. The main obstacles

seem to be conservatism, and the need to demonstrate real benefits over the traditional chemical method of treatment. However, the environmental and cost benefits of heat treatment should make it a popular alternative if its effectiveness can be guaranteed – which it can, now that quality controls are in place. ●

ity standard. Koch stresses the importance of proper marketing, so that when the owners of buildings choose the heat treatment from a contractor recognised by the quality control group, they know that they will benefit from the standard.

## Extending still further

One of the factors which helped in the uptake of the heat

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## FUEL SAFETY

# Keeping the Lid on Petrol

*A Swedish-led consortium has developed a new safety valve that dramatically reduces spillage from petrol pump dispensers. Proposed tightening of EU regulations would encourage extensive use of such valves, with significant benefits for the environment and health.*

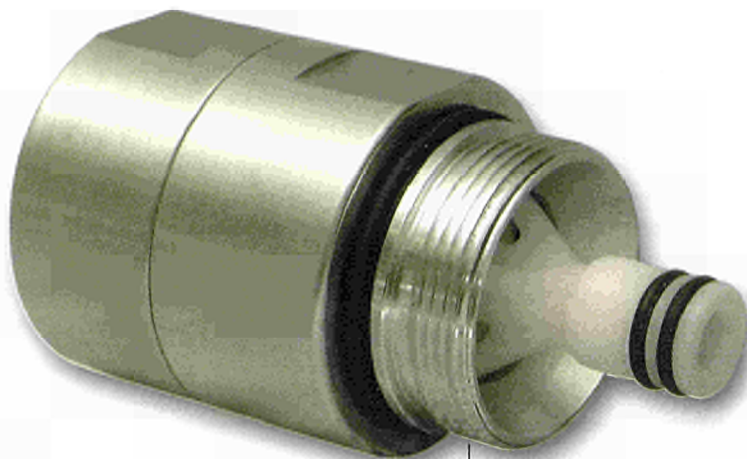
**A** new type of 'breakaway' safety valve, developed in a CRAFT project<sup>(1)</sup> as part of the Brite-Euram programme, is designed to stop the flow of petrol when a pump nozzle is forcibly removed from a vehicle's filler tube. This usually occurs by accident – when a driver is distracted – but it also happens in cases of drive-away petrol theft. Although the new valve only recently went into commercial production, it

has already found customers in several EU countries.

## High standards

The Swedish SME, Malte Persson & Son AB, had been making breakaway valves since 1992, but to be competitive it needed a more compact and more sophisticated unit that would meet proposed EU legislation limiting acceptable spillage from a ●●●





●●●  
sheared valve to just 10 millilitres. "There were also quite a few problems with the earlier valves. Corrosion from the additives in petrol could rapidly destroy the rubber seals and shorten their effective life," adds Malte Persson's Lars-Inge Andersson. "Taken together, these were tough requirements to meet."

The company assembled a team for the CRAFT project with partners from Denmark, the Netherlands, Sweden and the UK. There were three SME manufacturers, an SME contract research company (Utvecklingsbyrån Sverige Projekt) and a major producer of petrol pumps, as well as the Danish Institute for Product Development and Sweden's own National Testing and Research Institute.

The project was a big success. "We managed to develop new aluminium alloys and a highly conductive polyacetal plastic for special components in the new range of valves," says Andersson. The company's earlier models were 75 mm long, while its competitors were offering valves as small as 60 mm. "To be most effective they should be as short as possible," he continues. "The smallest of our new valves is only 40 mm long, and are the only commercially available ones that meet the proposed EU regulations. They don't damage the

pumps, and because there is so little spillage they save customers money as well as being good for the environment and the community."

### Testing and production

Malte Persson has been testing its new valves since 1998, and favourable results enabled the company to start production last November. "The tests were extremely positive. We found no faults," Andersson reports. "The valves worked just the way they were meant to. But we have to be sure that they will maintain their performance over the years, so our testing programme is continuing. I do not believe any break-away valve on the market has been as carefully tested as this one."

Since sales efforts have only just begun, it is too early to tell how successful the new valves will be. The current variation in regulations and petrol quality from country to country complicates matters. "We have eight different models in production," Andersson adds. "Prices range from €60 for the simplest to around €150 for the most elaborate. We have tried to sell to the major petrol pump companies, with some success. They have

*A CRAFT research project enabled Malte Persson and three other SMEs to perfect a break-away valve which will cut costs and increase safety at Europe's petrol pumps.*

installed small numbers across Europe, but are very cautious about new products – the valves they bought in the past corroded quickly. They like to do a lot of their own testing before committing themselves to large numbers of units. Still, I am confident we can convince them that ours will last for the minimum five years the industry expects."

A large share of future sales will come from service companies replacing broken valves. "When you have a 'drive-away', the valve is destroyed and you have to replace it," he says. Once the petrol pump companies fit our new valves as standard items on their dispensers, we will sell them

to the service companies too. We hope eventually to sell tens of thousands to the European after-market each year."

### Sprouting seeds

The seeds sown by this pan-European CRAFT co-operation are likely to bear further fruit in the future. "We definitely want to work with our partners again on future projects," says Andersson. "In fact, I recently recommended the Danish Institute for Product Development to a local Swedish SME looking for a design engineer – and I hear that this has also worked out well."

Malte Persson is now working with some of their original CRAFT partners on an entirely separate project involving vapour recovery from petrol dispensers. "We are collaborating with some of the same people because they have the necessary expertise," Andersson explains. "In some ways that first project helped us with this present one. We now have several other partners, but the experience of working with SMEs and research institutions in other countries is proving invaluable to our new team." ●

(1) Project BRST-CT98-5242 – Break away valves.

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<http://www.malte.se/>

# Light in the Darkness

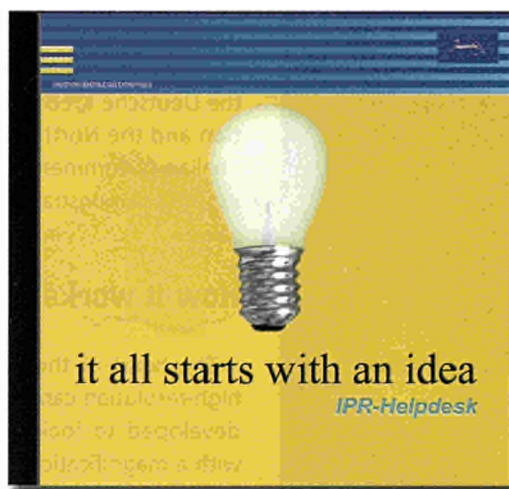
*Achieving a research contract that adequately protects each party's intellectual property rights (IPR) can be a lengthy and difficult process. Current legislation is complex, and new projects run the risk of infringing existing patents. A new support service is making contractors' lives much easier.*

**T**he IPR-Helpdesk, a project of the European Commission's Directorate-General for Enterprise, offers help with intellectual property (IP) issues for Framework Programme research contractors. Advising them on research contracts, consortium agreements, and patent applications, it helps researchers and companies to protect and exploit the results of their work.

## Online assistance

Researchers can usually find a great deal of relevant information among the extensive resources available on the IPR-Helpdesk's website. Model contracts, consortium agreements, briefing papers and the latest RTD news are all available, while online tutorials clarify many aspects of IP issues. The *esp@cenet* database contains some 30 million patents, which can be scanned for potential overlap with planned research. There is also practical information on IP for each individual EU Member State.

Alex Weir, the IPR-Helpdesk's public relations manager, indicates the extent of the impact the website had already achieved. "The site had around 800,000 hits during December," he says. "People look mainly at the RTD information and briefing papers, but the tutorials for model contracts and consortium agreements are also proving very popular, and users have given us very positive feedback."



*A new CD-ROM for the EU research community contains an offline copy of the entire IPR-Helpdesk website, as well as the multimedia esp@cenet tutorial in English, French, German, Italian and Spanish. Free copies of the CD may be requested from [promo@ipr-helpdesk.org](mailto:promo@ipr-helpdesk.org)*

## Seminars and training days

The Helpdesk also organises regular training days and seminars. Over 60 delegates from both SMEs and academic institutions attended the first seminar in Brussels at the end of November 2000. Forthcoming seminars, also in Brussels, are scheduled for 9 April and 21 May. Although access is free, strong demand means that places are allotted on a first-come, first-served basis. In the case of the first seminar, there were 250 applications for 60 places, and demand is expected to rise. Slides of the full programme from the first seminar can be viewed on the website.

Training days are held in Luxembourg and are limited to ten people. The first was held on 22 January, with the next two planned for 19 March and 11 June. Again, these sessions are

likely to be heavily oversubscribed. The training days are organised with a more personal, problem-solving approach than the seminars, offering assistance with very specific RTD and IP problems.

## Pleasant surprise

"The very brief yet clear overview of all the services on offer was extremely useful," says Lizzie Jespersion of the Danish Institute of Agricultural Sciences,

who attended the first IPR-Helpdesk seminar in Brussels. "I had no idea that so much personal assistance was available from the IPR-Helpdesk."

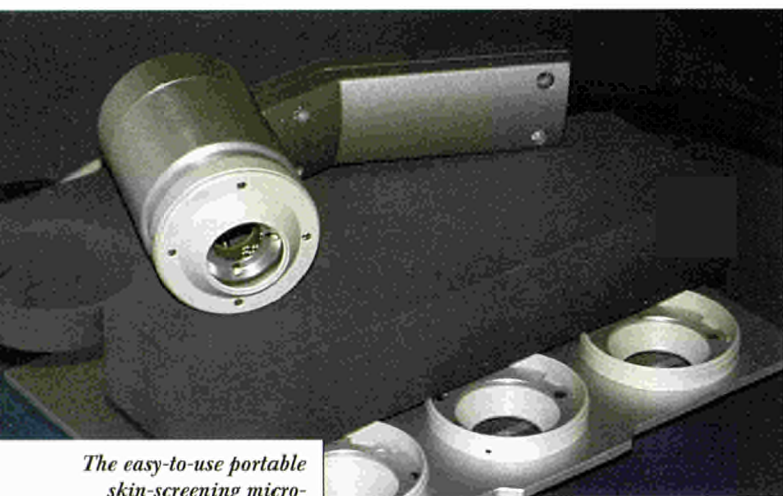
Jespersion found out that draft agreements could be sent to the lawyers who gave the presentation for consultation, and plans to seek their advice on the drafting of a consortium agreement in the near future. "This is a very tedious procedure, but as experts in these matters I think they might really save us time," she says. ●

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# Cancer Test Could be a Life-saver

*Skin cancer is a growing menace. Early detection is vital if treatment is to succeed. An Innovation project has developed a prototype rapid screening tool for skin cancer into a marketable device.*



*The easy-to-use portable skin-screening microDERM camera.*

**S**kin cancers are the fastest growing class of cancers, outpacing growth in the number of dermatologists to diagnose and treat them. The Zentrum für Neuroinformatik (ZN) at Bochum in Germany has developed a remarkable portable skin-screening camera and interpretation system, microDERM<sup>(1)</sup>, that can be operated by relatively untrained assistants. It will enable many more people to be screened, with

at-risk cases being referred to a specialist. There is a 95% chance of complete recovery if malignant skin tumours are caught early enough.

The Innovation project<sup>(2)</sup> began the development and validation of the camera system. Led by ZN, it also involved 12 hospital departments in Denmark, Italy, France, Spain, Greece, Sweden, Holland and the UK. A four-year follow-up project, Danaos (Diagnostic and

Neuronal Analysis of Skin Cancer), with additional funding from the Deutsche Krebshilfe foundation and the North Rhine-Westphalian government, refined the tool and demonstrated its market value.

## How it works

The heart of the system is a high-resolution camera, specially developed to look at the skin with a magnification of up to 50 times. The computer software to analyse its pictures is based on an artificial neural network which makes decisions in the same way as the human brain. In the development projects, the system was trained to recognise suspicious moles, with over 20,000 skin images collected from people of all ages, races and colouring. "We and our partners, led by Bochum University's skin cancer centre, classified the pictures by the ABCD rule (asymmetry, border, colour and diameter), which are the four main risk factors used by skin cancer specialists," explains ZN's Dr Martin Kreutz. "In these samples we found 3,800 different lesions and 30 types of skin cancer. They comprise the largest database of its type in the world."

The software is compatible with existing medical practice software. It takes into account the age and skin type of the patient and presents a numerical assessment of the ABCD factors, to form an overall assessment of the probability of malignancy. If this exceeds 30%, a specialist is called

in. The image is stored for confirmation of the diagnosis and tracking of the progress of the lesion, and can also be printed out.

## Market launch

In summer 2000, following validation and development of the system, a new company, VISIOMED AG, was set up at Bochum to market it. MicroDERM was launched in Germany, where there is full service support, and has been available in the Middle East since January 2001. The company will be demonstrating the system at trade fairs and congresses in America and Australia as well as Europe throughout 2001. For example, between March and July it will be on show at the French National Congress of Dermatology in Strasbourg on March 15-18, and at the 8th World Congress on Cancers of the Skin in Zurich in June.

"As it is more accurate than the human eye, the system should avoid unnecessary excisions of benign moles, as well as detecting dangerous cases in good time," concludes Kreutz. "It will save lives and save time." ●

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<sup>(1)</sup> microDERM is a registered trademark.

<sup>(2)</sup> Project IN10483I - A skin cancer screening tool.

# Innovation Relay Centre

N e w s l e t t e r

FIFTH IRC NETWORK ANNUAL MEETING

## IRCs – Becoming Indispensable

*The Innovation Relay Centre network is well placed to become a key part of the European innovation system. But individual IRCs must seize new opportunities to develop their technology transfer services as integrated components of their regions' enterprise support infrastructures.*



With a successful track record and a widely recognised brand name, and with well-developed plans for further strengthening its professional and technical capacity between now and 2004, the IRC network is fast becoming indispensable as part of the emerging European 'research and innovation area'. But it must start to take control of its own destiny, if it is to achieve long-term sustainability. This was the message presented to the network's annual meeting in Florence last October by Giulio Grata, Director of Enterprise DG's Innovation Directorate, and by Javier Hernández-Ros, head of the Networks and Services unit responsible for IRC co-ordination.

Against the background of Community enlargement, the Lisbon summit gave innovation a new impetus as the vehicle for securing European leadership of the global knowledge-based economy by the end of the decade, Mr Grata told IRC managers and staff. Europe's institutions would evolve accordingly.

"The Commission will become less involved in direct action," he said. "Increasingly, it will focus instead on the design of policy instruments, leaving implementation to those best qualified to carry it out. This implies no threat to the IRC network. The European Research Area will establish a framework for the co-ordination of Member State research programmes, creating new opportunities for transnational research outside the Sixth EU Research Framework Programme. The IRCs' role in FP6 will be crucial – not only their support for transnational technology transfer but their creation of a European profession at the heart of Europe's innovation infrastructure."

### Cruising speed

In the longer term, Mr Grata looked forward to the time when the IRCs would become so useful to their client enterprises, to their regions and to their Member States that they could sustain themselves on a commercial basis.

However, the Commission had no intention of abandoning them, he promised, although it would be encouraging the network to prepare itself for a self-sufficient and autonomous future.

According to another speaker, Aleardo Furlani of the IRC-IRE CU, the network now covers a wider geographical area than any other technology transfer network in the world. Its success, based on effective networking tools and procedures, brand recognition and close links with enterprises and universities, is also unique.

Reviewing the network's achievements at the start of its next phase, Javier Hernández-Ros said that it had now achieved cruising speed. He reminded delegates that it links 68 members, spread across Europe in 30 countries. It had been strengthened by the recent addition of a number of well-qualified new contractors within the European Union, and by the full membership of the IRCs in the accession countries. The Commission had given the IRC Central Unit (IRC-IRE CU) an

## The IRC Network in Brief

The Innovation and SMEs Programme's network of 68 Innovation Relay Centres (IRCs) spans 30 countries, including the EU Member States and the newly associated countries (NAC).

Each IRC is its region's window on European innovation, helping companies and research organisations transfer technologies to and from the rest of Europe. Further information about the IRC network is available on the IRC homepage (<http://www.cordis.lu/irc/home.html>).



*Professor Bernhard Sabel, founder of Nova Vision Ltd, with the IRC Innovation Award presented by the European Commission's Javier Hernández-Ros for his computer-based system to restore vision in patients with visual impairments. Nova Vision is supported by IRC South Germany, SEZ.*



enhanced role in order to support further improvements in the network's professionalism and performance. And new opportunities were opening up, both for links with European innovation support specialists such as the IPR-Helpdesk and

LIFT<sup>(1)</sup>, and for the extension of the IRC technology transfer service to transnational organisations such as Eureka and the European Space Agency.

### Over to you

"The co-ordination and rationalisation of different European enterprise support networks is now high on the political agenda," Hernández-Ros reported. "Closer co-operation between IRCs, Euro Info Centres (EICs), Business and Innovation Centres (BICs), and National Contact Points (NCPs) is essential. This is an opportunity for IRCs as transnational technology transfer specialists to become key players in a more coherent European enterprise support system."

For individual IRCs, integration in regional innovation systems presents similar challenges and opportunities. "As springboards for the internationalisation of local firms, you must make yourselves part of the core business of

regional innovation policy," Hernández-Ros encouraged them. "Already, a number of IRCs are securing recognition and financial support at regional level as projects of their regions' innovation strategies<sup>(2)</sup>."

The recently launched IRC study<sup>(3)</sup> would examine a range of options for the development and future organisation of the network, he continued, and he welcomed the lively debate which followed his invitation to contribute to the study. "It is time for you to take the initiative," he said. "The Commission established the IRCs and has supported them so far. But it is your network, and its future will increasingly depend on your creativity." ●

(1) Online at <http://www.ipr-helpdesk.org/> and <http://www.lift.lu/> respectively.

(2) See this edition, page 27.

(3) See 'IRC Strategic Review', edition 2/00.

## IRCs and Innovation Cells

During the annual meeting, parallel sessions focused on specific topics of practical relevance to the IRCs' day-to-day work, or its future development. One which attracted keen interest examined possible mechanisms for co-operation between the IRC network and the 'innovation cells' of the Fifth Research Framework Programme's thematic programmes.

Every FP5 research project must produce a technology implementation plan (TIP). The innovation cells are responsible for monitoring these plans, and for supporting transfer of technologies with potential for exploitation. However, as speakers from three of the thematic programmes made clear, few resources are available to deliver this support, while the necessary tools and procedures are still being developed.

The IRC network offers an obvious channel for the proactive dissemination of exploitable results, while the TIPs are a promising source of high-quality technology offers for the IRCs and their clients. As Karl-Heinz Robrock of the Directorate-General for Information Society put it, "That is why I am here," and he discussed the possibility of collaboration with the IRC Information and Communications Technologies thematic group.

Magda de Carli of the IRC-IRE Central Unit announced a forthcoming pilot action. Information from selected TIPs will be sent to the project's closest IRC, which will visit the company concerned, and disseminate its technology offer to the network's members. The potential of this collaboration seems substantial. "We hope that in the IRC

network we have found the ideal partner to support exploitation of research results with real technology transfer potential," said Stefan Vandendriessche of the Commission's Competitive and Sustainable Growth programme.

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# One-step and Two-step Mediation

*Two recent technology transfers involving IRC Rhône-Alpes illustrate the varied ways in which IRCs can mediate between companies, directly or with the help of other IRCs – sourcing partners far beyond the reach of SMEs working alone.*

One of the partnerships recently set in place by IRC Rhône-Alpes linked the French innovative electronics manufacturer ATIM with a much larger Belgian partner, Kelatron. ATIM has developed a range of security and control systems based on local wire-less networks for remote monitoring and control. They already have applications in France for monitoring and manipulating heavy industrial equipment. But as a very small company ATIM recognised the need for help in expanding into other countries. They wanted a partner able to integrate their know-how into new products and processes.

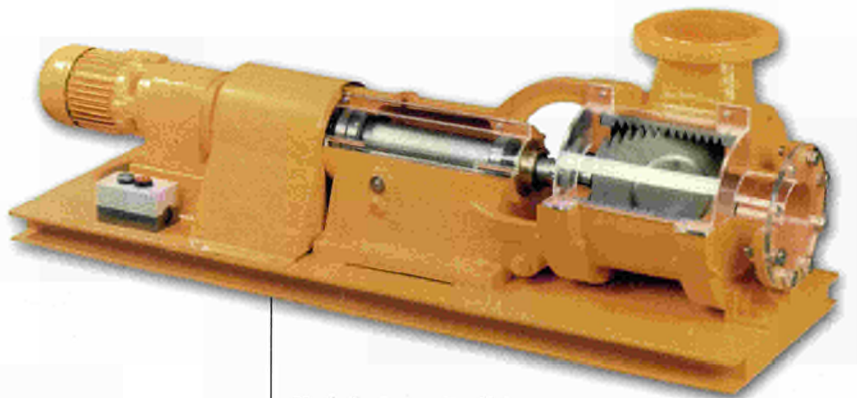
IRC Rhône-Alpes worked with ATIM to profile the sort of partner it wanted – the company was anxious to keep control of its own further innovations. "They want to work with other companies, but to maintain a link with their technology," says the IRC's Claude Sabatin. "They do not want to give it away completely." The profile entered the IRC network and IRC Rhône-Alpes helped ATIM to assess how well each potential partner fitted its needs. Kelatron had new ideas for how ATIM's technology could be applied in its own telecommunications systems. Now, it also markets some ATIM products as well as products of its own which incorporate ATIM systems.

## Two into one

IRC's from several countries often set up technology transfer days, where they bring together companies with technology offers or requests relating to a particular theme such as electronics or biotechnology. Sabrina Wodrich from IRC North Rhine-Westphalia says they have found it very useful for SMEs to go to a fair or exhibition, making contacts within the IRC network and sharing the cost. In 2000, the IRC took several companies to the Pollutec fair in Paris, which focuses on environmental protection. The IRC drew up a catalogue of offers and requests from these firms in advance, and sent it to the other IRCs attending from the environment thematic group.

One of the German companies taking part was Hoelschertechnik-gorator GmbH, which manufactures wastewater equipment. Hoelscher was interested in developing further its 'gorator' – a machine for suspending and dispersing waste from the chemical industry.

Meanwhile, IRC Rhône-Alpes had been in touch with the French company Dimeca, which



*Hoelscher's gorator disperses waste particles from paints, varnishes and pharmaceuticals.*

was interested in introducing a new product. Dimeca welcomed the gorator technology from Hoelscher and is now making it available in France, using its existing network of contacts within the pharmaceuticals, paints and varnishes sectors. Dimeca has the technical expertise to advise on where the gorator can be integrated into existing processes.

## Network effect

Sabatin says that IRCs have a two-level approach when a com-

pany asks them for help. If the client is clear about the type and location of partner it wants, the IRC will target its counterpart in that region directly. If not, it can search across the whole IRC network. As the IRC teams in different regions work together more and more closely, their work is becoming easier and more effective. ●

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# Ever Closer Union

*IRC Norway's close collaboration with the national technology transfer programme TEFT has been hugely successful in finding research partners for Norwegian small and medium-sized enterprises (SMEs). In a single year, the involvement of the IRC network has produced 14 transnational agreements.*

**T**he Norwegian Research Council established TEFT to encourage local SMEs to access research as the basis for innovation. The programme helps companies to acquire the new technologies they need to develop new or improved products or to increase productivity.

## Proactive approach

The TEFT programme aims to create 120 technology partnerships each year. It employs 12 technology advisers with strong research and industrial backgrounds to act as brokers, each with regional responsibility. They take the initiative by calling SMEs from a target group fitting criteria defined by the programme, and visit them in person to discuss and assess their research needs. They then identify a suitable partner, usually in one of the major research institutions. The decision to fund a project is made quickly – in as little as 14 days in some cases. The company does not need to make an application for project funding, and no other paperwork is involved.

During the initial five-year TEFT 1 programme the Norwegian government provided €15 million for projects. Government funding of up to €12,500 is currently available, while the average is €10,000. The SME is required to contribute 25% to the overall project cost. Between 1994 and 1998, technology advisers from TEFT visited more than 1,900 SMEs, which resulted in 840 projects. Of



*The Innovation Relay Centre Norway, hosted by SINTEF, is based at the Norwegian University of Science and Technology in Trondheim.*

these, 490 have been completed, and 30% of the companies continue to co-operate with their research partners after completion of the project.

"Many SMEs believe that RTD is too costly and risky for them. TEFT is making it easy for them to deal with the research community. They particularly appreciate the absence of red tape," says Hans Jorgen Flor, manager of IRC Norway. "We realised from the beginning that to change innovation practices, you have to grasp the culture of an organisation and understand the way it innovates. Research and development can be a very personal matter for these small companies, so before starting a project our brokers get

to know the managers and gain their confidence."

## IRC participation

IRC Norway and TEFT have been collaborating closely since 1995. A new programme, TEFT 2, began in January 1999, and six of the 12 TEFT brokers now work as counsellors in IRC Norway. If a partner cannot be found in Nor-

way, brokers make use of the EU-wide IRC network to find the required competence in other countries. "We rely a lot on the IRC service in our TEFT projects. In fact, IRC Norway and the TEFT organisation have become operationally integrated. The combination is helping both organisations, as well as our client SMEs," Flor stresses.

During the first year of TEFT 2, IRCs in Denmark, Sweden, Spain, and the UK helped Norwegian SMEs conclude a total of 14 transnational research agreements. Seven of these were TEFT projects. "In future," says Flor, "we expect 20 to 30 projects a year to involve Norwegian SMEs in cross-border technology transfer contracts. In the light of our success, other countries might wish to combine the IRC network with their own national technology transfer programmes." ●

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# A Forum for Booming Biotech

*Over 20 European companies found potential partners at the BioTech Forum, held in Stockholm on 9-11 October 2000. The matchmaker was the Innovation Relay Centre Central Sweden.*

**T**he Stockholm-Uppsala region of central Sweden is home to one of Europe's largest industrial healthcare clusters. With some 200 biotechnology, medical device, and pharmaceuticals companies, the cluster generates respectively 66% and 72% of the revenue of Sweden's pharmaceutical and biotechnology industries. The region boasts four major science parks and several renowned universities, hospitals, and technology institutes. Also present are the National Food Administration and the Medical Product Agency (one of Europe's leading regulatory bodies. In this environment, IRC Central Sweden (IRC-CS) quite naturally counts biotechnology among its areas of special competence.

## Multilevel co-operation

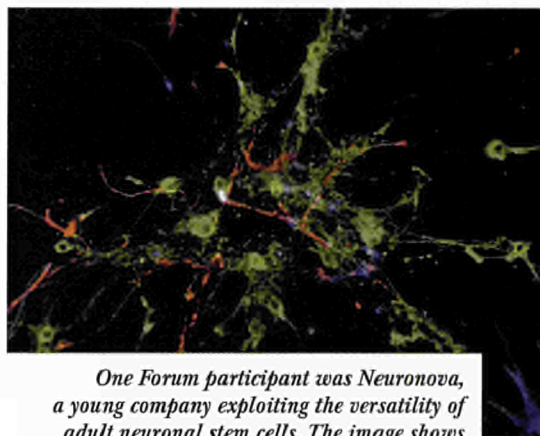
In its efforts to foster transnational technology transfer, IRC-CS has a strategic alliance with Business Arena Stockholm (BAS), an inward investment agency run by the City of Stockholm. It also collaborates with Technology Information Innovation (TII), the European association of professionals working in technology transfer and innovation support. The IRC is active in several thematic groups of the IRC network, too. "These groups are very important," says Anne Tirilly of IRC-CS. "In the Biotechnology Thematic Group, 12 countries are represented. We meet at least twice a year and organise brokerage events at fairs, as well as

company missions. We know the industry and our client companies well, and we offer access to biotech clusters throughout Europe. This is a very effective way to promote cross-border exchanges."

IRC-CS saw a golden opportunity when Stockholm International Fairs scheduled a BioTech Forum in parallel with two other biomedical technology fairs. With BAS, the IRC decided to hold a matchmaking session at the Forum.

By promoting the event in Sweden and via the IRC network, IRC-CS was able to assemble a catalogue of 42 partner-seeking companies, with carefully prepared profiles presenting each firm's technology offers and requests. BAS helped by sharing its own database of biotechnology companies. The IRC then matched likely partners and pre-arranged for them to meet at the BioTech Forum, either in person or via their local IRCs.

In addition to the partnering event, the Forum included a presentation of the Stockholm-Uppsala biotechnology cluster, an exhibition, several workshops, a visit to the famous Karolinska Institute, and another to Tripep AB, a young company that develops novel medicines. IRC-CS shared with IRC North Germany and IRC Eastern England a stand presenting the services of the IRC network. It also led two of the workshops, one on EU research projects and one on biotechnology clusters in Europe.



*One Forum participant was Neuronova, a young company exploiting the versatility of adult neuronal stem cells. The image shows astrocytes (blue), neurons (red), and oligodendrocytes (green) produced in vitro from a single stem cell.*

## Partners found

"The matchmaking session was very successful," says Anne Tirilly. "We reached companies that had never heard of us before, and the feedback was enthusiastic. To date, three technology transfer agreements have been signed, nine are under negotiation, and these results are probably just the tip of the iceberg." The IRC has remained in contact with potential partners, offering information and assistance. ●

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# Network Makes New Friends

*Last November in Lyon, a joint stand of the IRC-IRE Central Unit and IRC Rhône-Alpes was successful in bringing the Innovation Relay Centre network to the attention of high-level policy-makers - and of potential clients among innovative companies.*



*(Left to right) Claude Sabatin of IRC Rhône-Alpes, Mr Dominique Le Masne of the French Research Ministry, and Gudrun Rumpf of the IRC-IRE Central Unit, Luxembourg.*

**T**he Second European Forum for Innovative Enterprises and the high-level symposium *Towards a European Innovation Area*<sup>(1)</sup> brought together national and regional public and private sector decision-makers from around Europe, as well as entrepreneurs, researchers and innovation intermediaries.

Gudrun Rumpf of the Central Unit (IRC-IRE CU) identified the linked events as an ideal platform for the promotion of the IRC network, and organised a joint stand with IRC Rhône-Alpes/Auvergne. As at previous events<sup>(2)</sup>, the idea was to combine promotion of the network's overall activities and achievements with presentation of the specific services of a particular IRC.

Both parties were delighted with the outcome. "Claude Sabatin and his team at IRC Rhône-Alpes gave us outstanding support before and during the event. Together, we were able to win new clients for the network and enhance its recognition as the biggest and most successful network of technology brokers in the world," says Rumpf.

## National-regional partnership

Among the many prominent visitors to the stand was Mr Dominique Le Masne of the French Research Ministry, who is France's delegate to the management committee of the Innovation and SMEs programme and its

co-ordinator for European structural funds. He invited Claude Sabatin to present the role of the IRCs to all of the ministry's 24 regional representatives at the symposium. Sabatin was able to demonstrate their potential to assist in technology transfer from research to application, both within and between regions, and promoted the idea of joint work and co-operation between IRCs and the regional representatives of the research ministry.

The representatives welcomed the possibility of working more closely with the IRCs in their regions, especially on support for the practical application of research. Anvar, the French agency for financing innovation in SMEs, which is already an IRC partner in each region, also pledged its support. The French IRCs had the opportunity to meet many of the representatives and other national authorities in Lyon, and took the opportunity to present concrete success stories relating to effective technology transfer.

Future joint actions are already being planned with the ministry

representatives, including awareness-raising seminars for companies on EU research priorities. "We don't need a new agency," says Sabatin. "The IRCs are already there, and can act as a short cut from research to industry."

## Concrete results

Other useful contacts made or renewed at the IRC stand included the Rhône-Alpes Regional Council, the municipality of Lyon, and the Lyon-based incubator, Crealis.

Several new clients made contact with IRC Rhône-Alpes for the first time. These included Bionil, a Lyon based start-up which has developed a new product for cleaning and disinfecting soils with potential applications in the field of healthcare. The IRC has already started an outward technology transfer project with the company, using the network to search for suitable transnational partners. ●

(1) See 'Achievement and Optimism', edition 1/01.

(2) See 'Visibility and Value', edition 6/00.

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*(Left to right) Gudrun Rumpf, Giulio Grata, acting Deputy Director-General of the European Commission's Enterprise DG, and Claude Sabatin.*

# Innovation Communities

*Over 100 European regions have run regional innovation strategy (RITTS/RIS) projects, and are members of the 'Innovating Regions in Europe' (IRE) network. How have they benefited, and how do Innovation Relay Centres fit into the plans they have developed?*

**E**ach project began with an assessment of the region's existing innovation infrastructure, which started from the needs of its enterprises and encompassed its universities, research centres and incubators, technology brokers, chambers of commerce and other players, as well as financing instruments and other policy measures.

"Some less-developed regions simply did not have a distinct innovation policy," explains Michael Busch of the Commission's Directorate-General for Enterprise, which co-ordinates the action. "Here, national innovation support measures were often poorly adapted to specific regional circumstances." In almost every case, regions of this type which carried out a RITTS/ RIS project now have a sustainable innovation policy, with its own organisational structure, staff and budget.

"Even in regions with a strong research infrastructure, there was often poor communication between the innovation system's different actors, overlaps between schemes, and a poor match between services and the real needs of enterprises." In most of these, a fundamental review made it possible to improve performance significantly, often with no overall budget increase. "Fine-tuning has produced greater efficiency and new synergies – for example, creating 'one-stop-shop' service packages for firms," Busch explains.

## Wider role for IRCs

Each RITTS/RIS project involved as many innovation players as possible, and every participating region has benefited directly from the resulting interactions – which have led to the development of new technologies, products, joint ventures and public-private partnerships. "They have created dynamic regional innovation communities," Busch says.

IRC are key members of these communities, believes Javier Hernández-Ros, Head of Enterprise DG's Networks and Services unit. "As transnational technology transfer brokers, IRCs give a region's companies access to new sources of technology and new technological markets," he says. "The Commission would like to see them becoming core activities within all regional innovation strategies."

Busch confirms that IRCs must extend their role as delivery mechanisms for a key service, to become leading players in the innovation policy development process itself. "They have to become integral components of their regions' innovation systems, rather than something added from outside," he says.

## Come one, come all

In most RITTS/RIS regions, the process of policy development and implementation is continuing. But what of those regions which have never run an exercise of this kind? Already, at least six



are applying the RITTS/RIS methodology independently – and Busch expects more to follow their example as the IRE network spreads awareness of the benefits of the strategy development process.

Under the IRE umbrella, further regions will join a series of new thematic networks, and so gain access to the experience of the RITTS/RIS regions. Meanwhile, a new RITTS/RIS call, launched in mid-2000, will shortly see the start of the first generation of projects in Cyprus and the candidate countries of central and eastern Europe. ●

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# Streamlined Service for Hessen SMEs

*Eight agencies specialising in various aspects of Europe have joined forces to create a more efficient service for small and medium-sized enterprises (SMEs) in the German Land of Hessen. The Innovation Relay Centre is a key partner.*

**I**nnovative SMEs need a regional contact with the European Union," says Dr Raimund Bröchler of the TechnologieStiftung Hessen in Wiesbaden. "You cannot expect a small firm from Bavaria to travel all the way to Cologne to visit the National Contact Point." Confusion about the roles of different agencies is also a problem. Bröchler, who heads the IRC Hessen/Rheinland-Pfalz, says that so many organisations in Hessen offered specialist services that SMEs did not know where to turn.

## Network of networks

Since 1999, the Netzwerk Europainfo Hessen has provided an umbrella. Bringing together eight existing agencies, it had many local access points from the outset. Besides the IRC, its members include three Euro Info Centres in Wiesbaden and Kassel, linked to the Economic Development of Hessen, the co-operative and popular banks, and the chambers of commerce and crafts. Also involved are the European information points in Darmstadt and Frankfurt, Hessen's own Europe Office (which has a representation in Brussels), and the Kreditanstalt für Wiederaufbau, the federal bank for reconstruction, which finances SME projects and is based in Frankfurt.

Between them, the members have an impressive range of skills. But to reach SMEs the network relies on the telephone, its web-



*Dr Raimund Bröchler, Director of the Innovation Relay Centre Hessen/Rheinland-Pfalz.*

site, and referrals from other business advice agencies. "It is important to have a single telephone number managed by an independent organisation which can direct enquiries to the most appropriate agency," Bröchler says.

There is a lot of enthusiasm for working together, he reports. "Understanding what each of us does best has enabled us all to improve our service to clients. We have direct access to experts from the various agencies." Roles and specialities have become more clearly defined, even in cases where several members of the network serve the same client.

he says. "You cannot leave an application till the last minute. Transnational collaboration is a medium-term strategy, so companies must plan it well in advance." Nor is finding partners in other countries an impossibly difficult obstacle, in his view. "You just have to ask the client the right questions. Usually, they can readily identify potential partners - customers, suppliers or people they met at a trade fair. If not, our IRC can act as matchmaker."

The network drummed up business at the 'Light and Building' trade fair last year, and this February held a workshop for 100 companies in Darmstadt on EU support for research and innovation in information technologies. A follow-up event is planned for September.

Members of the Netzwerk Europainfo Hessen provide information, advise on law and technology transfer, help find partners, assist with project applications and offer individual consultancy. By streamlining access to EU innovation support for Hessen's SMEs it seems certain that the network will repay its small grant many times over. ●

## Ask the right questions

The network does struggle against Euroscepticism, Bröchler admits. "People always say that European procedures are complicated and slow. But few national funding schemes are any better,"

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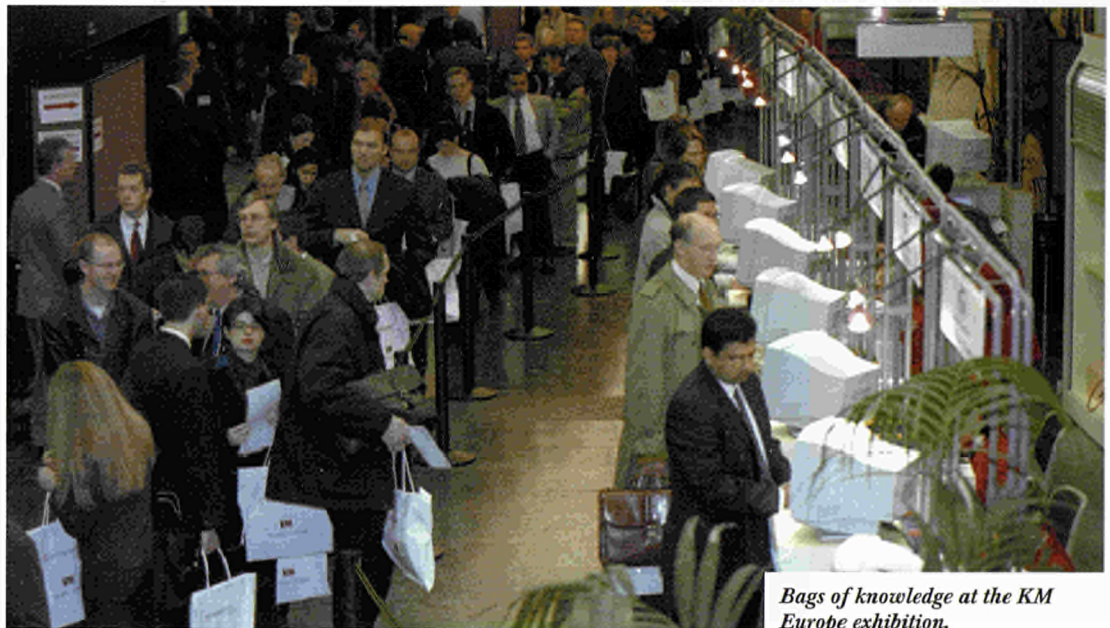
# Culture and Technology

*The KM Europe conference is the premier annual European event in the field of knowledge management. Last autumn, the three-day meeting gathered practitioners from around the world to exchange experiences and propose ways forward in the new knowledge economy.*

**K**nowledge Management (KM) seeks to identify the intangible features of organisational culture and form which are critical to innovation and success. Such features are sought between, not within, the formal structures and processes of organisations.

"The Lisbon summit put information and communication technologies on the political agenda for the first time, driven by the recognition of the growing power of knowledge within the economy and its impact on industry – the transition to the knowledge economy." With these words, Rosalie Zobel of the European Commission welcomed delegates to the first KM Europe conference and exhibition, which took place on 20-22 November and attracted over 2,800 visitors – breaking all attendance records for a knowledge management event. The clear business orientation was demonstrated by the many speakers from industry, both large corporations looking for new insights to complement their own internal efforts, and smaller consultancies and research groups working actively as solution providers in this field.

The wide variety of the presentations, and their interdisciplinary approaches, reflected the many facets of the emerging KM field, which are consolidating into two main approaches – technical and product-oriented, and cultural and process-oriented. Both have their proponents, although many speakers attempted a synthesis that would achieve a 'holistic' view.



*Bags of knowledge at the KM Europe exhibition.*

## Intangible assets

Ron Young of Knowledge Associates contrasted the two approaches in his keynote presentation. "The first claims knowledge can be represented and captured – this is the explicit, product view derived from management information systems and document control. The second recognises that much knowledge is 'tacit' and cannot be stored or owned, and encompasses soft issues such as empowerment and sharing. These approaches appear to imply different strategies, but in fact an integrative approach is needed, combining the best of both." Other speakers took up the same theme.

Networking and sharing are key for effective KM implementation. If true knowledge cannot be captured because it lies buried in individual memories and corporate cultures then, it is argued, KM practitioners must concentrate on the correct 'context' for effective knowledge leverage. Rather than trying to capture and reduce knowledge to information and data, we need to create the corporate environments that positively select for knowledge sharing.

The use of the terminology of ecology is deliberate. As Leif Edvinsson of Skandia pleaded, "We must move on from traditional metaphors of computers and machinery and look at biological metaphors instead. ●●●"



*Keynote speaker Larry Prusak.  
"Change requires passion – you  
must care deeply about knowledge  
to achieve change."*

•••  
Corporations must become co-operations, enterprises as institutions must be replaced by enterprising as an activity – and this demands a new taxonomy." Such suggestions come from the cutting edge of KM thinking, but Edvinsson placed them in a hard business context. "Seventy per cent of the value of the Philips company is unaccounted for, invisible, intangible. Philips does not need new accounting software, they need a new way of accounting, new reporting systems. This is a common problem in the knowledge economy. Business leaders must ask how they will be paid for their intangibles. Who owns their knowledge? Who owns 70% of your company?"

## Knowledge speak

Dan Holsthouse described the Xerox Corporation's efforts to blend the cultural and technical aspects of knowledge management. He identified as critical the promotion of knowledge-sharing behaviour and the ability to capture and communicate recurring

past experiences. A survey of Xerox engineers on work practices and culture showed that high performers have a vocabulary rich in words such as 'language' and 'knowledge', and are proactive sharers of solutions. By contrast, medium and low performers are reactive hoarders of information. They talk about information and data as issues separate from themselves. "These results prompt us to ask whether the inclination to share knowledge can be taught? Can we screen for it?" Holsthouse concluded. He believes that, to build cultural values, rules are needed. "Each individual must be responsible for helping to build and implement the knowledge base, searching for existing solutions before designing new ones, giving credit to others, eliminating the need-to-know culture and sharing externally where appropriate."

Stephen Denning of the World Bank related his experiences of KM techniques as change agents, in particular the use of storytelling, which he adopted after

trying and discarding many other techniques. "How can you hold a dialogue with ten thousand people? We tried charts and sound-bites, but resistance was huge and systemic," he said. Instead, he told the story of how a medical problem in an African country was solved when it was shared throughout the organisation, and a colleague in Canada remembered an existing solution. That grabbed the attention of a group of senior World Bank managers. "They said, 'We are like that. We should be working that way,'" Denning recalled.

He attributes the success of the technique to a story's ability to convey multidimensional concepts. "Heads are not empty, waiting to be filled. They are full of tacit understanding which only needs to be lit by a spark. Stories close the gap between knowledge and action, enabling people to fill in the blanks themselves."

## Co-operation not competition

An exhibition of 120 stands drew a steady stream of visitors, and its popularity was confirmed by the exhibitors themselves. "KM draws on many fields of business activity," said exhibitor Jan Schalkwijk of Knowledge Concepts BV. "It requires teamwork

and partnerships, and is a field of co-operation not competition. For us, that is also the great thing about this exhibition – we meet potential partners as well as customers."

Knowledge Concepts works with two other SMEs, EMD NV and the Semio Corporation, to offer made-to-measure KM solutions. EMD provides the software carrier layer, which is based on many years of developing Intranets. Semio contributes linguistic technologies for 'tagging' and analysing text-based data, and Knowledge Concepts adds multilingual capabilities to knowledge retrieval.

The need for multilingual capabilities was highlighted by Rosalie Zobel as a European opportunity. "Europe's experiences in multiculturalism and multilingualism are problems that become strengths in the field of knowledge management, where interconnectivity is so vital."

The conference also saw the launch of the European Knowledge Management Forum. Under the banner 'KM Made In Europe', this Commission-funded concerted action seeks to unite the European KM community into a self-sustaining mass of organisations and individuals able to share ideas, define standards and develop strategic visions. ●

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## Promoting Innovation Management Techniques in Europe

NB-NA-17-022-EN-C,  
ISBN 92-828-9688-9

This report assesses the success of the Innovation programme's action 'Promotion of Innovation Management Techniques', which ran from 1997 to 1999. The action comprised 23 specific projects and six accompanying measures involving a total of 90 organisations in the 15 Member States and Norway, Iceland and Israel. The aim was to sensitise SMEs, consultants and business development organisations to the potential of IMTs. Over 700 SMEs in the European Union alone benefited from short consultancies, and two-thirds of the participating consultants are continuing to use the IMTs developed in the projects, the report finds.

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## Managing international projects

English, French and German versions,  
ISBN 3-928110-02-0; €50 (on CD €100)

This workbook, subtitled 'How to promote co-operation of multicultural project groups', has been produced with the support of Enterprise DG by the partners of the Proinno (Promoting European Innovation Culture) Innovation project.

After outlining the life cycle of a typical transnational project, the workbook presents a number of concrete case studies, and identifies critical success factors. It also contains straightforward advice as well as performance tests, which may be completed by members of project consortia themselves, based on simple checklists.

### Contact

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## Public Strategies for the Information Society in the Member States of the European Union

Produced by the Information Society DG's European Survey of Information Society (ESIS) project, this report provides an overview of national strategies as the basis for benchmarking, communication, partnership and the promotion of best practice. It will also serve as a navigation tool for all key actors.

It is becoming increasingly clear that information and communications technologies (ICTs) are having a major impact on the organisation and functioning of society. The report notes that very large amounts of public

funding will be devoted to awareness raising, infrastructure development, new regulation, education and investment in application and service pilots over the coming years.

### Contact

The full report is available at  
<http://www.ispo.cec.be/esis/>

## The EC-US Task Force on Biotechnology Research

KI-NA-19-407-EN-C,  
ISBN 92-894-0110-9

In the decade during which the Task Force has brought together leading scientists from each side of the Atlantic to develop new ideas, biology has undergone a revolution, and international co-operation in the field has become both more feasible and more necessary. Subtitled 'Mutual understanding, a decade of collaboration (1990-2000)', this booklet demonstrates the Task Force's significant contribution to fields as diverse as neuroinformatics, genomics, nanobiotechnology and neonatal immunology.

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## Recent developments in the use of environmental taxes in the EU

The latest developments in the use of environmental taxes in the European Union are described in the summary of a draft report recently published by the European Environment Agency (EEA). The European Commission sees environmental taxes as important tools for creating market-based incentives for environmentally friendly commercial behaviour, and supports their application as a means of implementing the 'polluter pays' and 'user pays' principles. The report says that focus on environmental taxes is strengthening as the EU and Member States seek to achieve the Kyoto targets for the reduction of greenhouse gas emissions.

### Contact

The summary of the draft report is available at  
<http://themes.eea.eu.int/toc.php/improvement/policy?doc=39274&1=en>

## Growth in Action

The magazine will be published twice a year, along with occasional special editions. It will cover all aspects of FP5's Competitive and Sustainable Growth programme, in particular presenting the results of individual research

## Note

Publications are free unless otherwise stated. If specific contact information for obtaining a publication is not supplied, and there is a price listed in euros, then the publication can be purchased from the sales and subscription office in your country of the Office for Official Publications of the European Communities (EUR-OP). Addresses can be found in most EU publications, on the WWW (<http://eur-op.eu.int/general/en/s-ad.htm>) and by contacting EUR-OP (fax: +352 2929 42759).

projects. Articles in the first edition include the challenge of meeting increasing demands for transport whilst minimising environmental impacts, a report on new, safer, cleaner and more efficient forms of transport, a review of measurement and testing methods, as well as updates on Growth research priorities.

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<http://europa.eu.int/comm/research/growth/gcc/magazine.html>

## An overview of developments and prospects for e-commerce in the agricultural sector

It is predicted that there will be around 25,000 operational e-commerce sites by 2001 - between 1,000 and 1,500 for the agriculture and food sector. In the US it is estimated that 14% of commerce in agriculture, forestry, and fishing industries will be online by 2005. This short report reviews current applications of the internet in agriculture and the food industry and considers its prospects for the future. Developments are considered in a European context, with examples.

### Contact

The report is available in electronic form only at [http://europa.eu.int/comm/agriculture/markets/e-commerce/index\\_en.htm](http://europa.eu.int/comm/agriculture/markets/e-commerce/index_en.htm)

## Second European technology brokerage event on food

16-18 May, Marseille (France)

Organised by the Innovation Relay Centre French Mediterranean this event is aimed at technology users and technology suppliers. It includes scientific and technological conferences as well as meetings between companies and research centres designed to foster technological exchanges or partnerships, and transfers of technology or know-how.

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## Encouraging Baltic SME co-operation

17-18 May, Riga (Latvia)

The Baltic Sea Partenariat will serve as a platform for contacts between SMEs from the wood, construction, food products, chemical industry, machinery, IT and service sectors. More than 300 SMEs from Estonia, Latvia and Lithuania, as well as more than 1,000 companies from 30 European countries, are expected to attend. The two days will be taken up with thousands of pre-booked business meetings, aimed at concluding cross-border co-operation agreements and stimulating SMEs' international business activities.

**Contact**  
<http://www.bsp2001.com/>

## Electronic Business Technology Day

28 May, Bratislava (Slovakia)

Organised by BIC (Business and Innovation Centre) Bratislava, the event aims to develop transnational technological co-operation between companies, universities and research institutions in the fields of business-to-business and business-to-consumer systems and technologies as well as secure systems and data transmission.

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## E-novation meeting

30 May - 1 June, Lille (France)

The event will offer the opportunity to speak individually with experts, to exchange perspectives on e-novation and to take account of all of the dimensions of e-commerce. Meetings will take place between large enterprises in the areas of distribution, production and services, and 450 innovative enterprises involved in information technology and communication.

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<http://www.applica.tm.fr/enovationmeeting/>

## Patinnova/EPIDOS 2001

14-17 October, Cardiff (UK)

The European Commission's Innovation and SMEs programme and the European Patent Office have again joined forces to organise Europe's largest conference on patents and innovation. Hosting by the UK Patent and Trademark Office, it will attract high-level attendance from industry and from public authorities.

The broad theme of the conference will be 'Intellectual Property Rights in a knowledge-driven economy: Challenges ahead'. Following the conference opening and a short plenary, three parallel sessions will deal in depth with selected topics:

- patent information/EPIDOS Annual Conference
- the new economy – a challenge for IPR
- Intellectual Property Rights serving entrepreneurship

**Contact**  
 A link to the conference website will be available soon at <http://www.cordis.lu/patinnova99/home.html>

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