SCIENCE BUSINESS

BORN TO GROW

How to harness Europe's most innovative entrepreneurs – to create jobs and prosperity






RECOMMENDATIONS FOR EU ACTION

For more than a year some of Europe's leading industrialists, academics and policy-makers have met to discuss EU innovation policy with the Science|Business news service. These are some of their suggestions.

Imperial College London

ESADE

Microsoft

Born to Grow is the result of two meetings of the Science|Business Innovation Board, a blue-ribbon panel of innovation experts that reviews and makes policy proposals. The Innovation Board and this report were both supported by Microsoft Corp. For further copies (subject to availability), please contact the Science|Business Brussels Office, Rue du Trone 98, 6th Floor, 1050 Brussels, Belgium, or email info@sciencebusiness.net <mailto:info@sciencebusiness.net> .

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EXECUTIVE SUMMARY

For many politicians, this is by now a familiar equation: New companies = new jobs. So for at least the past decade in Europe, political leaders striving to create more jobs have also been trying to encourage start-up companies. That's good, of course. It has meant cutting the red tape involved in starting a company, improving social benefits for the self-employed, fostering networks and support services for new entrepreneurs, and providing tax breaks to start or invest in new companies.

But worthy as these policies have been, they miss part of the point: it isn't just new companies that create jobs, it's *fast-growing* new companies. High-growth entrepreneurs – sometimes called "gazelles" in the economic literature – are the most powerful source of new jobs in an economy. These are the most innovative companies. They think big from the start, with the business model, talents and financing to match. They grow quickly beyond their home borders. And, in time, many of them stop being small companies; they become the future Vodafones, SAPs or RyanAirs – powerful forces in global markets. In short, it isn't merely quantity of small and medium enterprises, or SMEs, that matter to the economy; it's also the quality that counts.

"We do not have enough entrepreneurs. And we do not have enough SMEs fulfilling their growth potential and creating new jobs," says Janez Potočnik, the European Union's commissioner for science and research. "Only 5 per cent of European companies created from scratch since 1980 are in the top 1000 in terms of market capitalization. If we were to compare this to the US, it would be 22 per cent." For Europe, the commissioner says, the challenge is simple. "Either you want to be successful or not. If you want to be successful, you cannot play without being global. That's the way things will go ahead."

Quality, not just quantity, matters to SME policy. It's to highlight this message that the Science|Business news service offers this special report to its readers.

The report is based on a year-long cycle of work by a unique CEO "club" organised by Science|Business, with the support of Microsoft Corp. Meeting in London and Barcelona as the Science|Business Innovation Board, 18 of Europe's leaders in business, academia and policy gathered to compare notes on SME policy. The participants include six CEOs, three university presidents, two venture capitalists, two serial entrepreneurs, a former prime minister and an ex-president of the European Parliament. All have deep, personal experience of the real world of European business, research and policy. Though addressed at one session by a sitting politician (Commissioner Potočnik), they met as a group independent of any particular policy agenda – offering their expertise as a blue-ribbon panel, or *comité de sages*. The aim: to make Europe a better place in which to innovate.

Their suggestions are listed here. In any group as diverse as this, opinions will vary – and no attempt was made to get a formal, unanimous slate of recommendations. But this report does try to capture what appeared to us – professional journalists of science and technology – as the consensus view of the meetings; and its recommendations were supported by most, if not all, participants. In the end, however, this report can only be a statement of Science|Business – and so we are solely responsible for its views.

The dominant theme, however, boils down to this: Innovation policy in Europe should start paying more attention to helping small companies grow in size, not number alone. That doesn't mean an end to all the useful policy advances that have helped boost the rate of company-creation in Europe. Rather, it means taking the policy analysis a step further, to foster growth as well as creation. A range of specific measures are suggested – tax breaks, awards programmes, information clearinghouses.

"There are many good, innovative companies in Europe between €5 million and €15 million" in revenue, observes Jean-Philippe Courtois, president of Microsoft International. "The biggest problem is for a company to grow beyond the first €10 million."

The overarching issue, the panellists agreed, is cultural. Most Europeans shun risk – and high-growth entrepreneurship is about as risky as business can get.

One panel member, Denis Payre, knows all about that. In the 1990s he co-founded Business Objects in France. It became one of the world's hottest software companies, and in 2007 was purchased by Germany's SAP. But making the decision to start the company – and quit his then-safe job at Oracle – was tough: in France "family and friends gave me 10 reasons why I should not do it," he recalls. By contrast, American friends "gave me 10 reasons why I *should* do it. We live in a very risk-averse environment" in Europe. To change that environment, this report includes profiles of some of Europe's most successful business-builders – role models for the next business generation, nominated at our Innovation Board meetings.

Science|Business itself is a start-up company – so our passion for these issues should come as no surprise. But our hope is that, though encouraging public debate on these issues, we contribute to a change in climate that creates new jobs in old economies. We welcome your views – and invite you to express them directly in our blog pages on www.sciencebusiness.net.

Gazelle, in the economic literature, is a term for the high-growth, entrepreneurial companies – that Europe needs more of

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The recommendations – in brief

These suggestions reflect the dominant views of participants at meetings of the Science|Business Innovation Board. They are not a formal statement of policy from the individual participants, or their organisations.

- **Teach the values of innovation and entrepreneurship in our schools**
- **Celebrate successful entrepreneurs – in prizes and the media**
- **Break the barrier between business and technical universities**
- **Organise researchers to work across scientific disciplines**
- **Train young researchers and managers for global growth – and flexibility**
- **Adopt policies to encourage innovation clusters around universities**
- **Create "free innovation zones" to speed growth in selected clusters**
- **Support the role of large companies in cluster-development**
- **Give priority to creating "lead markets" for innovation**
- **Free information flows – with online portals, benchmarking and patents**
- **Target tax incentives and other financing aids to growth companies**

A wake-up call: Go global

Janez Potočnik, EU commissioner for science and research, on the need for more small companies that think big

We do not have enough entrepreneurs. And we do not have enough SMEs fulfilling their growth potential and creating new jobs.

If we follow the Eurobarometer surveys, we see 60 per cent of Europeans have never considered starting a business. Only 5 per cent of European companies created from scratch since 1980 are in the top 1000 in terms of market capitalisation. If we were to compare this to the US, it would be 22 per cent.

Entrepreneurship is a social and cultural issue. It's about attitudes. It's about behaviour. Maybe this is one of the problems that we have in Europe. Don't forget: the instrument in the US called venture capital, in Europe is called risk capital.

What is the Commission's view on SMEs? Commission policies in this area include reducing administrative burdens. For instance, a number of member-states are going in the direction of shortening the period of time it takes to establish a business in their countries. We adopted new rules so SMEs can receive more state aid for R&D than larger companies. There's Framework Programme 7, for research. We have specific calls for SMEs, for example in nanotech. One of the major problems for SMEs in the programs in the past was that they had to provide bank guarantees – and this is now overcome by guarantee funds. The whole philosophy goes in the direction of making their life easier.

In the past, SMEs had a choice – but in the future they will not have that choice: if you want to be successful, you cannot play without being global. That's the way things will go. We have an SME-friendly policy in the Commission: 'Think small first'. But my personal view is that we also need to think big at the same time.

We have many wake-up calls. What we are seeing in China and India, or even Brazil, is only the beginning. Europe produces 100,000 engineers a year. In China, it is 600,000. If you look at growth rates, in China R&D investment is increasing 20 per cent a year for the past five years. They have a very clear, defined, top-down policy. That's the reality we face. How will we react? Will we be fast enough?

Commissioner Potočnik participated by videoconference from Brussels in the Innovation Board meeting at Barcelona.

Rising to the challenge

Esko Aho, a leader in innovation policy in Europe, on what's needed to meet rising international competition

We are challenged today in Europe – and public opinion doesn't understand that. Think about 1957, when the first Soviet satellite was launched; all Americans understood they were challenged, and they had to meet that technology. If we understand in Europe that we are challenged – by global competition for technology, prosperity and jobs – then we will have a positive impact.

The main problem with meeting the challenge is that our societal structures are still from the industrial age. They are designed for industrial production: our tax systems, social security systems. But if you look at how knowledge is produced today – globally – there is a conflict between the traditional European structures and the new requirement. It is very important that the EU, when deciding strategy post-2010, take this into consideration. It's not enough to set strategic goals. We also need social change.

Some practical suggestions: I support the idea of a European "young entrepreneur" status. We need opportunities for risk-taking: we have to concentrate on the young generation. Business angels are an asset in Europe that isn't fully utilised; in the US, 50 per cent of venture capital is coming from business angels – and they are giving, not only money, but their talent. We need to combine managerial and technology talent – and I would add a third: design talent. We are planning a test in Finland, putting together three universities – the Helsinki Business School, Helsinki University of Technology, and the Helsinki School of Art – to be one single university. I think this kind of combination will provide better opportunities for innovation.

We need to encourage experimentation. It's so much easier to motivate people to oppose something which is new. Take e-health. It's easy to get people worrying about accidental deaths in the healthcare sector – but nobody talks about the hundreds who die because the system isn't working efficiently, due to lack of information systems. If we don't get public opinion to support risk-taking, we cannot survive in competition with the US and Asia.

Mr. Aho is president of SITRA, the Finnish state innovation fund, and is former prime minister of Finland. In 2006 he co-chaired an influential committee of experts that recommended to the EU a new, market-driven approach to innovation policy.

A global partnership for SMEs

Jean-Philippe Courtois, president of Microsoft International, on the dynamism of small and medium enterprises

Global companies like Microsoft have an interest in having big, open partnerships. We have a network of 750,000 small and medium enterprises (SMEs) globally – software developers, PC manufacturers, systems developers and trainers. For every euro Microsoft bills globally, there are over 7 euros being billed by individual companies. To put this in perspective, some 45 per cent of the ICT jobs in a country such as Spain are based on Microsoft technologies.

This is an important example of the benefits of a global system, where global companies are working at the regional and national levels to build partnerships.

These days, you've got to go global. You need access to broader capitals markets to accelerate growth. There are many good, innovative companies in Europe between €5 million and €15 million – but beyond that, not so many. In a number of countries we are using our eco-system to work in partnership with VCs, selecting promising software projects, giving them access to our development, opening doors.

In Europe, we have many difficulties. It takes a lot of money to patent across Europe. We have failed for decades in the European Union to achieve the necessary consensus to have a European-wide patent system.

There's the cultural dimension. In Asia, kids can start at 6, 8 or 10 are working to learn English and other skills to give them potential for the future. We need to re-create an excitement among youngsters for science overall.

There is too much regulation. This includes just registering a company, before even doing business. It used to take months. In Israel, it takes 42 minutes. That's a new benchmark.

There are in Europe some great or islands of excellence, innovation clusters. We had an example, at a recent Innovation Board meeting, at Imperial College London, where they are creating an environment where you can connect the dots between all the stakeholders.

There is a very deep connection between higher education, research and the business community. There are very few places like that in Europe – but we need more of them.

Microsoft is founding sponsor of the Science|Business Innovation Board

The importance of gazelles, as reported in Spain at the last meeting of the Innovation Board

PART I

What is a high-growth entrepreneur?

The need for 'gazelles'

A mounting body of economic research shows that quality, not merely quantity, of entrepreneurs is a key factor in any region's economic advancement.

High-growth entrepreneurs, or "gazelles" in the academic literature, are a powerful force behind job creation. They were responsible for some 70 per cent of US employment growth in the early 1990s, for instance. In Britain, one study found just 4 per cent of the new firms formed in a given year were responsible for 50 per cent of the jobs created 10 years down the road.

But Europe has a problem: not enough gazelles. In the biotech sector, for instance, European firms on average start smaller; grow slower, and die faster than their US counterparts. Two-thirds of European biotech companies have fewer than 20 employees – compared to 40 per cent in the US, according to one sectoral study.[i] Europe's ICT industry has long struggled to support an ecosystem of successful, internationally-minded entrepreneurs. And in the simplest test of all – name-recognition in the general population – Europe comes up short.

It isn't enough to encourage the emergence of many entrepreneurs, economic research suggests. For job creation, high-growth entrepreneurs are what counts, according to Prof. Erkko Autio, of the Tanaka Business School at Imperial College, London, in a paper presented to the Innovation Board [ii]. Depending on the phase of the economic cycle, he says, new firms may be responsible for anything from one third to up to the totality of net job creation in different economies. According to data summarised by Prof. Autio, Europe has a third to half as many high-growth entrepreneurs as the US or China. The gap is economically profound. For instance, compare Sweden and Finland, two neighbouring countries with powerful high-tech industries but differing populations of high-growth entrepreneurs. Autio calculates that, if Finland had the same proportion of gazelles as more-dynamic Sweden, it could generate 150,000 extra jobs over a five year-period – equivalent to 5 per cent of the adult, working-age population. Significant unemployment in Finland would become a distant memory.

Researchers at ESADE Business School, in Barcelona, also addressed the topic in a recent study of high-growth strategies.[iii] That, says Prof. Xavier Mendoza, highlights the importance "of stressing quality over quantity. The argument is highly supported by the empirical evidence. Europe needs more of these high-growth companies. Radical change is needed in the politics of entrepreneurship."

i Biotechnology in Europe: 2006 Comparative Study. Critical I. http://www.europabio.org/CriticalI2006/critical259_FINAL.pdf

ii Autio, Erkko. High-Growth Entrepreneurship: The Challenge for Europe. A roundtable debate – 20 June 2007, Imperial College London. http://www.sciencebusiness.net/documents/autio.pdf

iii Svejenova, Silviya, José Luis Marín, Montse Ollé, and Marcel Planellas. New Paths to Internationalisation: Born-Global and Reborn-Global Companies. Quaderns OME. Internacionalització i Competitivitat, no. 2. COPCA and Generalitat de Catalunya. Barcelona, January 2007.

How do you get a gazelle?

High-growth entrepreneurs are rare – a unique product of both nurture and nature. They start with special talents, but the economic and regulatory environment in which they operate can help or hinder them. "Who are these creatures?" asks Pat Cox, president of the European Movement and former president of the European Parliament. "We need to try and personify them, and locate some of their characteristics. We tell too few stories celebrating these people when they are Europeans." Herewith, from suggestions at the Innovation Board meeting in London, are some of those characteristics.

In the *nature* of a high-growth entrepreneur

Originality. The greatest entrepreneurs have a better idea: a novel product, service or process that fills a need. Examples: Sean FitzPatrick of Anglo-Irish Bank, with a high-speed credit-rating system that permitted hyper-growth, or Robin Saxby of Britain's ARM with a "fab"-less, low-power chip design that's now the brains inside most of the world's mobile phones.

Adventurousness. In the generally risk-averse culture of Europe, it's rare to find an entrepreneur with the will to quit a cushy job and gamble the future on an idea. Example: Geoffroy Roux de Bézieux, who quit a fast-track career at L'Oreal to start what became a roaring success in the French mobile-phone market with Phonehouse.

Dedication. Rigor and determination are hot-wired into the best entrepreneurs – and that comes naturally to many scientists and engineers.

Ambition. International business success comes easier if the entrepreneur's plan is global from the start. Examples: David Bäckström, whose Telemedicine Clinic helped create the market for remote medical diagnoses – but gets most of its business outside its home country, Spain; and Isak Andic, a former Barcelona street trader who founded women's clothing chain Mango with an ambition to have a store in every major city in the world.

Humility. Perhaps the rarest, but most important, trait in a high-growth entrepreneur is the ability to recognise one's personal limitations – and seek help from others, rather than try to run the whole show. An example: Alexander von Gabain, whose Austrian vaccine-company Intercell thrived on his recognition that he was a better scientist than businessman, and so recruited a professional CEO to run the show while he focused on R&D.

In the *nurture* of a high-growth entrepreneur

A thriving ecosystem. Businesses don't grow in vacuums; they need networks of suppliers, researchers and customers. Examples: Martin Wood and Peter Williams, whose Oxford Instruments has grown in a thriving context of science-based companies and labs that buy from it and supply it.

Financial backing. It takes money for a start-up to grow from minnow to whale; and deep-pocketed, deeply engaged investors are critically important. Examples: Again, Alexander von Gabain of Intercell, whose managers worked closely with its lead investors.

A big, open market. A company needs plenty of room for manoeuvre – and some of the brightest entrepreneurial stars have profited when old, regulated markets started to open up. Example: Michael O'Leary of RyanAir, with a better airline business model that capitalised on the gradual liberalisation of Europe's skies.

Big brothers. For many start-ups, it helps to grow in the shelter of big corporations that create their own ecosystems. Examples: Risto Siilasmaa, whose F-Secure antivirus company thrived in the 3,500-company world created around mobile-phone giant Nokia; and Peter Bang and Jesper Balser, whose Danish business-process software firm Navision grew up in Microsoft's programming environment – and was later bought by it.

Profiles in entrepreneurship

Forget the abstract theories: It's people – individual men and women with an overwhelming drive to succeed – who are at the heart of innovation. Herewith, some profiles in entrepreneurial courage – role models, nominated by participants in our Innovation Board meetings.

Alexander von Gabain: People, not location

Cormac Sheridan

It may be too much of a stretch to suggest that a young man's ponytail played an important role in the founding of one of Europe's top biotechnology firms. But Intercell co-founder and chief scientific officer Alexander von Gabain recalls that the team who trooped into the offices of TVM Capital in Munich almost ten years ago offered a spread across three or four generations of scientists and an open culture that was quite different from the usual line-up of professorial types then setting up companies in the German-speaking world.

The team included Max Birnstiel, a senior scientific statesman and outgoing scientific director of the Institute of Molecular Pathology (IMP) in the Vienna Biocenter research campus; von Gabain, a globetrotting professor of microbiology at the University of Vienna, with stints at Heidelberg University, Stanford University and the Karolinska Institute in Stockholm; Michael Buschle and Walter Schmidt, scientists who were still in the early stages of their careers; and Aaron Hirsh, then a pony-tailed young student, who later found fame as a respected science writer.

With von Gabain at the helm, this group laid the foundations of an enterprise that would rise to the top of Europe's biotechnology pile over the next decade and, arguably, rewrite the region's rules for biotechnology start-ups.

Operating from Vienna, a region never previously considered a major international life sciences hub, and quoted on the Vienna Stock Exchange – a market with no prior history of biotechnology investing – Intercell has built a market capitalisation of around a billion euros and has gained a reputation as Europe's foremost vaccines innovator.

"It does seem as though the borders have broken down," says Peter Welford, analyst at Lehman Brothers in London. "They've demonstrated that you don't need to have strong local [investor] support for your industry."

Broad base of backers

Instead, the company has managed to win over a broad base of international backers, attracted by the quality of the company and by its ability to crank out significant deals with the vaccine industry's biggest players. A multi-faceted alliance with Novartis, signed in July, is one of the biggest transactions in European biotech. With €270 million in guaranteed cash, and hundreds of millions more in potential milestones, it will transform Intercell's balance sheet and give it the kind of financial strength and flexibility enjoyed by just a handful of Europe's biotechnology elite.

Those who invested in the company's IPO in February 2005 have been amply rewarded. Its shares, initially priced at €5.50 each, were soaring past €30 in May 2008 – partly on the strength of its next big growth plan: Buying US biotech Iomai for $189 million, to develop needle-free vaccines for travelers.

Much of the company's success can be attributed to von Gabain, who is widely credited not only for his scientific capability, but also for his commercial nous and distinct lack of ego.

"He recognised what he did know, but he also recognised what he didn't know and needed to bring on board," says Cathrin Petty, healthcare partner at Apax Partners in London, which led Intercell's €27 million Series B round in January 2001. "He was responsible for recruiting a stellar team."

Von Gabain handed over the CEO job to the company's erstwhile chief operating officer Gerd Zettlmeissl, who has a pharma industry background, in October 2005 and took on the role of chief scientific officer himself.

Recipe for success

Von Gabain himself attributes Intercell's success to three principal factors: a strong scientific platform; a strong team; and the ability to "be humble and never promise more than you can deliver". Too many young biotechnology firms, particularly in Europe, are starting out without a "really innovative and robust founding technology", he says, unlike the first generation of industry leaders, such as Genentech, Biogen Idec and Genzyme. "The science coming out of the IMP was incredibly strong," says Petty.

The team von Gabain built was strongly multinational from the start, with over a dozen nationalities represented during the company's early stages of development. That kind of mix, von Gabain says, is essential for developing a broad, flexible approach to problem solving and to accommodating alternative points of view. In a monocultural environment, von Gabain says, people become obsessed by the need to conform to their cultural norms. He also attracted tier-one venture capital investors – among them TVM Capital, its first-round investor, and Nomura International, as well as Apax, and a weighty scientific advisory board, which included his old postdoctoral supervisor, the Stanford-based genetic engineering pioneer Stanley N. Cohen. "We were really striving for quality from day one."

David Bäckström: Your X-rays are in the email

Michael Kenward

Radiologists are in short supply in parts of Europe. Telemedicine Clinic, founded by David Bäckström, solves the problem by remote control, with a network of doctors who diagnose patients on the basis of medical images that arrive by email.

It is unlikely that David Bäckström was thinking about social networking when he started Telemedicine Clinic along with his partner, Henrik Agrell. After all, when he created the business, in Barcelona in April 2002, the term wasn't seen as a way to raise money for new internet ventures. In effect though, with a growing global team of consultants, the company is a focused social network that offers long-distance medical diagnostic services to health services throughout Europe. Indeed, says Bäckström, "We have created a community of radiologists."

Bäckström, a Swede, with degrees in business administration and economics from the University of Umeå, went to Barcelona in 2000 to open a branch of what was then his second start-up, a Web site for consumers seeking the best deals from providers of telephone services, electricity and other utilities. After selling off the business, Bäckström was keen to find something that would let him stay in the city. He revisited an idea that he had first investigated a few years earlier, telemedicine. One of those "next big ideas" that had been threatening to happen for 20 years or so, telemedicine hadn't taken off. But the development of "Broadband Europe" and the growing use of digital imaging in medicine, meant that the technology was finally capable of sending medical images from country to country.

Bäckström also knew that back home in Sweden, and in other parts of Europe, radiologists and pathologists are in short supply. In the UK, for example, "waiting for the X rays" is a constant refrain in the country's hospitals. Bäckström saw this as an opportunity to offer services in teleradiology, remote analysis of images from medical radiology – using new digital techniques.

Medicine goes digital

The company, which likes to call itself Europe's first virtual hospital, has customers in hospitals around the continent. They take diagnostic images of patients, mostly MRI scans, at the moment, and send these to Barcelona. There a team of experts analyses and interprets the images and returns the diagnosis to the patient's hospital.

Why Barcelona? Apart from Bäckström's enthusiasm for the city – one that other medics share, making it easy to attract doctors from elsewhere in Europe – costs are lower in Spain than in northern Europe. The fiscal system is also more favourable, with great tax breaks for foreigners moving into the region. The company operates from the 21st floor of a high-rise building that overlooks the Mediterranean and is next door to the Biomedical Research Centre and Hospital del Mar, one of Barcelona's many teaching hospitals. About half of the company's team of some 75 diagnostic medics work out of Barcelona. TMC's doctors are also in Sweden, Denmark, Finland, Hungary, Germany and the UK. All of the radiologists working for the company are insured and registered in the countries they read cases from.

Catalan investment

The location in Barcelona also helped in the finance front. An initial investment of €300,000 got the ball rolling. In February 2004, Invernova, a VC fund backed by the Catalan government, the Catalan Finance Institute and the Centre for Innovation and Business

Development, invested a further €2 million. This VC cash gave the company the credibility it needed to offer public services.

In September 2005, Molins Capital Inversión, the first VC fund of Active Capital Partners, acquired 16 per cent of TMC. This gave the business the cash it needed to develop its services and to move into new regions. Then in September 2007 the company raised a further €7 million in a round led by Kennet Partners.

TMC makes it possible for smaller local hospitals to provide the same sort of expert diagnosis that is taken for granted in larger specialist medical centres.The company reckons to take 36 hours to do what can take three weeks in hospitals. With customers in Sweden, Norway and the UK, TMC uses a secure communications network that connects to, for example, 95 per cent of the hospitals in Sweden through Sjunet, the country's healthcare network. In April 2007, the UK's National Health Service awarded TC a large contract for reporting services for positron emission tomography/computerised tomography (PET/CT) – a new radiology examination to detect cancer.

CT's turnover of examinations is increasing by about a factor of three every year. The company is on course to process 200,000 this year, and hopes to reach 500,000 next year.

Bäckström estimates that telemedicine could eventually account for 20 per cent of all diagnostic radiology. Not quite enough to match Facebook, but more than enough to create a large social network of radiologists, which is why CT sees training as yet another major outlet for its approach to radiology.

Risto Siilasmaa: Fostering innovation may mean being 'un-Finnish'

Lori Valigra

The art of innovation – putting your ideas first, trumpeting your merits, taking on risk – is most "un-Finnish", says Risto Siilasmaa. To Finns, egalitarianism is the norm, modesty is a virtue and job security means success.

Risto Siilasmaa, the understated founder and chairman of the board of Internet and mobile network security company F-Secure of Helsinki, has succeeded at balancing being an entrepreneur and a Finn. He won't talk about the special traits that have made him successful. That's for others to comment about, he says. The facts speak for themselves: he's built a 19-year-old Internet security company with 540 employees and €26.6 million in revenues in the first quarter of 2008, up 15 per cent over the same quarter last year, with €5.6 million in cash flow.

Siilasmaa has ideas about how Finland can foster innovation and entrepreneurship that involve changes within education, government and individuals. The key ingredient for entrepreneurship is people who don't give up and who are optimistic. "That attitude is deeply ingrained into the way people in the United States think," he says.

The students who apply for teacher training at Finland's universities are very bright, he notes, but they also tend to be the most risk-averse people in the country, enjoying employment security for life. "How do you get very bright but risk-averse people to train young people to be more innovative?" he says. "People change slowly. It will be at least a generation before we see change."

Get government involved

The government also needs to get involved. With Finland facing an ageing population in which pensioners will outnumber working people, there is a need for new growth companies. "The government needs to help new growth companies to be created." Siilasmaa says that many of the actions needed to promote entrepreneurship and support the creation of growth companies are politically incorrect. "Our leading politicians should have the courage to put national interests first."

One proposal Siilasmaa has made is to get more angel investors, especially retirees who have international business experience and who have accumulated meaningful wealth, involved in new growth companies. "Every single government-funded investment into companies should only be possible if there already is one angel investor," he says. "If an entrepreneur can't convince one angel to invest €20,000 in his or her idea, the idea is bad or the entrepreneur cannot sell. In neither case should the government put money into the company."

To become an entrepreneur in today's globalised world, "you really need to want to do it," he says. Siilasmaa knows about the school of hard knocks. In the spring of 2001 F-Secure reduced personnel by about 20 per cent in response to weak demand for certain

products. “It was difficult, but I’m happy I went through those years and learned. Every company will go through difficult times. An entrepreneur can never give up.” Last November, with the company in a strong business position, Siilasmaa did resign as CEO to become chairman of the board.

Since then, he has kept busy. He’s involved in 10 smaller companies, most of which he’s a major shareholder in. He’s chairman of three of them, a board member in another three and an advisor in the rest. He also is involved with several large companies, but since he isn’t officially employed by them he won’t reveal their names. “What’s been highly educational is to see how different industries work,” he says.

Reportedly worth several hundred million euros, Siilasmaa says he doesn’t need to focus on short-term returns. “I don’t have the exit pressures of typical venture capitalists,” he says. “All companies I’ve invested in have big ideas that change the way people live or how an industry functions. I want one of them to grow larger than F-Secure.”

Jean-Michel Aulas: king of the middle market

Fabrice Delaye

Critical size is an elusive concept. As soon as a company reaches it, the target changes. Few entrepreneurs have been chasing the ideal size more consistently than Jean-Michel Aulas, founder and manager of French software company Cegid. During the past 20 years he has orchestrated no fewer than 10 mergers and acquisitions. And he is not finished yet: now he is contemplating growth outside France.

The man seems tireless. With a two-year professional degree, Aulas started his first company in 1969 at the age of 20, selling it after three years and joining a computer services company. Here he gained insights into the specialised software needs of companies in different sectors.
Aulas was also quick to understand the significance that the introduction of the personal computer would have for medium-size companies. He soon left his job to found a company. He thought the first beneficiaries of the PC revolution would be accountants. They were (and still are) among his best customers.

Aulas’ company Cegid floated on the stock exchange after only three years, moving up to the main market in 1989. He spent most of the money raised in the IPO on consolidating his market by acquiring small specialist companies. This strategy allowed Cegid to build a dominant position in fashion, construction, restaurants and various industrial sectors.
At a time when the large software companies are trying to muscle in on the middle market, Aulas’ little kingdom (40 per cent of the French SME market) is looked on with envy by competitors. In 2006, Microsoft CEO, Steve Ballmer visited Lyon, France’s second city and Cegid’s headquarters, to sign a partnership with Aulas to develop sector specific applications in security and on-demand business.

Leader of the pack

Whatever his standing in the international software market, in France Aulas is better known for his sporting connections than his entrepreneurial success. As president of French football premiere league side Olympique Lyonnais since 1987, Aulas is in the newspapers almost daily, sparking, or commenting on, the controversies that seem to dominate the game these days.
But his attitude as the head of the football club provides a good insight into his entrepreneurial style. Tagged as ultra-liberal, Aulas regularly uses the platform offered by Olympique Lyonnais’ ups and downs to argue about tax breaks, labour deregulation and IPO possibilities for football clubs – he took Olympique Lyonnais public last year.

And he hasn’t stopped taking risks. Maybe it is because he is a true survivor. At 17 he broke his spine and was forced to spend six months immobilised in bed. And Aulas has sacrificed a lot to his ventures. He is divorced, and when asked recently about his next grand plans, he said he was going on vacation with his son, something he has rarely been able to do for a long time.

Contrary to recurrent rumours of a sale of his company, Aulas’ football activities – he is now president of the G14, the club of the super-rich European football clubs – have not yet restricted his computer venture. He is from Lyon, a city where the business culture has little tolerance for overspending and flamboyance. In 2006, Cegid had revenues of €228.2 million and profits of €16.2 million. In the first half of 2007 revenues grew by 22 per cent.

Torkel Klingberg: More than just a computer game

Michael Kenward

When Torkel Klingberg found that memory isn't as "hard-wired" as thought, he decided to borrow ideas from computer games to treat children suffering from attention disorders.

Healthcare professionals naturally concentrate their efforts on patients and their afflictions. Few medical researchers have the lateral thinking it takes to see opportunities for their work in other applications, let alone to see those ideas through to commercialisation. Harriet Wallberg-Henriksson, president of Sweden's Karolinska Institutet, singles out Torkel Klingberg as an exception.

Klingberg, professor of cognitive neuroscience at Karolinska, works in a hot area of science, understanding how the brain works. By merging cognitive science and computers, he also surfs ahead of the wave dubbed converging technologies, the idea that many of tomorrow's new products and services will come from the merger of previously disparate areas of science.

Klingberg's group uses fMRI, or functional magnetic resonance imaging, to study what is going on physiologically in the brain. The technique, which is revolutionising cognitive science, allows researchers to investigate how memory develops in young people and to compare this with how memory works in adults. It turns out that youngsters with attention deficit hyperactivity disorder, or ADHD, and some people born prematurely, have problems with their working memory. In the course of its research, the Karolinska group found that it is possible to train working memory.

Setting up a company

Not content with adding to the growing body of knowledge on the subject – something that the group has done with numerous peer reviewed papers – in 2001 Klingberg set up a company, Cogmed, with backing from Karolinska's development fund and venture capital investors, to sell software it calls Cogmed Working Memory Training.

Children participate in exercises through a software programme called RoboMemo. For about 30 minutes every weekday for five weeks, RoboMemo guides the child through different exercises that are, says Cogmed, "designed to train both the visuo-spatial and verbal working memory. The level of difficulty continually adjusts based on the real-time performance of the participant."

More than 1,400 children and adults have been through the training in Europe. Clinical trials have shown that more than 80 per cent of children who have completed Cogmed's programme have, "dramatic and lasting improvements to their attention, impulse control and problem solving skills". "Parents often report that their children perform better in school and are able to keep up a coherent conversation more easily after training," Klingberg said recently. "Being able to hold back impulses, such as anger outbursts, and keeping better track of one's things are other every-day life benefits.

US expansion

With between 3 and 5 per cent of school-age children in the US estimated to have ADHD, Cogmed clearly has a large potential market. Earlier this year the company opened an office in the US and more than 25 practices now offer Cogmed Working Memory Training.

Klingberg didn't set out to start a new business to exploit his ideas. At first he considered licensing the idea but he soon found that using computerised training for a medical condition was such a new idea that it was difficult to find a company that could take it on. The same issue came up when Cogmed was looking for funds. "The fact that we did not really belong to any particular category, such as IT or pharma, made it more difficult," Klingberg explains.

Wallberg-Henriksson likes Cogmed because, she says, "It is not a fancy molecule or a new drug, but based on an observation." Instead, Cogmed trains the memory with tricks borrowed from computer games.

RoboMemo is not only for ADHD, says Klingberg. It is also "a tool for improving working memory and attention for anyone with an impairment" – including stroke victims. RoboMemo could even help us to counter the effects of ageing. The capacity of our working memory goes down as we get older, "as much as 8 per cent per decade, starting when we are 30," says Klingberg. "Many older persons might therefore want to use this as a way to stay sharp as they age." Perhaps computer games have something to teach older people after all.

Jean Stéphenne: the inside conqueror

Fabrice Delaye

To find pharma giant GlaxoSmithKline's latest source of inspiration for its R&D management, don't look to places like Route 128 in Boston or California's biotech clusters, but to the village of Rixensart in French-speaking Belgium – and Jean Stéphenne.

There, over the past 30 years, Jean Stéphenne has crafted one of the most productive units of the company, GSK Biologicals, transforming a small vaccines entity into a significant revenue and profit contributor. The enterprise now holds 25 per cent of the world vaccines market. It produces 1.2 billion doses a year, employs 6,200 people worldwide and will generate revenues of around $3 billion this year.

Yet in 1974, when Stèphenne joined what is now GSK Biologicals, there were 50 people and annual revenues of $3 million from the company's lone product, a 20-year-old polio vaccine.
What are the ingredients of this transformation? First, Stéphenne, now aged 55, was given the freedom to behave as if GSK Biologicals was his own company. And maybe more importantly, he has been able to keep this independence from the corporation under a highly regarded banner of intrapreneurship rather than be seen as empire building.

In 2001, GSK started to emulate Jean Stéphenne's model in Rixensart with the launch of seven autonomous Centres of Excellence for Drug Discovery (CEDDs).

"The idea," explains Stéphenne, "is to have both internal and external researches and to build multidisciplinary teams." Even now that GSK Biologicals has 700 researchers on its payroll and about the same number at development level, Stèphenne does not want large internal groups.

GSK Biologicals researchers are divided in teams that work through a network of 40 scientific partnerships with universities and biotech companies. They are multi-disciplinary – in the broadest sense of the term, involving scientists, clinicians, marketers and production experts. "Those autonomous teams develop a better sense of business culture among scientists as well as a better sense of strategy and scientific realities among marketers," explains Stéphenne.

The patent-based revolution

The son of farmers, Stéphenne graduated in chemistry and bioindustries from the Gembloux Agricultural University, Belgium, in 1974. After few months in a public lab, he fled the civil service for the dynamism of little private company RIT (Recherche et Industrie Therapeutiques) in Rixensart. There, he has experienced all the ups and downs of the corporate lab under the successive ownership of Beecham, SmithKline and finally GlaxoSmithKline.

In 1984, Stéphenne was asked to manage the development of a hepatitis B vaccine programme. The product was discovered in Rixensart, but the programme was stalled en route to commercialisation. He brought together a large panel of university researchers to deal with the various problems. Within two years the vaccine was on the market, giving Stéphenne a free hand to negotiate the expansion of the Rixensart facility, trumping proposals to transfer vaccine research to the US. The vaccine became the first ever to be patented – and Stéphenne was raised to the title of baron by Belgium's King Albert II.

The independent intrapreneur is now considering a further move in his revolution of the world vaccines market. A true believer in globalisation's virtues, Stéphenne wants to conquer the North from the South. Instead of launching in the US and Europe the 20 vaccines GSK Biologicals has in clinical trials, and the 20 in pre clinical development, he will first offer them to developing countries.

Stéphenne believes the drug industry cannot afford to repeat the communication mistakes made when it priced HIV drugs beyond the means of poorer countries, and he hopes his South–North strategy will avoid price wars. "GSK Bio is not entering market without strong innovation," says Stéphenne.

Part II

The policy debate – and the recommendations

5 problems

The cultural dimension

The university

Fostering clusters

Finance

Fragmented markets

Problem I: The cultural dimension

Denis Payre: "We were Class B citizens."

Albert Esteve: "Young people are not prepared to take the risk."

Erkko Autio: European politicians don't like to be seen helping the typical entrepreneur.

When Denis Payre co-founded French software giant Business Objects, the danger signs were posted all along the road.

His family and friends thought it too risky. And the French government, he learned to his dismay, couldn't care less: If the venture failed, he would not be eligible for unemployment benefits. "So we were starting up the company, and potentially creating a lot of employment - but there was no safety net," says Payre. "We were Class B citizens."

That's often the lot of the entrepreneur in risk-averse Europe: a fish out of water. Hans Martens, a Danish entrepreneur who is now CEO of a Brussels think-tank, the European Policy Centre, was 45 years old with dependent children when he left his post as director of a bank to start a company. "What I did was counter-cultural."

Culture: That's the most important obstacle to successful entrepreneurs in Europe. Commissioner Potočnik cites Eurobarometer surveys that 60 per cent of Europeans have never considered starting a business. And among those companies that do get started, comparatively few in Europe grow to global scale. Says Cox: We need "to allow in our culture for the idea of noble failure: It is very rare for an innovator and entrepreneur to get everything right the first time. Sometimes it is possible to get everything wrong the first time."

Why is Europe this way? Prof. Xavier Mendoza, of ESADE, thinks it "has something to do with the model of social contract we have in Europe. We give too much attention to the safety net. We should think about assuming risks." And it goes with lots of other impediments to change in Europe: language barriers, an ingrained distrust of industry and entrepreneurs in some countries, or the cultural differences between Europe's north and south. Rigidities in the system, all. The result, says Albert Esteve, president of Esteve Quimica: "Young people are not willing to take the risk. They're not thinking in terms of innovation."

And culture shapes policy. At present, politicians love SMEs – at least in speeches. But that support is egalitarian, favouring broad self-employment and business-creation, rather than high-growth competitors for a global economy. What's needed is a shift in policy to support quality, as well as quantity. That's a hard sell for politicians. High-growth entrepreneurs are people with lots of options: the data suggest, according to Prof. Errko Autio of Imperial College London, that they are typically well-educated, 35 to 40 years old, male, in a top income bracket and, before they leave to start a business, hold a good job. They have the skills and contacts needed for business success; but they are not the kind of people European politicians generally like to be seen helping. The underlying economic logic – that those are also the people who can do the most in a market economy to create opportunities for all the rest – is a hard text for the typical social democratic or centrist politician to learn. Again, culture is the issue.

So what is to be done? What's needed is a broad program of culture change – from the schools through the media.

RECOMMENDATION

Teach the values of innovation and entrepreneurship in our schools

In many European countries, students absorb an attitude that starting a business is something *other* people do – and, perhaps, something a bit selfish and vaguely anti-social. In such an environment, entrepreneurship isn't going to be an obvious career choice. And heaven help the entrepreneur who tries and fails. "If you fail in Europe, you are done, compared to the US," says Roch Doliveux, CEO of Belgian pharma company UCB. "There is something about European culture that says it is wrong to be an entrepreneur. Harvard professors pride themselves on being serial entrepreneurs; here you hide it – it's not a plus."

Of course, entrepreneurship is only part of the educational challenge. Generally speaking, from school through university, in Europe "our educational system does not stimulate experimentation," says Prof. Mendoza. In school, there's too much emphasis on diligent effort, rather than creative experimentation. "We are risk- and failure-averse. We need to experiment from very early ages."

There are some promising initiatives to correct this. In France, an organisation called La Journée de l'Entrepreneur in 2007 began orchestrating a national day of school activities. Several non-profits and government bodies across Europe have signed on for a Global Entrepreneurship Week (Nov. 17-23), with events in schools and the media.
But more forceful action is needed – with official support. Education is, for the most part, outside the direct authority of the European Commission – but it does have the power to guide, suggest, cajole and organise education efforts. It should be more forcefully urging that experimentation, innovation and entrepreneurship become part of a standard school curriculum. It could, across Europe, facilitate an entrepreneurship day in schools. It should promote discussion of the social value of innovation, and hold up role models for the next generation. Topic for a secondary-school history report: Who was André Citroën, Adriano Olivetti or Lars Magnus Ericsson?

RECOMMENDATION

Celebrate successful entrepreneurs – in prizes and the media

Needed: an upgrade to the image of entrepreneurs in Europe. It's a daunting task, for which no one initiative is enough. A series of communications are needed – "not so much a single telegram, as a continuous blog," says Courtois.

One missing factor is fairly simple to supply: through prizes, media campaigns and competitions, put successful entrepreneurs on a public pedestal – on a pan-European scale. There are, already, several local awards for entrepreneurship, private and public: Research universities like University College London or ETH-Zurich organise annual on-campus awards. There is, even, a (small) European Commission awards program for enterprise. But all lack broader visibility, media buzz and respect.

"We have local competitions for entrepreneur of the year," says Courtois. It would be interesting to bring the national efforts to a European context. Mix categories – awards for microcredit companies, best 1 to 5-year-old company, best innovation clusters. Talk about the exchange of best practice. Benchmark readiness across member states."

"We should celebrate entrepreneurs, celebrate our success stories," says Prof. Mendoza. "In the US it is quite usual – and the media can play a role here."

Roche Doliveux: "If you fail in Europe, you are done."

Problem II: The university

Research universities play a special role in innovation. They supply the skilled labour; they come up with the discoveries; and, if well organised, take the first step towards turning the discoveries into job-creating products and services.

Richard Sykes: The market-friendly university.

Imperial College London is a model for this in Europe, with more than 70 spin-out companies to date. Sir Richard Sykes, the rector, says that critical to success is the interaction between its traditional engineering and science faculties and its more-recent business-school faculty. The business school can look at the theory of what makes a good entrepreneur, or how to establish and manage a start-up, and put it into practice. The academic clinicians can work on several fronts, interacting with colleagues in the business school and across scientific disciplines, whilst also being involved at the bedside, treating patients. The aim: To create a culture of entrepreneurship. "A big part of the business school culture involves engaging the medics and scientists," Sykes says.

Sykes calls this a market-friendly university – with the business skills and organisational flexibility to innovate. It's also unusual in Europe; more common is the ivory-tower university, where academics simply don't do business.

Needed: fundamental change in Europe to make universities more flexible, more open – and more closely engaged in the process of innovation.

RECOMMENDATION

Break the barrier between business and technical universities

A fruitful interplay between business and technical disciplines is critical to innovation. And no better place for this to start than at the universities that form the next generation of leaders.

In most of Europe, however, "there's too much inbreeding," complains Prof. Mendoza. "We need to bring the scientific and technical world together with the business schools. Business schools need to partner much more with scientific and technical universities. There is an issue of language and mind-set. We need to prepare both sides to understand each other."

This doesn't mean that all scientists need an MBA, or all business students need a PhD. In fact, most successful start-ups recognise the importance of putting the right person in the right job. It's a rare university spin-out that can continue for long – with success – with a scientist-founder still in the CEO role, for instance. But a mutual understanding of the two worlds of science and business can make a big difference.

Alphonse Sauquet: "Intractable pattern" in European academia.

Helmut Schüssler: In contrast to the US, European entrepreneurs often think small.

RECOMMENDATION

Organise researchers to work across scientific disciplines

It may be a cliché: "Thinking outside the box." But it's also an important part of innovation at the start of the 21st Century. The most successful universities encourage researchers to collaborate with colleagues from other departments. At Imperial, there's an Institute for Biomedical Engineering, and another for climate change research. ETH has five "competence centres," that include researchers in materials, energy, the environment and other fields.

Taking such a multi-disciplinary approach is the only way some of our most intractable problems will get solved – and it will be the source of some of the most fruitful innovations from which new European competitors could spring. The EU has announced one such initiative, the EIT, as an EU-funded framework for researchers across countries and disciplines to collaborate on a few of the world's greatest problems.

But it needs more effort on a pan-European level. One panellist, Philippe Pouletty, general partner of Truffle Capital and chairman of France Biotech, urges a targeted initiative: To create small institutes, of a few hundred researchers each, in "some very nice places" – attractive enough to draw the top minds of the world. Once there, a researcher "would have broad freedom, be well paid, and work for five or seven years on trans-disciplinary, high-level problems." He calls it a Da Vinci Institute, and presents it as the "cherry on the cake for European research, telling the world that Europe is looking for the best."

RECOMMENDATION

Train for global growth – and flexibility

One obstacle to high-growth enterprise isn't in the market at all – but in the mind of the entrepreneur.

In contrast to the US, in Europe entrepreneurs too often think small. With potential markets fragmented by language and border, a typical entrepreneur in, say, Munich would start by thinking locally rather than globally, argues Helmut Schüssler, chairman of the European Private Equity and Venture Capital Association and managing partner of TVM Capital. After the business is thriving in Munich, the entrepreneurs might expand into the rest of southern Germany. International expansion might mean a step across the border into Austria. It's a careful, cautious approach – too careful. "At that point you will have already lost, because if there is a big business someone in the US will think of it and globalise in three years," he said.

An end to narrow thinking is needed elsewhere in the curriculum, too. Prof. Alfons Sauquet of ESADE bemoans an "intractable pattern" in European academia: "The way we have linked university degrees with professions." A medical degree leads, usually, to a job in a national health service. An electrical engineering degree leads to Philips or Telefonica. What would happen if the electrical engineer were in the health service, improving medical devices or electronic record-keeping systems? Or if the doctor were at Telefonica trying to make telemedicine practical, rather than merely interesting? At present, Sauquet says, the standard academic career tracks "make universities rigid, and lower the possibility for innovation."

Esko Aho, president of Finnish innovation fund SITRA and former prime minister, suggests yet another example of academic rigidity: Low mobility into and out of the university system. Take the case of older professionals, at or near retirement, with a lifetime of experience and the time to impart it to others cheaply. "We have to open our universities for those people who have made good careers in business, or government or media, and are still able to give their input. We are too formalistic."

Problem III: Fostering clusters

The old real-estate line – just three things matter: location, location and location – is true also for innovative, high-growth companies. A dynamic cluster of technology companies, large and small, grows spontaneously around the best universities.

David Gann: "You need a critical mass."

These clusters matter to a local economy. The Cambridge cluster, for instance, now includes more than 3,000 enterprises and, the university estimates, has produced more than 200 millionaires among its faculty.

These clusters matter greatly to the entrepreneurs, too. Success, says Prof David Gann of Imperial's Tanaka School of Business, isn't just about individuals but also about the context in which they operate. The founders of Oxford Instruments, a (for Europe) large scientific-equipment supplier, is a case in point: They have grown the company in a vibrant community of specialised technology customers, suppliers and laboratories. To succeed, "you need a critical mass around you providing an opportunity to engage and rub shoulders with other scientists."

And finally, the clusters matter to multinationals. The world of R&D is now global. For the likes of Nokia, Toyota or Microsoft, their innovation strategies depend on a healthy exchange of new ideas and bright people – wherever in the world they happen to be. Procter & Gamble, for instance, has a corporate goal of obtaining at least 50 per cent of its innovations – new products, services or processes – from outside its own labs. Clusters matter to the multinationals because they congregate lots of bright people and ideas in a few, manageable places, and create new possibilities for growth. They matter to a country or region because, in the global marketplace for ideas, they become magnets to attract multinational investment.

RECOMMENDATION

Adopt policies to encourage innovative clusters around our universities

In the 1980s, when the Silicon Valley "brand" was emerging, nearly every government in Europe wanted its own. Now, policy-makers realise the cluster game is harder than it looks. You can't just import Californian ideas to the Costa Brava; coherent, locally tailored plans are needed – with long-term goals.

Prof. Mendoza cites Barcelona, which is now striving to be a dynamic hub of innovation for southern Europe. In 2006, he notes, Catalonia asked some experts from abroad to diagnose the region's potential for innovation. The conclusion: In the Barcelona region "we have good academia, a developed VC sector, a public administration that is aware – but we are missing the link, the connections." Pulling those links together into a coherent cluster is the challenge for Barcelona, and the aim of several new local initiatives. Generally, he says, Europe needs "communities where the business world, science, academia, politicians, public administrators – all share the successes of innovation, living the failures, overcoming the hurdles.

RECOMMENDATION

Create free innovation zones

One way to speed cluster growth in Europe would be to cut them some slack – reduce regulation, assist financing, encourage mobility.

Some call this approach "free innovation zones". These would be a limited number of regional clusters – perhaps five or seven – with special legal, administrative and incentive policies to encourage innovation. They would be places where big and small business, university researchers and individual entrepreneurs, could work together more easily. Companies would find it easier to license intellectual property created in the zone; start-ups would have easier access to finance. European programmes – like the planned European Institute of Innovation and Technology – would help them develop. The result would be a unique ecosystem in which innovations can be developed more easily, and small companies could grow faster.

Says Jean-Philippe Courtois, president of Microsoft International: "We know there are great islands of innovation in Europe, but we lack the critical mass. We can pick places in Europe were we can loosen the rigidities of the system, apply new ways of thinking, enabling financing, and applying IP."

RECOMMENDATION

Recognise the role of large companies in cluster-development

For a cluster, attracting multinational investment is a sign of having "made it." For the high-growth spin-outs, these multinationals can be their fastest route to global markets. A study by ESADE researchers found a frequent factor in the most successful start-ups' growth was their relationships with larger companies – as R&D partners, suppliers, labour pools and more. "In many instances you clearly see a symbiosis with the large companies," says Mendoza.

Courtois notes that Microsoft has a network of 750,000 SMEs around the world with which it works, including software developers, PC and component manufacturers, systems developers and trainers. "Global companies like Microsoft have an interest in having big, open partnerships in Europe," he says. In the case of Nokia, in whose wake 3,500 small companies have grown, its own successes aren't those of the multinational alone, says Commissioner Potočnik: "It's the success of a good way to organise cooperation."

Jean-Philippe Courtois: "We know there are great islands of innovation in Europe, but we lack the critical mass."

Problem IV: Finance

Raising money is difficult in Europe. We at Science|Business have direct experience: when we were seeking investors to launch the company in Europe in 2005, one friend in London asked: Why bother with Europe? Move to San Francisco.

Certainly, the investment numbers document the problem. For early-stage capital, according to the European Investment Fund, there is three times as much capital available in the US, as a percentage of GDP, than in Europe. Academic surveys suggest that the US has at least 50 times as many "angel" investors – wealthy individuals who help bankroll start-ups – as does Europe.

But the problem doesn't get easier as a company matures; quite the contrary. In fact, the data suggest, it can be at least as difficult to raise capital for a middling-size company in Europe. Only when a company is very large, and is financing on an international scale, is a European no longer at a competitive disadvantage.

The reasons are many. One is the high rate of personal tax: in a country like Belgium, where more than half the average pay goes to the government, there aren't as many opportunities to amass investment funds – and what money they isn't gambled on risky new companies. Market fragmentation is another cause of the problem. Each country has its own tax rules and pension systems – so there are few American-style, jumbo-size pension fund managers with the resources to build vast, diversified portfolios – and so can afford to gamble on young, innovative companies. And European banks, now as ever, are a byword for caution in lending (for good reason, some might say after watching the sub-prime mortgage fiasco in the US).

Philippe Pouletty: A European legal status for young, innovative companies.

Xavier Mendoza: Symbiosis with large companies.

RECOMMENDATION

Target tax incentives on Young Innovative Companies – YICs

One problem in European innovation policy is its scatter-shot approach: the targets keep changing and spreading, as one set of politicians succeeds another and policies are defined more as means (for example, research spending) rather than goals (number and growth rate of innovative companies). What's needed is a more disciplined approach, encouraging the high-growth companies that can produce the most jobs and innovation.

To that end, Philippe Pouletty argues for the creation, on a pan-European basis, of a legal and fiscal status for "young, innovative companies" – would-be European companies less than 15 years old (20 in biotech) that spend at least 15 per cent of their annual budgets on R&D and are independent. He estimates that 5,000 to 15,000 companies a year might qualify in Europe. These companies would get special tax breaks – from income tax for the company, from social charges for employees, and from investment taxes for their shareholders not limited by European de minimis rules. European institutions and member states would devote dedicated programmes to them that would generate greater efficacy and synergies by being well targeted and address financing, research and human resources needs. He argues, for instance, that 90 per cent of the European Investment Fund should be devoted to funds dedicated to YICs and part of FP7 dedicated to research labs collaborating with YICs. And he urges the creation of a special tax-exempt pan-European pension fund status to invest in YICs, and a "brain-hunting" fund to help them recruit the best talents from around the world. Member states, being in competition, would define aggressive incentives towards the same YIC target.

A first-generation YIC status, proposed by Philippe Pouletty, began in 2004 in France, and by now more than 1,700 companies have registered for it. But the idea has some big obstacles to overcome, as it tries to go European. One is that it would require that the EU waive its so-called de minimis rule that forbids a member-state from providing more than a fixed maximum of tax incentives or other state benefits to any one company.

But the basic idea – target incentives to help innovative companies overcome their financial bind and grow faster – remains sound. "Quite right. We need clear target definition," says Commissioner Potočnik – and he cites one recent Commission initiative, the EuroStars programme, to address the issue.

"Many of the tax benefits are focused during the creation stage of a company, not the expansion stage," agrees Prof. Mendoza. "If there was a more favourable tax regime for expansion it would be easier to attract funds."

The importance of micro-credit

The main focus of the Innovation Board meetings was high-growth entrepreneurs. Maria Nowak, president of French micro-credit association ADIE, pleads to remember the very small entrepreneurs, as well.

Quantity, as well as quality, counts in entrepreneurship.

In France we have financed about 50,000 micro-enterprises (of fewer than 10 employees), created by unemployed people on welfare – with very good results in terms of survival, and repayment of loans. We have a 3 per cent loss rate, which is good in comparison to what banks have. France loses 100,000 industrial jobs a year. New technologies and the development of services allow the creation of small productions units. Linking these new service companies into networks – I think this is a future model of enterprise which could develop.

In late 2007 the European Commission published an initiative on the development of micro-credit, for growth and employment. The initiative is trying to change the environment for micro-credit and micro-enterprise, to extend good practices and to provide funding to the micro-finance institutions. Now we are preparing action plans. My suggestion: simply to support this idea.

Maria Nowak

Problem V: Fragmented markets

With 493 million people, Europe is the richest single market in the world – but that potential advantage is undercut by the fragmentation of the market into a series of fiefdoms. That hurts every company, small or large. But this, perhaps more than anything else, is at the heart of why so many promising European start-ups never get airborne: Their runways are too short.

European medicine is Exhibit No. 1. "We don't have a single market in pharmaceuticals," says Albert Esteve. Despite the creation of a European Medicines Agency to start coordinating approvals, every country has sovereignty within the system. Result, he says: "Every country has to approve and finance the product separately."

The clumsiness of the approvals process is compounded by different national pricing systems, with disparate approaches to reimbursement, says Doliveux. Another disadvantage: public funding. "How does Europe compete with the [US National Institutes of Health's] $28 billion annual public budget on healthcare?" Wallberg-Henriksson agrees. With Europe's healthcare budget, "we are not optimising it. There is a rigid system and we don't allow workers within the system to use their creativity."

Of course, ending this market fragmentation has been the dominant project of Europe for more than 20 years. Its few successes are famous: the GSM mobile-phone standard, for instance, is the world leader. But its failures are many. In finance, the pension and banking industries remain predominantly local and inefficient. Professional services – doctors, lawyers and accountants – are inbred; a Commission campaign to liberalise the professions stalled miserably in 2005. "The experience in automotive is that lack of standards is not helping at all to generate innovation," says Javier Pujol Artigas, CEO of Ficosa International. "We have too many large corporations working only in their own territories."

Harriet Wallberg-Henriksson: We don't allow health workers to use their creativity.

Esko Aho: "The EU and national governments should concentrate on architecture creation."

RECOMMENDATION

Give priority to creating "lead markets" for innovation

For Aho, "market creation is the key". Europe is competitive with the US in skills and knowledge – but market fragmentation hurts. The answer, he argues, is coordinated government action: liberalising the market in key sectors, driving market development through public procurement, attempting to break down the silos in policy implementation, and creating the correct architectures for technology to be applied and markets to thrive. At the suggestion of an expert group that he headed, the European Commission is now planning pilot programs in this kind of coordinated, market-creation effort, called "lead markets". But it hasn't yet put any extra money behind it – relying for the moment on coordinating existing actions.

A model is the development of the GSM mobile-phone market in the 1980s and 1990s. After

Pat Cox: Decade-long failure to introduce a European-wide patent system.

some initial local efforts to build a mobile phone market, industry and political leaders put their weight behind a European system: an architecture of technical standards, industrial collaborations, spectrum licenses and regulations that created one, single pan-European market. That changed the investment formula for industry. Companies like Alcatel and Siemens, which had been cautious about the new technologies, switched on the investment machines. One company, Nokia, simply stopped making everything else to focus on this extraordinary new opportunity – with by-now famous results.

A GSM-style approach in other fields could work wonders. Aho cites the case of systems for storing and accessing medical records electronically. At present, every national health service has its own peculiar records system, technical specifications and suppliers. Result: expensive and little-used. A pan-European approach could create a new industry around these vital records – and save lives. "The EU and national governments should concentrate on architecture creation, so all effort is pulling in the same direction, in the same way as the telecoms infrastructure was created in the 1980s," suggested Aho.

Hans Martens: "Too much concentration in the Lisbon strategy on quantity, instead of quality."

Other examples include the automotive industry, where "smart regulation" could have a lead-market effect. Cox, who is also a board member of tire-maker Michelin, says he had the disturbing experience at a Chinese trade exhibition of seeing technology on display that was developed in Europe – but is seldom used in Europe. It was a so-called "stop-start" system, that seamlessly turns the engine off and on as the car stops and starts. "The fuel savings can be dramatic. The technology is not expensive. But except for the highest-quality European cars, it's not being used."

"Smart regulation" to require more fuel-efficiency would help pull such technologies through into European markets. Pujol sounds an alarm about the lost opportunity in CO2-emissions. So far, he says, the European automotive industry hasn't been as clever as the Japanese in responding to the challenge of climate change – and even the American industry is starting to wake up. "We need smart regulation that drives technology through."

RECOMMENDATION

Free the flow of information – with online portals, benchmarking and patents

One victim of a fragmented market is information. Someone in Gothenburg can invest thousands in a new product idea – unaware that a company in the Veneto has already done so. Reason: neither had the money to declare, and protect, their invention through Europe's absurdly expensive patent system, which costs an inventor at least 10 times as much as it would in the US. The current system, a patchwork of bilateral treaties and multilateral agreements, requires multiple translations when applying for a European-wide patent in Munich – and then leaves them fighting, one national court at a time, to defend it. "We have failed for decades in Europe to achieve the necessary consensus to have a European-wide patent system," says Cox. Despite some recent progress in reducing the number of translations, "we are still deeply fractured in the market for ideas."

But the problem isn't just patents: it's also market intelligence, understanding trends, or knowing what works and what doesn't – a knowledge of "best practice". Here, several panellists say, the Internet is an obvious aid: Creating more and more online portals, targeted at specific sectors or policy threads, can help.

And on a government level, better information is must – particularly when fashioning policies to promote innovation. A classic example is the by-now farcical EU target to be investing 3 per cent of gross domestic product in R&D by 2010. That was adopted by European leaders in 2002, and incorporated into their Lisbon Strategy to make Europe "the most competitive" economy in the world by 2010. But by 2007, Europe's R&D investment had gone exactly nowhere – if anything, the R&D share of GDP had slipped slightly.

What's needed, says Courtois, is a more sophisticated set of benchmarks for Europe's innovation performance – a multi-dimensional scorecard, rather than a single number. Agrees Hans Martens, CEO of the European Policy Centre: "We need to think about new benchmarking. There's too much concentration in the Lisbon Strategy on quantity, instead of quality."

The Science|Business Innovation Board

To promote broader debate on European innovation policy, the Science|Business news service in 2007 began organizing, with the support of Microsoft Corp., a semi-annual gathering of European leaders in industry, academia and policy. They met on 20 June 2007 at Imperial College London, hosted by the rector, Sir Richard Sykes. A second meeting was held 10 December 2007, at ESADE Business School, in Barcleona, hosted by the then- dean, Xavier Mendoza. Here is the list of participants in the meetings:

Esko Aho
President, SITRA – the Finnish Innovation Fund, and former Prime Ministeer of Finland

Erkko Autio
QinetiQ Chair in Technology Transfer and Entrepreneurship, Imperial College London

Jean-Philippe Courtois
President, Microsoft International

Pat Cox
Managing Partner, European Integration Solutions; President, European Movement; and former President, the European Parliament.

Roch Doliveux
CEO and Chairman of the Executive Committee, UCB

Albert Esteve
President, Esteve Quimica

David Gann
Chair in Innovation and Technology Management, Imperial College London

Hans Martens
CEO, The European Policy Centre

Xavier Mendoza
Dean, ESADE Business School

Maria Nowak
President, ADIE

Denis Payre
President and CEO, Kiala and co-founder, Business Objects

Janez Potočnik
Commissioner for Science & Research, European Commission

Philippe Pouletty
Co-founder and General Partner, Truffle Capital; and Chairman, France Biotech

Javier Pujol Artigas
CEO, Ficosa International

Alfons Sauquet
Vice-Dean, ESADE Business School

Helmut M. Schühsler
Managing Partner, TVM Capital and chair, European Venture Capital and Private Equity Association (EVCA)

Sir Richard Sykes
Rector, Imperial College London

Harriet Wallberg-Henriksson
President, Karolinska Institutet

Colin Wyatt
Business Development Director, Imperial College London

Secretariat for Science|Business:

Richard L. Hudson, CEO & Editor

Nuala Moran, Senior Editor

Peter Wrobel, Editorial Director

A further meeting is scheduled for 2008 at INSEAD in Fontainebleau, France, and an additional meeting is being planned for Karolinska Institutet in Stockholm.

SCIENCE BUSINESS

Science|Business is an independent news and events service, focused on R&D investment and policy in Europe. It publishes online daily at www.sciencebusiness.net, and produces numerous special print reports, studies and conferences. It was founded in London and Brussels by Richard L. Hudson, former managing editor of the *Wall Street Journal Europe*, and Peter Wrobel, former managing editor of *Nature*, and works with a professional team of communicators and journalists to facilitate communication between the disparate worlds of academia, industry and policy. It works with a network of five professional organisations, and ten universities: Chalmers University of Technology, ETH-Zürich, Imperial College London, Karolinska Institutet, ParisTech, Politecnico di Milano, TU Delft, University of Cambridge, University College London, and the University of Warwick.

Its mission: To promote enterprise in science.

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A special Science|Business report on what Europe needs to do to encourage the birth of high-growth entrepreneurs.

The secret to economic success is not just new companies creating new jobs. High-growth entrepreneurs – sometimes called "gazelles" in the economic literature – are the most powerful source of new jobs in an economy. Quality, not quantity, matters.