



1. Preface

The Swiss Mission to the EU, the Norwegian Mission to the EU and the Stockholm Region office formed a Partnership for Innovation. Norway, Sweden and Switzerland all have strong commitments to Education, Research and Innovation. We share a strong will to contribute to the efforts of the European Union to realise the Lisbon goals.

Therefore, we teamed up to organise an event in Brussels to create more input for the current debate on the “European Innovation Era”. In order to optimise our input, key-players from the European Institutions were invited to participate, as well as representatives from one of the most performing regions of the world: California. This booklet records the presentations and findings of the conference.

The event, “Boosting Innovation from Research to Market”, was held in Brussels on 10th December 2003. This day, which also is the day of the Nobel Prize Ceremonies in Stockholm, was chosen as a tribute to excellence in research. Hosted in the impressive town hall in the Brussels commune of St Gilles, high level speakers, as well as experts from the European Institutions, California, Stockholm, Norway and Switzerland all contributed to the success of the event.

In this booklet, four high level speakers present their views on research and innovation. The booklet further sums up future challenges and opportunities. It finally demonstrates different approaches to promote innovation: An industry view, a regional view, and a view of a sector with outstanding potential - the hydrogen economy.

With the support of the Nordic Innovation Centre and the Swiss Science Agency, this booklet aims to show that innovation is by nature international and necessarily involves co-operation around the world. Europe must be a stronghold for Education, Research and Innovation. Switzerland, Norway and the Stockholm Region intend to be at the forefront of this endeavour: Partners for Innovation contributing to European Innovation.

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2. Executive Summary

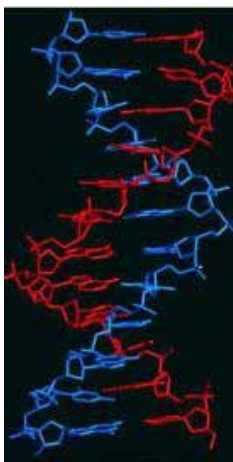
Based on input by the rapporteurs:

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The main purpose of this summary is to provide an overview of the presentations and discussions at “Boosting Innovation from Research to Market”.

The event was organised into three parts: Plenary keynotes and a panel debate (1), three parallel sessions (2) and a plenary session to sum up (3). While this summary gives an overview, you will find the conclusions in Chapter 5 - Future Perspectives for Innovation - in the statement made by State Secretary Bjørn Haugstad.

Innovation as a common goal in Europe

First, all the speakers agreed on the importance of innovation for Europe. Their statements indicated their strong commitment. This can be summarised as follows:

1. Innovation is critical for growth and welfare.
2. Innovation is vital for success as we move towards knowledge-based economies in the context of international competition
3. All economic sectors must be considered. Referring to the "low tech" as opposed to "high tech" sector is old-fashioned. What matters is the innovation capability of companies to develop new products and services, whatever their fields of activities.
4. Education and research are important for innovation, but must be combined with other private activities and public policies. For instance:
 - incentives for developing R&D in SMEs
 - opening markets
 - tax policies favouring innovation



Key factors for successful innovation

The second points addressed were "How can we boost innovation?" and "Do the experience gathered throughout Europe show some key factors for successful innovation?"

Five points were emphasised:

1. Scale

- Innovation will be international or will not exist at all.
- Innovation, especially in SMEs and small countries, needs big and open markets.
- Structural changes may be necessary in some countries. These changes may be difficult to achieve but are the only way to develop activities with more added-value.

2. Clusters

- Innovation requires partnerships.
- These partnerships can take many forms: between public and private actors on international, national and regional levels; between companies and scientists; between scientists from different fields of science.

3. Wake up call

- Good science and good education are pre-conditions but are not enough.
- We need more entrepreneurship.
- We need to speed up technology transfer.
- SMEs must do more research.

4. Time

- Europe needs more skills, more engineers, more scientists: this will take time.
- Innovation policies need continuous medium-term goals.
- Innovation is today the new European integration driver, as the Internal Market up to 1993, followed by the European Monetary Union.

5. Policy mix, people mix

- Innovation is supported by a mix of complementary policies. It is necessary to bring together all policies fostering innovation, as the European Competitiveness Council currently tries to do.
- Innovation policy also needs "people mix", e.g. co-operation between private and public actors.

Making the awareness grow: innovation has to be learned

Finally, most speakers underlined the growing awareness of the importance of innovation for Europe. They also emphasised the necessity for further efforts to enlarge the "special ambience" needed for innovation. This can be achieved through:

1. A broader political commitment.
2. Benchmarking (such as the European Innovation Scoreboard).



3. National forums and thought-provoking debates on innovation.

In summary: Innovation has to be learned.

Building this learning process is necessary if innovation is to be the "European integration driver", and if the Lisbon targets are to be achieved.

The first parallel session was **“A Company Approach to Innovation”**. Some of the main questions were:

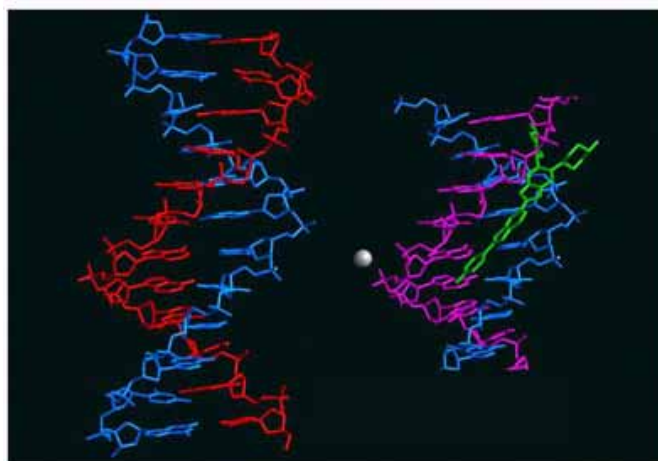
What does innovation mean for SMEs?

How can companies boost growth through innovation?

What kinds of business management networks are needed to foster Innovative Companies?

The session concluded that:

- Innovation is the process of creating new products, new processes and new methodologies.
- A company approach to innovation is increasingly based on collaborative research and partnerships between larger companies and smaller enterprises.
- A closer collaboration should be fostered between universities and education on one hand, and the economy and entrepreneurs on the other.
- Innovation also rests upon a successful co-ordination and integration between national and European research programmes.
- Co-operation in “Strategic Partnership Networks” across business and research and between larger and smaller companies is the key to successful, innovative and competitive companies.
- In order to “Boost Innovation from Research to Market” there is a need for active governmental support and incentives to further stimulate the formation of these “Strategic Partnership Networks”.



The importance of regions is growing, particularly when it comes to research and innovation, so the second session was **“Regional Actors within the Innovation Process”**.



The globalisation effect, limited natural resources, low economic growth rates across different areas, as well as a stagnation of resources for research and development, result in a need for innovation and research for future generations.

One speaker stated that the goal is to have a dynamic business environment supporting innovation and entrepreneurship. Promotion of small business development and encouraging innovative technologies, including resource conservation, employee safety and clean, reliable energy sources, are the policies to focus on. Competitiveness is seen as a clear motivational factor for developing research and innovation. Focus on these matters will also promote small business development.

Mr. Dr. Jan-Ake Gustafson, professor at the Karolinska Institute in Stockholm, presented the development of co-operation between the Huddinge University Hospital, the Karolinska Institutet Medical School, the Södertörn University College and about 25 service companies in order to bring innovations to the market.

He also pointed out that development of clinical research is necessary to find medical solutions for illnesses such as cancer, osteoporosis, metabolic disorders and Alzheimer disease. It is also needed to develop pharmaceutical products for major markets.

The fruits of innovation and research are wide-ranging; from innovative products and services, to procedures or new technologies; the growth of labour efficiency; or the decrease in consumption of natural resources. These results are not only needed in the area of the “new economy”, but also and even more so in the “old economy”. Not only large companies, but also small- and medium-sized companies, can benefit from innovative arrangements within their industries, which are necessary to sustain a strong SME sector.

It was also underlined that innovation is needed for public services and in government, especially through initiatives such as “e-Government”.

To accomplish the goals, it is necessary to create a culture of innovation. We have to cultivate our inventors and entrepreneurs by enhancing access to credits and investors, providing educational paths to self-employment and small businesses.

Education is a key driving factor. Strengthening the co-operation between universities and governmental institutions with small- and medium-sized enterprises was recommended, since, for example, 88% of the companies in Switzerland have less than 10 employees.

We need to develop a higher risk-taking mentality, to promote best practices and strengthen public awareness of innovations. The universities could play the role as catalysts for innovation.

The process of developing innovative ideas through patenting, licensing, market analysis, legal matters, business planning, as well as financing, needs to be done in very close co-operation with the involved parties. The NOVUM Research Park in Stockholm is one of the examples where this kind of co-operation is carried out.

With regard to government involvement, supporting, but not duplicating existing programmes was advised, as well as identifying gaps in existing programs and developing internal and external stakeholder agreements.

It was recommended that the government’s role should be to support basic research, applied research and commercialising of research.

Corporate tax rates, credit and tax reductions, local incentives for use of technology, state grants, and loans and rebates were all mentioned as public tools to move research to the marketplace.

The importance of co-operation in order to sustain international competitiveness was stressed. This co-operation must take place between educational institutions, research and development institutions, enterprises, and the government together with promotion agencies.



Regional differences have to be respected. This should especially be considered in the development of new programs.

A general conclusion from the session was the need to develop a culture of innovation in the regions, and to respect regional differences.

The European Action for Growth and the Quick Start Programme are examples of recent initiatives implemented on a European level to boost innovation and growth.

Technology platforms are another tool to promote breakthrough innovation. Hydrogen-projects are crucial in these initiatives and hydrogen as an energy carrier is also high on the political agenda in Europe, as well as in the US.

The third session was **“Innovation for a Sustainable Hydrogen Economy”?**

This session was made up of five presentations on rather different subjects, covering a broad range of topics on the “Sustainable Hydrogen Economy”. The speakers explained why this relatively new concept has climbed high up on the policy agenda, the main drivers behind this development, and the role played by the EU in promoting it. Several examples and case studies were presented, from district cooling and fuel cell vehicles, to hydrogen fuelling stations.

One of the main lessons learnt was that several hydrogen technologies exist, so the “Sustainable Hydrogen Economy” is already here.

The future potential was indicated and some possible developments drawn up. The challenges for hydrogen as an energy carrier and its advantages compared to other carriers were explained. Not surprisingly, the most obvious advantage is that of cleanness.

This attribute makes it an attractive energy carrier. We should also expect a high rate of technical development in this field, resulting in the use of hydrogen becoming more viable. This applies to large-scale as well as small-scale (local) hydrogen production, and among the most promising routes for a more sustainable energy supply, we find the use of biomass and solar chemistry.

Fuel cells in cars have enormous potential. Today, they have already increased energy efficiency by 14-18%. But there is more to come: in the not too distant future, one can expect the efficiency to have increased by more than 40%.

At EU level, there are several new initiatives related to the use of hydrogen. The “Hydrogen technology platform”, the “Lighthouse project” and hydrogen projects in the GROWTH initiative were presented. The rationale behind these initiatives is the recognition that the “Sustainable Hydrogen Economy” is already here and it is likely to have the future potential to achieve EU policy objectives effectively.

Among the challenges of further developing and implementing the “Sustainable Hydrogen Economy” is the trade-off between competition and co-operation among public and private stakeholders. Large-scale projects tend to be of a more public character and co-operation should be emphasised.

