THE SCIENCE CORRIDOR

An Alliance of Hubs

Draft of Memorandum
November 23-25 2009
Hamburg

I. Introduction

This memorandum proposes the establishment of a Science Corridor with a focus on materials science. It is the final result of several meetings between partners within the Corridor region from March to July 2009. It will serve as a basic memorandum for potential members of the Science Corridor when discussing the Science Corridor.

The text is mainly based on the outcome of a meeting in Gothenburg on July 6, 2009, when the main stakeholders, some 25 delegates from Hamburg to Oslo met, in all 10 universities from four countries plus public authorities.

The process so far has been

- March 27-28, Lund/Copenhagen: presentation of the Corridor concept
- June 3: *The Lübeck Declaration* signed by Free and Hanseatic City of Hamburg, Land Schleswig-Holstein, Region Sjælland, Capital Region of Denmark, Region Skåne with the Corridor as one of the priorities
- July 6, Gothenburg: a draft memo discussed and revised

The future process will be

- 23 – 25 November – Conference in Hamburg where a steering committee is to be appointed and discussion of a Letter of Intent take place
- Intention of having the project in force on January 1, 2010
- Deadline for application Interreg IVA, Baltic Sea Region, in March 2010
- November and onwards – Implementation

Crossborder Cooperation

Europe today consists of 27 countries within the EU and a number of countries bordering it, many of which are formal members of the science programmes. This means a continent with borders and differing systems for European research and higher education. In spite of the Bologna system, the European Research Area, the EIT and the four European freedoms Europe still suffers from

- Fragmentation
- Mobility and Border Problems
- Many different systems and solutions, esp. financing research
- Small markets

Free movement of knowledge across borders must be seen as a priority to respond to the challenges of globalisation and transform Europe into “a truly modern and competitive economy”.

Free movement of knowledge is the fifth freedom within the EU.

Crossborder cooperation can be seen as one option to get closer to the vision of free movement of knowledge. By crossborder we mean in this context co-operation between regions, universities, facilities that are geographically quite close to each other but are separated by international borders.

Proximity matters irrespective of borders.

The proposed Science Corridor covers Scandinavia and Northern Germany.

II. A Science Corridor

Rationale

Four new world-leading research facilities focused on materials science will be established in Hamburg (XFEL and Petra) and Lund/Copenhagen (ESS and MAX IV). These new facilities together with their associated research communities, other existing facilities and about 15 large research universities along a corridor from Hamburg northwards to Oslo and with possible extensions uniting Scandinavia and Northern Germany, will create one of the absolutely largest science communities in the world.

This Science Corridor will promote synergies between research infrastructures and facilities, encourage researchers to share knowledge, the transfer of knowledge between research, industry and society in the four countries, and will provide enhanced professional development opportunities for scientists and students.

Given the existence of the important material research facilities, it is natural that this Science Corridor should initially focus on materials science, but it would aim to form a model for other disciplines.

It can be seen as a cluster of science infrastructures where closeness is important. The universities are the driving forces with regional authorities as necessary supporting partners and complemented by business initiatives. The Science Corridor brings together a critical mass of researchers and facilities that become stronger than the individual units. It can make science more visible to politicians and industry in the region, nationally, in the EU, and globally.

From GENNESYS White Paper, page 320 [1]

OVERALL CONCLUSIONS: BARRIERS AND GENERIC CHALLENGES

The future welfare of the European citizen depends intimately on innovations in so-called key technologies encompassing information and communication, energy and environment, health and transport. Today, it is common wisdom that these innovations require, in turn, novel, made-to-measure nanomaterial structures which can: process data at a speed of terabytes per second; safely store the data in the smallest dimensions; assure biocompatible transplants; remove monoxides in modern car catalyzers; efficiently separate protons and electrons in fuel cell technology and electrons and holes in novel organic solar cells; and which can withstand – with a minimum weight – the highest mechanical and thermal loads. A paradigmatic example is taken from the IT roadmap which aims for smaller and faster material structures and improved data storage […]

[1] GENNEYSY White Paper, February 2009: A new European Partnership between Nanomaterials Science & Nanotechnology and Synchrotron Radiation and Neutron Facilities. Max Planck Institute for Metals Research, Stuttgart.

IMPACT, INFLUENCE AND BENEFITS FOR SOCIETY

Nanomaterials may generate products which improve the quality of life for individuals. Thus, it is important to prepare for a European industry which can compete openly in the international market with its products and processes. Nanomaterials will bring benefits throughout society and its activities:

- In economy, science and technology are the principal drivers of economic growth and quality of life. Research, particularly nanomaterials research, has widespread impact in health, information, energy, and many other fields where there is major economic benefit to the commercialisation of new technologies.
- Concerning energy efficiency, nanomaterials research will have a great impact, as new nanomaterials will allow higher temperatures and hence a more efficient operation of power plants, and enable the development of new energy production systems based on nuclear, solar, and renewable sources.
- In medicine and health care, nanomaterials will provide new drugs and new therapies, and cures for currently chronic and fatal illnesses. Important areas of research will be the application of nano - materials in tissue engineering and medical imaging. The potential application of nanotechnologies has immense capability and promise for advanced diagnostics, improved public health and new therapeutic treatments.

From GENNESYS White Paper, page xv

The goal is to develop the Science Corridor into a framework for optimal utilization of the regional potential, demonstrating regional excellence with a global impact.

Geography – a crossborder alliance of regional hubs

The foundation of the Science Corridor is foreseen as covering the geographical area from Oslo in the north to Hamburg in the south including the following possible hubs:

- Southern Norway
- Västra Götaland
- Øresund
- Jutland/Funen
- Schleswig-Holstein
- Mecklenburg-Vorpommern
- Hamburg

The area covers parts of four national states with different administrative systems and traditions, and four different currencies. The corridor could possibly be enlarged integrating other hubs in Scandinavia and Northern Germany.

III. The Scientific Resources of the Corridor

For information on the organisation, science and facilities within each hub, please see the website xxx. Also, the scientific resources will be presented at the conference in Hamburg 23 – 25 November.

The Corridor area covers about 15 large research universities. Some of these are very big, some are very specialized. In addition, there are research facilities and laboratories and independent research institutes.

The number of students is close to 300 000, and the number of researchers at the academic institutions somewhere above 30 000.

The regions also have a vast industrial potential with all types of knowledge- and research – intense companies, many of which are big multinational brand names.

Science parks – some of them very big – and innovation and tech transfer organisations are situated in connection with almost all the universities.

Universities within the Corridor area

University of Hamburg
Technical University of Hamburg Harburg
University of Rostock
Christian-Albrechts University Kiel
University of southern Denmark
Aarhus University
Aalborg University

Öresund University:
Lund University, Technical University of Denmark and University of Copenhagen. Institutions with minor activities in this field are Roskilde University, Malmö University College and Kristianstad University College.

Halmstad University College
Gothenburg University
Chalmers University of Technology
Borås University College
University of Oslo

IV. Purpose and Activities of the Corridor

The main purpose of the Science Corridor is to add value to the existing research and educational collaborations, existing networks, universities and facilities, to do things that are easier to do jointly. By this we will bring forth a critical mass of knowledge development in order to meet the challenges of Europe and take a global leadership through scientific cooperation.

Four main areas have been identified as the most important areas of activities. Within each area we have listed a number of examples of important potential activities, initially focussing on identifying potential synergies and barriers to jointly solve. Some of them are self-evident, others may in fact belong to other levels of the European society, yet they have to be addressed.

Create synergies between existing and new facilities and research groups

1. Further detailed mapping of the resources
2. To work collectively to identify synergies between disciplines, and synergies across disciplines
3. To identify possible gaps for optimal collaboration
4. Pooling resources, using lab facilities in an efficient way by e. g. using empty or crowded space
5. Access – developing a coordination system for better accessibility
6. To provide a forum for scientists to come together for strategic planning and co-programming of scientific research an d forming new combinations of research groups
7. To work collectively to promote the use of scientific results by
    a. Working together to attract industrial interest and provide knowledge transfer services
    b. Providing where appropriate joint consultancy services

Mobility and People

It is very obvious – in fact self-evident – that mobility across borders in all its aspects is necessary for the functioning of the Corridor. It is the mobility of people: students, specialists, researchers and their families. But it is also, of course, money and other types of resources.

1. To work towards establishing the free movement of researchers, and research money across national borders and to play a full role in the co-programming of research at a European level.
2. To work towards generally abolishing or lowering barriers of all kinds for cooperation across European borders
3. Create a model for crossborder cooperation in Europe
4. To provide the means to facilitate short term and longer term mobility of scientists and active support to help them develop their careers

    a. Short term mobility support includes provision of short term accommodation, networking and family orientated support
    b. Longer term mobility support includes ensuring transfer of social security and pension rights, assisting families with relocation and schools
5. To provide the means for smaller groups of specialists to come together easily
6. To support the development of higher educational programmes including PhD studies that allows crossborder and cross-institutional mobility and provides supervision of the highest international quality. ("seamless education"), including for example, joint summer courses
7. To foster the development of early stage researchers through provision of joint summer schools, and opportunities also to develop complementary skills
8. Generally to support student mobility
9. Work for easier transfer of research funds and other types of money across borders

A bridge between research, the community, trade & industry

Tech transfer offices at universities are small and not seldom underfinanced. Subsequently interaction between research, community and industry is conclusive; cross communication to optimise the user driven innovation is essential:

1. Pooling tech transfer capacity within focus areas
2. Develop tailored models for "open innovation" and appropriate IP-models within the corridor
3. When possible, working close together when planning research
4. Providing university-industry contacts for student jobs
5. Encourage venture capital across borders
6. Encourage cooperation with science parks and innovation organisations across borders

Branding

Branding is a necessary part of the activities of the Science Corridor. If the corridor is unknown to outsiders it is of very little value. The main task is to promote the Science Corridor through joint public relations activities and branding as an attractive location to do science, allocate money and other types of resources and attract talents. The first task is to decide on a joint communications plan.

V. Organisation

The potential number of academic institutions and authorities in the Corridor is around fifteen. They are of very different characters and sizes and are situated in four different countries. This could easily lead to a very unwieldy organization.

In order to make the organization flexible and not too complex it is suggested to have a hub (or "federal") approach meaning that the corridor is organized into natural hubs, each according to its own conditions.

A hub in this corridor context is a natural geographic and (normally) administrative centre with universities, research facilities and regional authorities that are willing to take part in the development.

The hubs should not be too small. They are not and cannot be identical in their structures. They are after all situated in four different countries with separate systems, traditions etc. It could be up to each hub to decide who should be in the hub or not, and also how the hub makes its decisions. The hubs can be triple helix (research-industry-public sector) or not. Participation from industry and innovation milieus like science parks should, however, be encouraged. There should be so little bureaucracy as possible. Some harmonization between the hubs might be necessary.

This means that the corridor can be seen as an alliance between hubs.

The Science Corridor is coordinated by a steering committee that can have as its members one or two delegates from each hub. A small secretariat has to be added. It could be housed in an existing secretariat for synergy reasons.
It is important that the scientific community is the main "owner" of the Corridor and that the operational tasks are defined according to the needs of the scientific community.

Naturally, there will eventually come forward a number of networks, project committees etc. They are all a result and part of a dynamic development.

VI. Establishing the Science Corridor

The Science Corridor cannot be a loose and open network. Partners have to be members. There have to be decisions made on different levels.

The Science Corridor has been discussed during two previous meetings (Lund/Copenhagen and Göteborg) and this document summarizes the results of these two meetings.

The intention is to have a final discussion at the Hamburg meeting 23 – 25 November and – if possible – agree on the outlines of a Letter of Intent that can be signed later through an e-mail procedure. At this meeting a steering committee should be appointed.

One of the tasks of the steering committee will be to prepare an application for the Interreg IVA, Baltic Sea Region in February/March 2010.

Another task will be to prepare a "constitution" and a communication plan for the Corridor and generally implement the ideas of the corridor.

Time table

- An invitation to the Hamburg meeting, incl. material and a draft memorandum of understanding, will be sent out in October. There is also a website under construction for information on the organisation, science and facilities within each hub.
- November 23 -25: Hamburg meeting, discussion of a Letter of Intent and forming of a steering committee
- November and onwards: implementation
- December: meeting of the steering committee
- Signing of Letter of Intent, 1 January 2010
- Deadline for application Interreg IVA, Baltic Sea Region, in March 2010
- Spring 2010: a corridor Symposium

VII. Financing the Science Corridor

The Science Corridor with all its universities and research institutions has, of course, a very impressive turnover if you add all the figures. It is also a major employer in the region. One of the main purposes of the corridor is to increase these figures when it has become fully operational.

The Corridor as an organization of its own needs some money to handle "Corridor business". This type of money could be labelled "glue money".

There could also be a need for extra project money for joint activities, e. g. research projects, joint education programmes, PhD – activities etc.

Finally, there is, of course, a need for some small sums of money for starting costs.

- Glue money
  It is natural that the major – if not the whole – part of this type of money comes from EU structural funds. The Baltic Sea Interreg IV B programme could be a very good source. Next application deadline is in March 2010. There could certainly also be other types of funds.

- Project money
  Each joint project will be financed separately and according to its own conditions.

- Start money
  The starting period lasts till other types of money can be used. There is no need, however, for any large sum of money for the starting costs. Just as has been the case so far, each hub pays for its own costs and handles meeting costs etc by moving from hub to hub. The costs of the working group (mainly salaries and travelling costs) are to some extent taken care of by the relevant hub. A small fund should, though, be given to the working group to cover the period from the Hamburg meeting till new funds come.