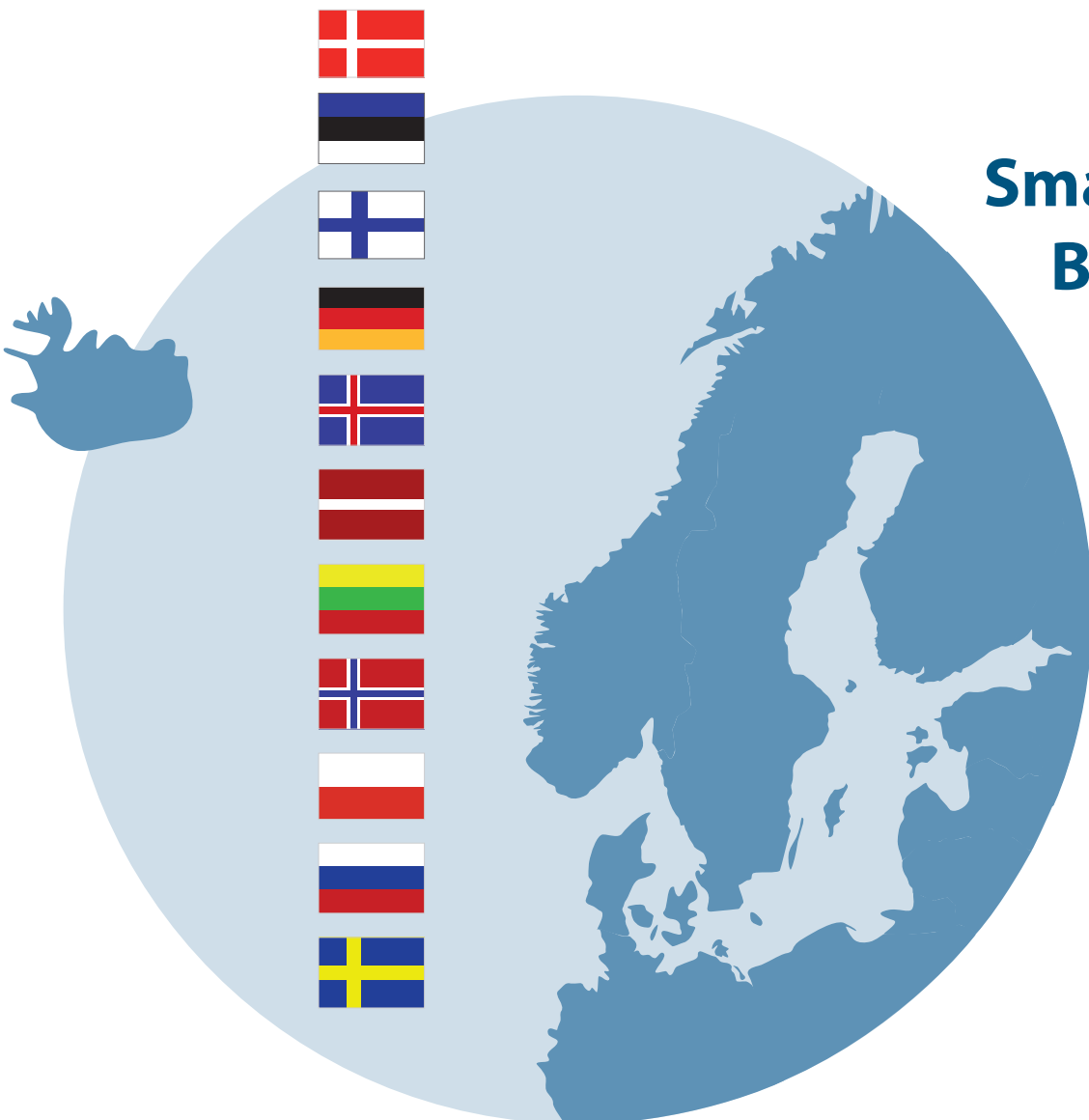


Smart Growth: Bridging Academia and SMEs in the Baltic Sea Region



**Smart Growth:
Bridging Academia and SMEs
in the Baltic Sea Region**



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1. Top of Europe as an “Ideenschmiede”

This report “Smart Growth - Bridging Academia and SMEs in the Baltic Sea Region” outlines how to create more efficient cross-border collaboration between academia and SMEs within life sciences on the Top of Europe - ScanBalt BioRegion - as this efficient cross-border collaboration is the key challenge for successful continued development. The recommendations aim to promote more effective and coordinated investments among for example EU structural funds, the EU CIP-programme, and EU FP7, plus to enhance national and regional public and private involvement. This report contains specific suggestions for actions on which the ScanBalt BioRegion Community intends to act in collaboration with relevant stakeholders. In addition, it contains proposals for improved framework conditions where policy and decision makers at the EU, national and regional levels will have to take action in order to ensure implementation. The recommendations and proposals are prepared by the Bridge-BSR Innovation Council and adopted by the ScanBalt Executive Committee (Board of ScanBalt).

“Smart Growth” and the principles of sustainability were laid down in the statutes of ScanBalt when the not-for-profit association was established as a legal entity in 2004. It implies that innovation processes in life sciences and biotechnology should support Sustainable Development leading to “smart growth”. The academic and industrial competencies and resources in ScanBalt BioRegion give the opportunity to be at the forefront

with “smart growth” and ScanBalt sees this direction as the main competitive advantage for our region. ScanBalt BioRegion is thus well positioned to explore the potentials of a new global agenda with focus on eco-innovation and a reliable economic future.

ScanBalt BioRegion acts in a larger context, the entire Baltic Sea Region, and depends in many ways on how the Baltic Sea Region is organised, for example within research, innovation and business as well as on the freedom of the mobility of resources and knowledge – the fifth freedom. Physical infrastructure like roads, bridges (Femern), air transportation and railways are of course very important but we have to remember there are other types of equally important infrastructures if we intend the Baltic Sea Region to be a knowledge-based society on Top of Europe.

Support infrastructure for Research, Development, Innovation and Education

First, the Baltic Sea Region lacks a cross-border financial support infrastructure for research, development, innovation and education. The EU structural funds, the CIP-programme and EU FP7 are very valuable, but they should not and must not stand alone if we have ambitious goals for the region. The Nordic countries have well established financial support tools in the Nordic Council of Ministers and its institutions, the Nordic In-

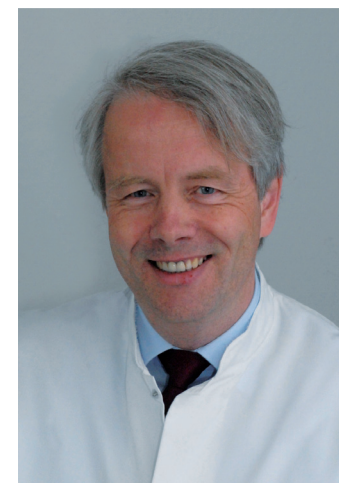
novation Center and NordForsk. However they only encompass the Nordic and Baltic countries, excluding Poland, North Germany and North West Russia. In addition they lack the financial power to fully exploit the potentials for cross-border collaboration. Strong cross-border financing collaborations, networks and institutions which can support research, development, innovation and education across the entire Baltic Sea Region are urgently needed. The ScanBalt Bridge Award will be distributed for the first time in 2009 with the goal to promote cross-border collaboration and we hope this will encourage national and regional policy makers in the Baltic Sea Region to focus on the establishment of financial support tools. We suggest that ScanBalt Academy representing the highlight of research in ScanBalt BioRegion should play an active role in the shapening of this and other relevant initiatives related to the EU Baltic Sea Region strategy.

Integration of the Baltic Sea Region Strategy

Second, we need a strong focus on the integration and implementation of the EU Baltic Sea Region strategy. ScanBalt is very grateful for all the efforts by the EU, and the many other institutions, organisations and authorities involved in this excellent initiative. However, it has to be remembered that the success of the strategy and of the entire Baltic Sea Region depends on the willingness to implement practical measures to fulfil the visions. Therefore

every region, every institution, every authority should have a clear vision of the importance and advantages of being and acting "Baltic". This is far from the case today. Solid commitments are necessary from all of us who act on a daily basis in the Baltic Sea Region and who have direct contact with the stakeholders to ensure proper and consistent communication. In addition the national and regional policy makers need to take the necessary steps to ensure implementation of the Baltic dimension in their strategies. Finally ScanBalt has proposed in preparation of the EU Baltic Sea Region strategy to establish a flagship project for innovation in health and life sciences in order to promote the Baltic Sea Region as a globally leading "health region" and to meet demographic challenges. ScanBalt BioRegion is ready to take the leading role in such a project.

It is time to look beyond the current economic crisis and be an "Ideenschmiede" on Top of Europe. The initiatives proposed in "Smart Growth - Bridging Academia and SMEs in the Baltic Sea Region" strategically positions ScanBalt BioRegion for the time after the economic crisis when clean energy and environment, health, safe nutrition and agriculture will be the basis for reliable economic growth. I hope that the recommendations in this report can support the Swedish EU Presidency in the implementation of the EU Baltic Sea Region Strategy and will be an inspiration for relevant stakeholders to work within the umbrella of ScanBalt BioRegion.



Hans-Robert Metelmann
Chairman of ScanBalt
June 2009

2. Summary of Recommendations

Listed adjoining are the key recommendations given in this report on how to enhance collaboration between academia and SMEs in ScanBalt BioRegion, plus basic proposals on how to improve the overall frame and conditions for cross-border collaboration (From “Top of Europe as an “Ideenschmiede”). For detailed information please refer to the respective chapters in this report.

Establish financial support infrastructure for Research, Development, Innovation and Education

The Baltic Sea Region lacks a fundamental cross-border financial support infrastructure for research, development, innovation and education. ScanBalt BioRegion therefore recommends national and regional authorities in the Baltic Sea Region to:

- ▶ Establish an effective Baltic Sea Region financial cross-border support infrastructure for research, development, innovation and education in collaboration with public and private funds and investors,
- ▶ Involve ScanBalt Academy representing the highlight of research in ScanBalt BioRegion as an advisor in the shapening of a financial support infrastructure and in other relevant initiatives in the EU Baltic Sea Region strategy.

Integration of the EU Baltic Sea Region strategy

The success of the EU Baltic Sea Region strategy and of the entire Baltic Sea Region depends on the willingness to implement practical measures to fulfil the visions. ScanBalt BioRegion therefore recommends:

- ▶ All key stakeholders must explain and promote both the importance and advantages of being and acting “Baltic” based on a common strategy,
- ▶ National, regional and local policy makers must ensure implementation of the Baltic dimension in their strategies based on the EU Baltic Sea Region strategy,
- ▶ Establish a flagship project for innovation in health and life sciences in order to promote the Baltic Sea Region as a globally leading “health region” and to meet demographic challenges.

The Baltic Sea Region as a Globally Leading Eco-Economy

The Baltic Sea Region has the potential for a globally competitive eco-economy based on “smart growth”. Therefore the foundation for “smart growth” should be strengthened for all activities and become a leading principle for ScanBalt BioRegion. ScanBalt BioRegion intends to:

- ▶ Promote “Green” labelling of education and training courses based on the established Gothenburg model throughout ScanBalt BioRegion and broaden the initiative to include to other sectors as well,
- ▶ Establish masters level education programmes within Eco-innovation and bioscience,
- ▶ Integrate bioethical aspects and establish the mobile Bioethics Task Force BETAFORCE.

Shared Modular Business Support and Services between Clusters

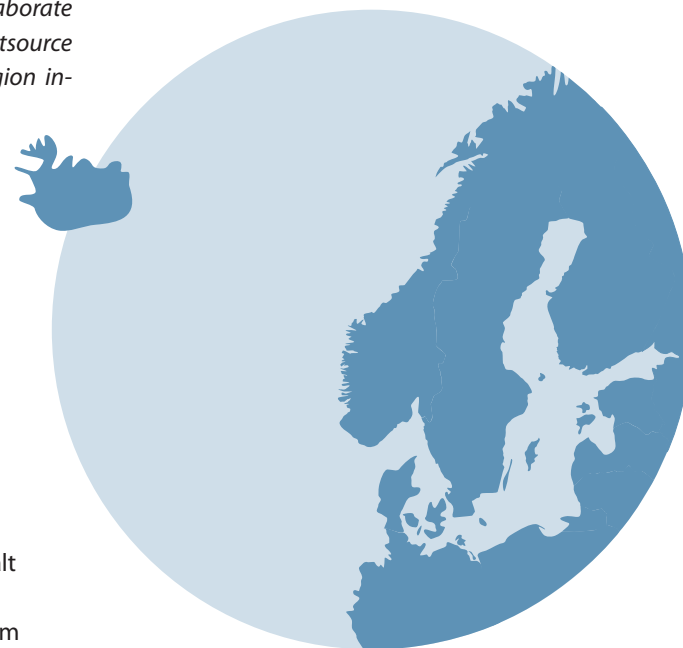
Shared Modular Business Support and Services between Clusters is needed to support the development from ideas to high-growth SMEs, to improve effectiveness of regional support and services and to strengthen the meta-regional value chain. ScanBalt BioRegion intends to:

- ▶ Establish the ScanBalt Modular Shared Business Support and Service (SMS-BSS) as a basic model,
- ▶ Establish an IP Exploitation Group in the Baltic Sea Region as an SMS-BSS Module,
- ▶ Link together science parks, universities, accelerator units and SMEs in a set of horizontal activities as an SMS-BSS Module,
- ▶ Establish Project Incubation and Management as an SMS-BSS Module,
- ▶ Establish a Global Matchmaking Programme as an SMS-BSS Module,
- ▶ Connect biosystems technology competencies via hubs and satellites and integrate the SMS-BSS tools.

Talents as drivers of collaboration between academia and SMEs

Human resources, or talents, are crucial for the collaboration between academia and SMEs as knowledge is located in the heads of people. Life sciences and biotechnology operate with a very high degree of specialization and it is therefore both necessary and advantageous to collaborate with neighbouring regions on talents – or to outsource tasks to where those talents are. ScanBalt BioRegion intends to:

- ▶ Strengthen the established and successful Knowledge Network-model as science links based on competence hubs and satellites,
- ▶ Promote Research Management Training and further develop it as a model for training modules and training offers,
- ▶ Promote investments in cross-border public-private PhD education based on the model for the Nordic Public-Private Partnership PhD Programme,
- ▶ Establish on-site pre-incubation and entrepreneurship training throughout ScanBalt BioRegion,
- ▶ Further develop the Nordic-Baltic Expats Forum as a brain-bank and explore coordination and collaboration with EU services for researchers abroad like EUROAXESS.



3. Introduction

3.1 The Role of Life sciences and Biotechnology

Life sciences and biotechnology are regarded as key technologies for the 21st century¹. In particular the United States and Europe have seen life science and biotech clusters become an important factor in creating significant economic growth and employment of highly skilled people². However the competition between Europe, the United States and Asia has significantly intensified. In Asia massive biotech investments have been launched during the last 3-5 years. Singapore, South Korea and China have shown an enormous political will to improve the competitiveness of their life science and biotech sectors. Globally, there is a strong focus on cluster building within Life sciences and biotechnology in order to strengthen collaboration between academia, SMEs, other industries and public authorities. The aim is mainly to improve the positive impact on economic development³.

Life science and biotechnology are the keys to solving the challenges within environment, health and nutrition and important tools to fight climate changes and improve non-fossil energy supply. The Baltic Sea Region is Europe's most innovative region⁴ and has a well developed array of clusters within life sciences⁵. But it is obvious that the massive investments in science and technology not least in the USA and Asia are both a threat and an opportunity. To stay competitive it is necessary - with increased investments, enhanced coordination and strengthened collaboration - to exploit the potential of the region. This has been further

accentuated with the new global agenda focusing on eco-innovation. A key element is to strengthen cross-border collaboration between Academia and SMEs.

A key element to strengthen cross-border collaboration between academia and SMEs is through transnational cluster collaborations as the primary platform for various initiatives. The Baltic Sea Region life science and biotechnology sector, ScanBalt BioRegion, accounts for 2543 companies including close to 700 research based biotech SMEs⁶. However the SMEs in the sector are relatively small companies, while in the US for example the biotechnology industry employs twice as many people, spends approximately three times as much on research and development, raises 3-4 times as much venture capital and has access to 4 times as much debt finance compared with the EU life science and biotech industry⁷. The major hurdle for the competitive development of life science and biotech SMEs in the EU is the transfer of ideas from academic research into products or commercialisation⁸⁻⁹. Another challenge is the low level of inter-regional cooperation within research and development and among companies and institutions from different regions of several EU states¹⁰. These are key challenges to be faced by transnational cluster collaboration in the Baltic Sea Region.

¹ EU Commission, *Contribution of modern biotechnology to EU policy objectives, DG JRC/IPTS 31 January 2007*

² Medicon Valley Alliance, *from bioscience to new jobs, strategic report 5 October 2004.*

³ Medicon Valley Alliance, *from bioscience to new jobs, strategic report 5 October 2004.*

⁴ *State of the Region report, Baltic Development Forum, December 2009.*

⁵ *ScanBalt Competence Region: ScanBalt – Top of Europe: Competencies in Life Sciences and Biotechnology in the Baltic Sea Region, W. Blank, C. Krüger, December 2006.*

⁶ *According to ScanBalt Yellow Pages, March 2009, www.scanbalt.org.*

⁷ *Biotechnology in Europe: 2005 Comparative Study. Critical comparative study for EuropaBio, the European Association for Bio industries, Biovision Lyon, p. 5, 2006.*

⁸ *Improving knowledge transfer between research institutions and industry across Europe: embracing open innovation, EU Commission, Brussels 4.4.2007 COM (2007) 182 final.*

⁹ *Life sciences and biotechnology – a strategy for Europe, European Commission, COM (2002) 27.*

¹⁰ *Life sciences and biotechnology – a strategy for Europe, European Commission, COM (2002) 27.*

¹¹ *Notice that the EU is using the term “macro-region” referring to the same geographical definition as the term “meta-region” used by ScanBalt, see note 12 for definition.*

3.2 The EU Baltic Sea Region Strategy

The EU Baltic Sea Region Strategy is the first EU strategy being designed at the level of a “macro-region” ¹¹. The European Commission was requested by European Council in December 2007 to present an EU strategy for the Baltic Sea Region at the latest by June 2009. The 4 overall objectives are:

- ▶ To make the Baltic Sea Region an environmentally CLEAN place,
- ▶ To make the Baltic Sea Region an ACCESSIBLE and ATTRACTIVE place,
- ▶ To make the Baltic Sea Region a SAFE and SECURE place,
- ▶ To make the Baltic Sea Region a PROSPEROUS place.

A key activity towards the formulation of the Baltic Sea Region has been BSR InnoNet, a part of the EU PRO INNO initiative and the European Cluster Alliance.

Two aims of BSR InnoNet are to establish a shared conceptual framework for cluster policy formation, evaluation and operational activities across national borders in the Baltic Sea Region, and to establish one or more trans-national innovation programmes focused on cluster development among partner countries in the Baltic Sea Region.

In the formulation of the EU Baltic Sea Region Strategy ScanBalt has proposed setting up a cross-sector reference project for innovation within health and life sciences. The promotion of public health on a high level and the exploitation of modern life sciences can be regarded as prerequisites for the Baltic Sea Region to

become a globally leading and prosperous “Health Region”. Furthermore the demographic challenges have to be met with innovations combining science, technology and social science.

About BSR InnoNet

The vision of the BSR InnoNet for 2010-13 is to provide settings for a strategic trans-national collaboration on jointly beneficial fields of clusters and innovation systems in the Baltic Sea Region. The vision should contribute to prosperity and economic development of the Region and to the implementation of the forthcoming EU Strategy for the Baltic Sea Region. The basic assumption of the vision is that countries and cluster players at national, regional and local levels will benefit from trans-national cooperation to increase knowledge, scale of economy and global competitive positions.

Source: www.proinno-europe.eu

Promoting eco-innovation and new “green-collar” jobs, especially in small and medium enterprises (SMEs), ranks high among the priorities for EU support. One of the clear aims of funding for research and innovation is to boost overall investment in green technologies. If structural funds, the CIP programme, EU FP7 and other EU, national and regional investments together with private resources are combined with an EU strategy for the Baltic Sea Region, the Top of Europe has a unique opportunity for sustainable growth, new jobs and strengthened competitiveness.

3.3 ScanBalt BioRegion

ScanBalt BioRegion is a meta-region ¹² representing Life Sciences in the Nordic and Baltic countries, Poland, Northern part of Germany and North western Russia. ScanBalt BioRegion includes regional networks and clusters of universities, industries, service providers, hospitals, public institutions and other important players. These are triple helix networks and clusters due to the coordinated involvement of public institutions, public authorities and private companies. Since May 2009 clusters, networks, universities, industries and other organizations located outside the geographical definition of ScanBalt BioRegion can participate as “affiliates” upon application. This is intended to strengthen global match making for the ScanBalt BioRegion Community.

ScanBalt BioRegion comprises :

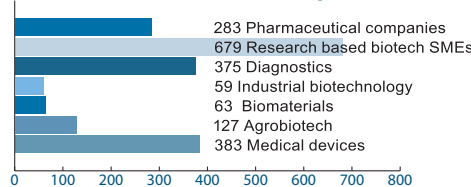
- ▶ 2543 life science or life science related companies (see table beside for examples of companies)
- ▶ 1012 universities and research institutes
- ▶ 238 Hospitals and Clinics
- ▶ 112 Investors

Various EU projects and other activities constantly enhance the knowledge about the competencies in ScanBalt BioRegion.

3.3.1 ScanBalt fmba

The not-for-profit membership association ScanBalt™ fmba ¹³ (ScanBalt) was established June 2004. The aims of its regional networks and clusters constitute the basis for ScanBalt. ScanBalt is a mediating, coordinating and communicating umbrella and/or platform for interactions among the networks and clusters. ScanBalt acts as a service provider for the ScanBalt BioRegion Community with a secretariat located in Copenhagen (Denmark) while liaison offices are currently located in Tartu (Estonia), Gdansk (Poland) and Rostock (Germany).

Life science within ScanBalt BioRegion:



3.3.2 ScanBalt Academy

The ScanBalt Academy is composed of highly esteemed experts and represents the highlights of research in the Baltic Sea Region within Life sciences. The role of the ScanBalt Academy is foremost to be an independent advisory body to activities in ScanBalt BioRegion, to act

as ambassadors and to deliver high level knowledge at seminars, conferences, workshops and so on. In March 2008 the ScanBalt Academy House opened in Schwerin, graciously donated by Landesregierung Mecklenburg-Vorpommern. The settlement of the ScanBalt Academy in Schwerin is expected to have a significant positive impact for the region and play an important role within the scientific communities.

3.3.3 Innovation on Top of Europe 2008-2011

In June 2008 the ScanBalt Executive Committee ¹⁴ agreed on a strategy for 2008-2011: “Innovation on Top of Europe” ¹⁵. The strategy intends to strengthen support and service to the members in order to further enhance the development of ScanBalt BioRegion. An important pillar of the strategy is the focus on cross-border innovation through cluster collaboration and how to promote it based on “smart growth”. Figure 1 shows key priorities for the development of ScanBalt Bio-Region since 2001. Each key priority is connected to its concrete action plans.

¹² A Macro-region is an evolving social level between the nation and the international global level. The European Union is a macro-region. Micro-region is one or several adjacent trans-national region(s), which within the framework of the macro-region seeks for a niche or expresses a common interest. Meta-region is a region of regions (between already formed micro-regions) within the framework of the EU macro-region (Hettne, 1977). ScanBalt BioRegion is such a meta-region.

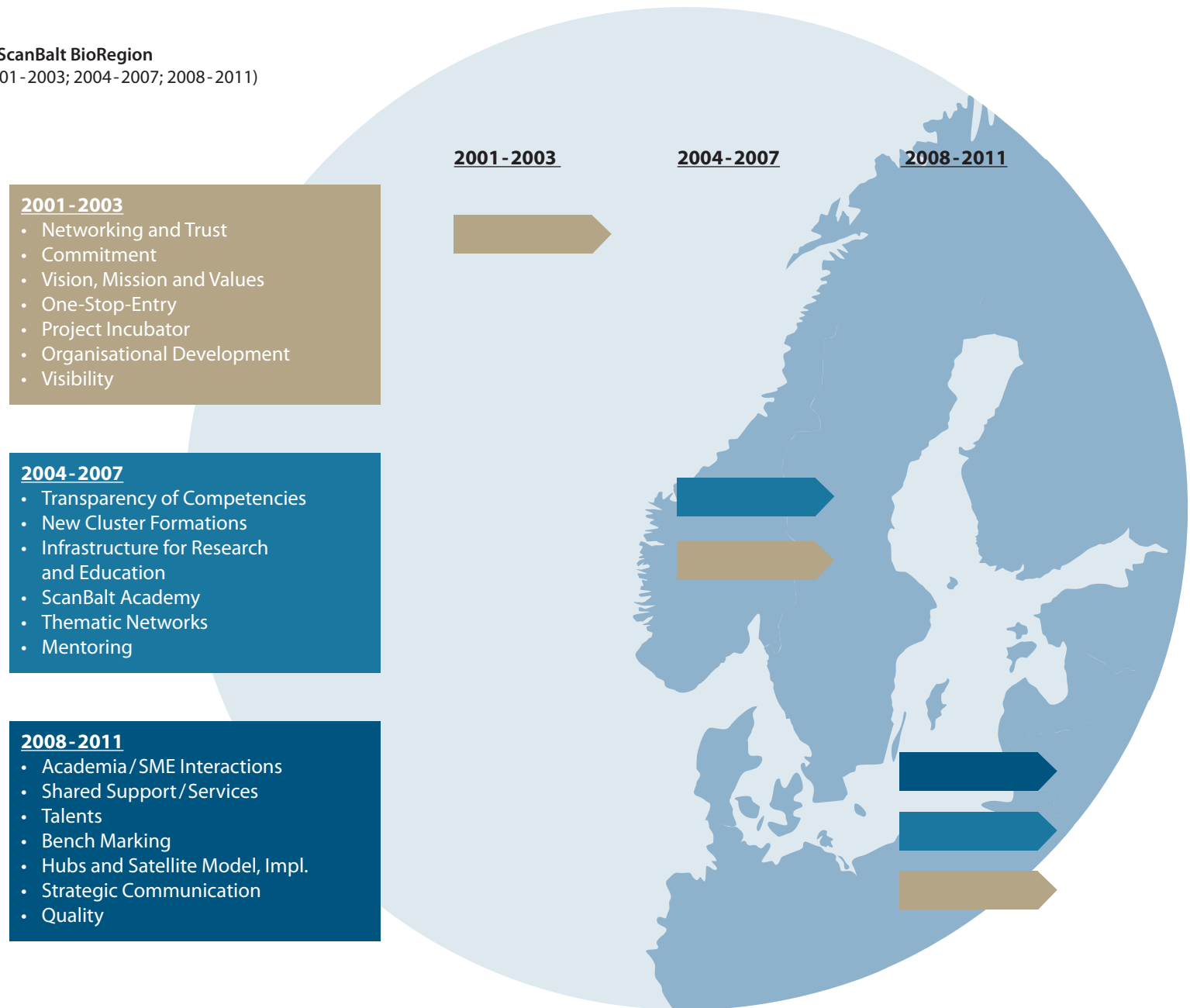
¹³ Fmba abbreviation in Danish for “Forening med begrænset ansvar”. In English “Association with limited responsibility”.

¹⁴ The aims of regional clusters and networks constitute the basis for the not for profit association ScanBalt fmba. ScanBalt is a mediating, coordinating and communicating umbrella and/or platform for the networks. ScanBalt is a registered trademark ScanBalt™.

¹⁵ ScanBalt Executive Committee, Göteborg 10 June, 2008.

Figure 1: The Development of ScanBalt BioRegion

(Sources: ScanBalt strategies 2001 - 2003; 2004 - 2007; 2008 - 2011)



4. Innovation Strategies in the Baltic Sea Region

In preparation for this report, innovation strategies for Bridging Academic Research and SMEs were analysed by senior analyst Peter Aksel Villadsen, Medicon Valley Alliance. The analysis “Innovation Strategies for Bridging Academic Research and SMEs” was published December, 2008, and presents a broad background picture of the challenges and opportunities for cross-border collaboration between academic research and SMEs in the Baltic Sea Region. The analysis can be downloaded at www.scanbalt.org.

Only the key conclusions from the analysis are presented here. For detailed review of benchmarks and data please see the analysis. Unless other sources are mentioned, the following text refers to the analysis. The analysis was based on a comparison of innovation strategies using five parameters: Academic performance, Labour and access to talent, Social and economic infrastructure, Access to capital, and Supportive research and development (R&D) environment. Performed as a desk study, the analysis was supported by interviews with selected clusters and regions. See also “Methodology” for further information on the analysis.

4.1 Diverse regional conditions

The Baltic Sea Region (BSR) has very diverse regional conditions for bridging academic research and SMEs. BSR is characterized by a great range in the level of salary, taxation and working hours. The Nordic countries have comparatively low working hours and high salary

levels while the opposite combination applies for the Baltic countries and Poland, which may promote industrial localization and development. Northern Germany has a combination of comparatively low salary and low working hours and has in addition high unemployment, which is among the highest in the BSR.

There is a very large difference in academic performance across the BSR. The Baltic countries and Poland have a large capacity in terms of students and scientific personal but the exception is life sciences due to lack of focus. An explanation is that life science dedicated research and commercialization greatly depends on tradition as well as industry demand. The establishment of a dedicated life science industry is a vital element in bridging academic research and SMEs as industry is often – directly or indirectly – financing tech transfer between academia and SMEs. This industry is present to greater or lesser extent in the Nordic countries and Germany, creating a demand for collaborative academic research. In the Baltic countries, Poland and North Western Russia an established life science industry is still in birth and thus gives rise to particular challenges in bridging academic research and SMEs.

Notably, BSR overall takes a leading position in terms of venture investments and compounds in clinical development compared with the rest of the EU but this masks wide differences within the region. Figure 2 (see next page) shows life science venture and buy out investments 2007 in BSR (according to European Venture Capital Association, 2008). No reliable information was available on Russia.

4.2 Future Challenges and Potential

Sweden and Denmark have a well balanced life science industry based on a historic cooperation between industry and academia and have a high level of academic life science research, which has the potential to foster many new companies and technologies the coming years. One challenge, however, is to control the balance of new projects and available capital. There is a lack of risk willing capital and this tendency has been dramatically strengthened by the economic crisis as is the case for the other countries.

Norway and Finland have a relatively high level of academic research activities within life sciences, however there is a comparatively low number of commercial research projects and life science companies. Both countries have very high investments in life sciences so one key challenge will be to generate an acceptable return on investments by improving collaboration between industry and academia.

Iceland is primarily challenged by the country's small size and thereby limited opportunities for academic research and industry cooperation. However Iceland has the potential to become a major contributor to BSR by means of delivering key research and expertise within selected areas.

Northern Germany has more than 400 biotech companies and a very large number of products in the pipeline which forms an ideal basis for further development of their life science sector. One advantage is the high level of private equity allocated. One key challenge considering the comparatively low salary levels may be that

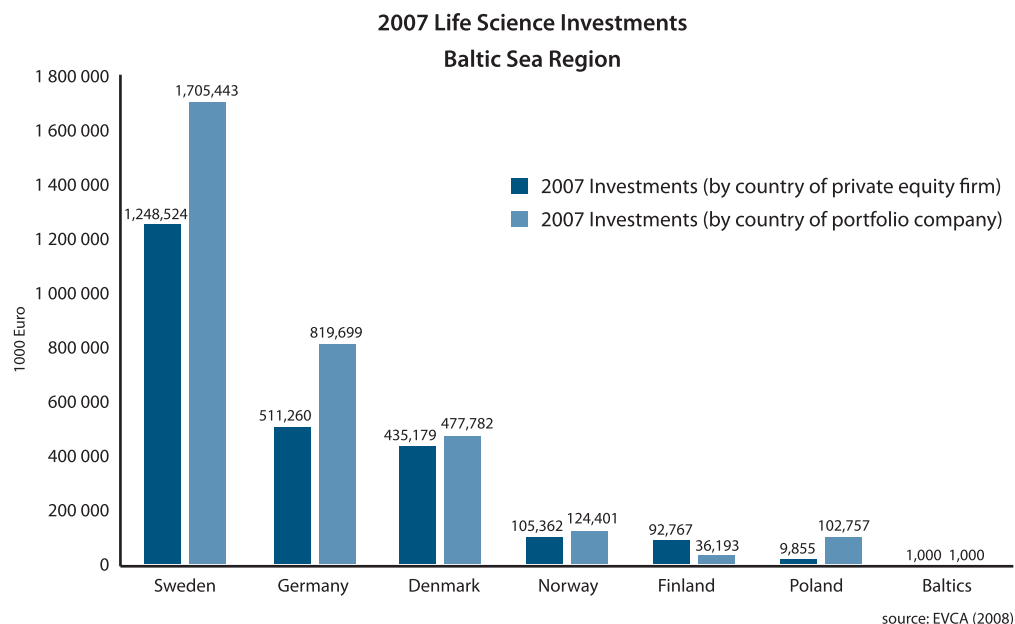


Figure 2: Life science investments in the Baltic Sea Region 2007 (1000 Euro)
(Source: European Venture Capital Association, 2008)

a lack of competencies could develop over the years, which may create issues in attracting talents from outside the region.

The key challenge for the Baltic countries is their lack of focus on life science research, technology transfer and commercialization. In addition they have a challenge to attract key expertise and specialists, again primarily due to comparatively low salary levels. However the Baltic countries have the potential to become major contributors to the European life science industry and the recent year's growth - before the economic crisis - has sparked growing interest and awareness among international investors.

Poland has an established life science industry but it is very small compared to the country's size and economy. Poland lacks a focus on life science in terms of educated and employed scientists. However Poland has the opportunity to develop its existing industry by initiating new partnerships between the academic environment and the private life science industry.

A challenge throughout BSR is the access to life science competencies and talent. In the global competition for talent BSR is unfortunately experiencing significant problems to attract and retain people. Despite the economic crisis highly skilled employees within life sciences are lacking in many places. And the global focus

on an eco-economy is likely to increase the demand. At the same time pharmaceutical companies for example seem to go through the crisis relatively untouched like other companies producing basic needs¹⁶. Access to talent is a key parameter for collaboration between academia and SMEs.

Obviously the economic crisis has dramatically lowered the possibilities for financing start-ups and continuing development of existing companies throughout the region. Nonetheless this presents acquisition and licensing opportunities for the established industry due to the lower prices of attractive projects. It still remains to be seen what effect the economic crisis will have on the life science industry, but it is predicted by many that there will be a dramatic decrease in the number of research based biotech companies as investors have become less interested in taking risks and financing has dried up.

A global agenda focusing on the creation of an eco-economy with science and research as key drivers is likely to strengthen the life science sector as this sector will deliver the solutions for the practical implementation of such an economy. It is therefore important to look beyond the current economic crisis and prepare for what will come after.

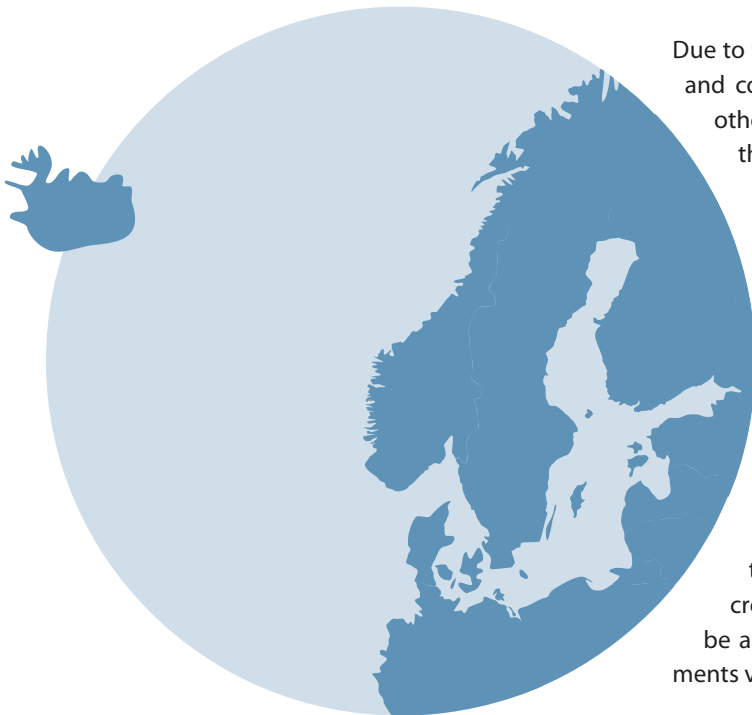
¹⁶ *Life Science Cluster Magazine, Spring 2009, Hans-Robert Metelmann & Peter Frank.*

4.3 Exploit Cross-border Synergies

Due to their great diversity of competencies, resources and conditions the BSR countries complement each other very well and enjoy significant opportunities through strengthening cross-border collaboration within life sciences. A further exploitation of cross-border synergies will result in additional strengthening of the regions capacity to bridge academic research and SMEs. As a consequence continuous development of cross-border knowledge and resource sharing should be pursued and outsourcing opportunities should be promoted and exploited for example from the Nordic countries and Germany to the Baltic countries, Poland and Northwest Russia. A basic tool to exploit the diversity in BSR is to strengthen cross-border technology transfer and this should be a focus for the EU, national and regional investments via coordinated efforts.

It is vital to attract early stage funding for commercial development of projects. Therefore BSR should be strongly promoted to international investors in order to attract them into early stage collaboration with academic research and to syndicate with national and regional investors. In addition it is crucial to apply mentoring programmes as follow-up on interregional initiatives. This includes identification and use of best practise and general support to cross-border industry-academia collaboration.

These were the key conclusions from the analysis “Innovation Strategies for Bridging Academic Research and SMEs”, providing a broad picture of challenges and opportunities. The following chapters give concrete recommendations on how ScanBalt BioRegion should face these challenges and exploit the potentials for cross-border collaboration between academia and SMEs with trans-national cluster collaboration as the primary platform.



5. Recommendations for Academia-SME Collaboration

5.1 The Baltic Sea Region as a Globally Leading Eco-Economy

As previously mentioned ScanBalt BioRegion, with its strategy “Innovation on Top of Europe 2008-2011”¹⁷, took steps to support BSR becoming a global leader based on a competitive eco-economy relying on “smart growth”. The Bridge-BSR Innovation Council recommends strengthening this direction as a crucial and fundamental principle in order to establish a competitive advantage for SMEs on a global market where solutions building on “smart growth” will be in high demand. ScanBalt BioRegion is in the forefront of Eco-innovation, and by simultaneously stimulating entrepreneurship and establishment of new companies together with promoting Eco-innovation, it can enhance the competitiveness of the region.

5.1.1 Green labelling of courses

It is necessary as a basic prerequisite that universities and research institutions develop and deliver competencies and knowledge within sustainable development in order to strengthen “smart growth”. There is a need for students with an understanding of sustainable development as being an integrated part of innovation as well as understanding the needs of companies. Basic education in integrated sustainable development is a first step to achieve this. Therefore it is suggested that “Green” labelling of courses based on the established Gothenburg model should be promoted throughout ScanBalt BioRegion and to other sectors as well.

5.1.2 Master level education within Eco-innovation and bioscience

Research within Eco-innovation is promising but the utilization and application of the research both commercially and for society’s use and long-term benefit is insufficient. The main reason is that the capability to transfer ideas within bioscience and ecology to poten-

implementation of which is likely to prevent or substantially reduce the risks to the environment or any other negative impact of the use of resources. The creation of an open innovation platform - sharing both results and knowledge on methods - would greatly benefit the sharing and utilization of ideas, which again would positively affect the environment.

About Green labelling of Courses in Gothenburg

Courses and programs at Gothenburg University are labelled according to their contents concerning, or references made to, sustainable development and the environment. Two levels are given. The higher level is marked with a blue globe as logo and the lower level a black globe. A blue globe indicates that the course mainly deals with environment and sustainable development, and where more than half of the time is concerned with ecological, economical and social sustainable development. A black globe indicates that the course partly deals with environment and sustainable development, and where less than half of the time is concerned with ecological, economical and social sustainable development. These logos or indicators are given together with the title of the course (or programme) in catalogues, on the internet and wherever courses are announced to future students and others. The labelling is given by the course responsible. The purpose is to create visibility and attention for students with a potential interest.

Source: www.gu.se

tial commercial activities is not yet fully supported by the necessary competencies. Notably, there is a lack of master’s level education within Eco-Innovation, entrepreneurship and bioscience¹⁸. Therefore master’s level education, common curricula and exchange of master program courses should be developed within two areas:

► **Eco-innovation**

Eco-innovation includes all forms of innovation activities resulting in or aimed at significantly improving environmental protection. Eco-innovation includes new production processes, new products or services, and new management and business methods, the use or

► **Innovation based Bioscience**

Innovative research today is performed in both industry and academia. Involvement of industry/SMEs in the process is an incentive for authentic case studies and consequently the foundation for industrial PhD and early innovation programs in the area of industry and academia. This could be further developed by an expert network and the model for Nordic Public-Private Partnerships described in 5.3.3 may be applied.

¹⁷ ScanBalt Executive Committee, Göteborg 10 June 2008.

¹⁸ Discussion in the Bridge-BSR Innovation Council.

5.1.3 BETAFORCE – Working with Bioethical Aspects

Bioethics is an essential topic within Life Sciences as it deals with the risk-management of moral problems and delivers solutions to significant ethical questions. Discussions in the ScanBalt BioRegion Community have revealed the need to build up a strong bioethics experts network within ScanBalt BioRegion, promoting dialogue and solutions to questions and principles connected with the activities.

The network should consist of persons with a practical attitude to ethics from within life sciences and bio-business. The network would be a one-stop point of contact for all aspects within the ScanBalt BioRegion bioethics frame.

In addition, a mobile Bioethics Task Force - “BETAFORCE” - should be established. The activities of BETAFORCE would be to:

- ▶ Promote best practices within bioethics and support efforts enforcing highest quality standards in regard of ethical aspects of ScanBalt BioRegion.
- ▶ Promote the integration of bioethical aspects at universities, research facilities and hospitals in the region.
- ▶ Provide opinion pieces on concrete demands such as animal facilities and husbandry, clinical trials, adjustment of negotiations in bio-business with a focus on IP relevant questions, and so on.
- ▶ Provide consulting such as ethical check-ups and solutions based on general or concrete issues.
- ▶ Provide lectures, seminars and workshops for clusters, universities, research facilities and so on.

- ▶ Provide assistance regarding the organizational development of institutional entities like ethical committees, working groups and responsible quality circles etc.
- ▶ Provide structural, organizational and management support to the activities mentioned above.

In this setting, BETAFORCE should collaborate and interact with specialists from the legal sector as existing laws form the frame of all meaningful activities in ethics connected with life sciences.

5.2 Shared Customer Support and Services between Clusters

5.2.1 Competence Hubs and Satellites – A Basic Model

The clusters in ScanBalt BioRegion will benefit from further strengthening cross-border collaboration and coordination. The aim is to rationalize and improve regional support and services to customers and to promote and enhance the meta-regional value chain. This requires more intense and committed interactions between the clusters and networks, clear priorities in order to strengthen effectiveness of investments and a more professionalized cluster management. For example, issues can arise when the local critical mass of competencies or resources are lacking, thereby preventing high quality level customer service or support - or when the local market is not large enough to sustain local service or support though they are highly relevant for those who are in the local market. Cluster collaboration should not have as an aim to remove competition

between clusters or equalize them according to any standards. Each cluster represents very specific regional competencies and objectives and should be developed according to specific regional needs and demands.

In the EU FP6 project ScanBalt Competence Region a putative model for enhancing cluster collaboration in the ScanBalt BioRegion was developed based on a model of competence hubs and satellites¹⁹. The basic idea is to develop strategies for targeted networking in selected areas where scientifically strong regions can

be regarded as “competence hubs” while other regions with a competence fit would then be regarded as “competence satellites”.

The Bridge-BSR Innovation Council proposes to promote this basic model of collaboration to all fields of activities within science, business, innovation and education by targeted measures. By concentrating on similar or complementary competences in the partner regions along the value chain of, for example, development of new drugs, non-fossil energy sources, clean-tech,

agro-biotech and marine biotech products, the existing commercial potential could be leveraged through enhanced collaboration and coordination and lead to better exploitation of the resources in the region.

5.2.2 Customers for Cluster-based Shared Support and Services

SMEs and SME-academia interactions would be the main customers of cluster-based shared support and services because there are troubling regional gaps and bottlenecks to overcome and gains to achieve from rationalization effects. The focus should be on integrating innovative SMEs into clusters, implementing best practices for the formation and growth of SMEs, establishing pilot activities to test and implement improved SME support and service tools, and on developing cluster self assessment programs. As an example consider that many SMEs lack knowledge and resources within general management, intellectual property management, financing and/or marketing issues because they are spin-offs from academic institutions. This in particular is the case in regions without an established life science industry but also in regions with a solid tradition for such industry it holds true due to a fierce competition for resources. These are the conclusions of an analysis performed for the Bridge-BSR project by Dr. Wolfgang Blank, BioCon Valley²⁰. The analysis was based on interviews throughout ScanBalt BioRegion, desk studies and knowledge from previous projects.

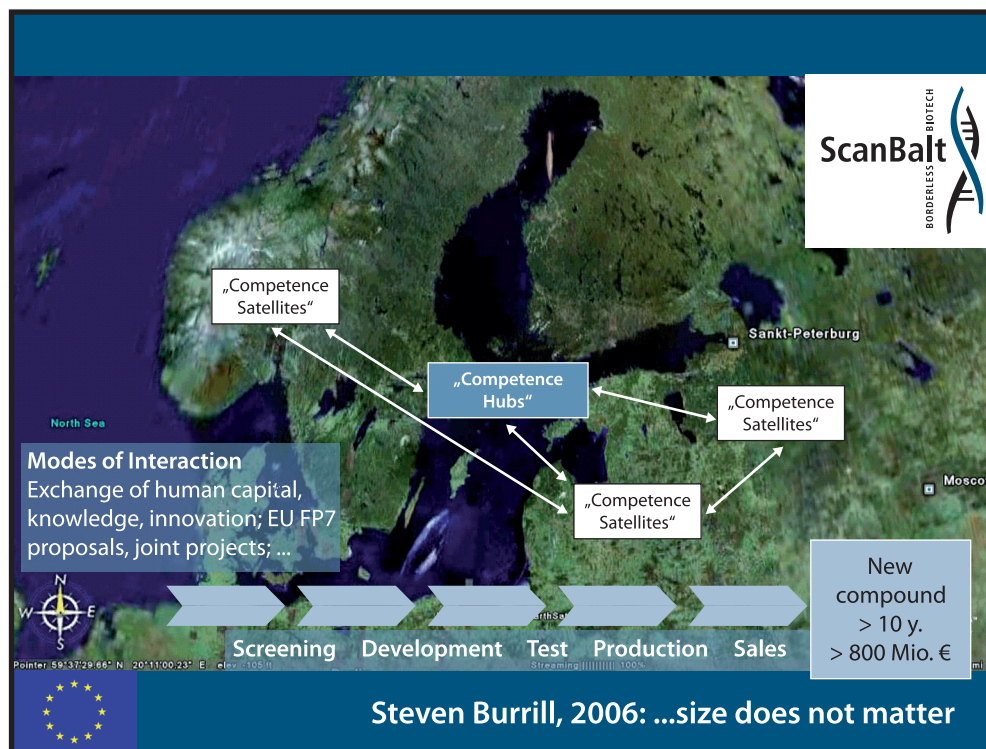


Figure 3: Competence Hubs and Satellites
(From ScanBalt Competence Region: ScanBalt - Top of Europe: Competencies in Life Sciences and Biotechnology in the Baltic Sea Region; February 2007)

¹⁹ ScanBalt Competence Region: ScanBalt - Top of Europe: Competencies in Life Sciences and Biotechnology in the Baltic Sea Region; Wolfgang Blank, Careen Krüger, Biocon Valley, February 2007, p. 1-68.

Though SMEs and SME-academia collaborations are regarded as the main customers, hospitals and clinics active in R&D and translational research may also be potential customers, especially when they partner with regional SMEs. This is more and more the case with the growing interest in translational research and development (“from bench to bedside”) within such fields as pharmacogenomics or individualized medicine. In addition, investors interested in early contact with promising projects are often partners of cluster or network organizations and may buy professional SME-oriented services from them. A variety of EU, national and regional initiatives offer services in the field of technology transfer or innovation such as Competence Research Centre institutions (CRCs). These organizations are potentially well suited collaboration partners in setting up shared SME support and services due to their often regional mission.

Establishing shared support and services means dealing with a number of challenges. Staff in clusters and networks is usually engaged in a broad variety of activities which does not permit in depth consulting or management activities for SMEs. Therefore an effective work share between the partners must be ensured, as well as the integration of professional partners. In addition the heterogeneity of partners and customers can be a further challenge for the implementation of shared support and services. These can be inter-cultural differences but also potentially different interests at the customer level. It is thus a crucial issue to establish a suitable communication within the support and service structures as well as towards the customers’ side.

The Bridge-BSR analysis further revealed that a huge variety of SME oriented support and services are performed in the clusters and networks while no shared services and support between the different organisations were identified. Table 1 gives an overview of existing SME oriented services and support performed by individual clusters and networks in ScanBalt BioRegion according to the analysis:

²⁰ *Mentoring and integration between clusters and networks “ScanBalt INCUB4HEALTH –Shared SME service support” BioCon Valley for Bridge-BSR, January 2009.*

Table 1: Existing SME services and support from individual Clusters and Networks in ScanBalt BioRegion

Services	Description	Products (examples)
Information	Delivering information to SMEs about life sciences and biotechnology, trends, developments, programs, projects	Internet Newsletters Publications
Partnering	Promoting contacts between SMEs and R&D, service providers and investors	Meetings Partnering events
Renting Infrastructure	Physical infrastructure for SMEs (Incubators)	Incubator
Training	Offering training and educational support to SMEs and to cluster personal.	Management courses Individual coaching
Consulting	Offering consultancy on various topics	Individual coaching of SMEs, Studies Expertise
Marketing	Delivering hands on marketing support in various directions	Organization of fair participation Support in public relations Press contacts and releases
Project incubation & management	Supporting applications for regional, national, EU or other funds	Screen tenders Support in concept development Application writing and consultancy
Financing	Support for SMEs to stabilize financing from consulting to active participation	Investor partnering events Investments
Human resources management	Delivering services for SME in human resources management	Organization of Job fairs Organization job portals

5.2.3 ScanBalt Modular Shared Business Support and Service (SMS-BSS)

It is proposed to establish the “ScanBalt Modular Shared Business Support and Service” (hereinafter SMS-BSS) in ScanBalt BioRegion as a basic practical organisational model. The proposal is based on the analysis described above, the experiences gained over the years in ScanBalt BioRegion, and discussions in the Bridge-BSR Innovation Council as well as in the ScanBalt Executive Committee. The SMS-BSS should be delivered and marketed as a virtual portfolio with different modules to be initiated depending on customer demand or based on priorities set by the ScanBalt BioRegion community. The total portfolio would rely upon the regional competencies of the SMS-BSS partner organisations and each module partnership should include competence hubs and satellites. SMS-BSS constitutes a flexible model of organizing shared support and services which can be extended according to needs, competencies and priorities and can be quickly adapted to a rapidly changing market. An overview of the basic support and service portfolio is depicted in Table 2 and can be differentiated into building blocks where each block may contain several modules, each module with its own partnership construction. Blocks and modules may be set-up so they actively interact with each other in order to enhance effectiveness and improve sharing of limited resources, so SMS-BSS should be regarded as a non-rigid and open model.

Type of service or support	Activity	Examples of activities
Information & marketing	Basic information and marketing activities performed by regional cluster and networking organisations. Gives access to information services in ScanBalt BioRegion.	ScanBalt Website, ScanBalt Newsletter, ScanBalt EU Digests, Nordic-Baltic Expats Forum. Presentations and exhibitions at regional, national and international conferences/ workshops.
Networking & partnering	Comprises network management and organisation of contacts and meetings between SMEs and players from universities, research institutions, service providers, among others.	Regular regional round tables, partnering events, yellow pages with add-on services, network guides as support for SMEs.
Project incubation and management	Development and implementation of joint cross-border projects between public-private partners such as SME-academia.	Working with best practice examples, project manuals and guidelines with general design, idea scouting, partner search, application support, project management.
Consultancy and coaching	Consulting & coaching activities delivered by the partner organisations.	Professional business development support in combination with manuals and guidelines such as preparation of business plans for SMEs.
Financing	The module covers all questions of financing support. It will be delivered with external partners and may be connected with access to financing infrastructure.	SME matchmaking with investors, development of financing networks.

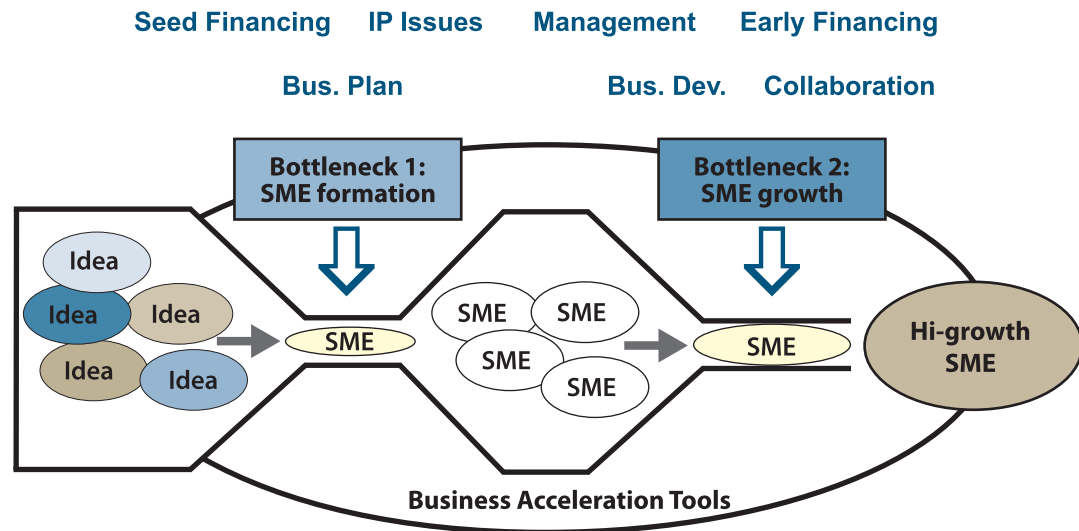
Table 2: Building blocks of ScanBalt Modular Shared Business Support and Service (SMS-BSS)

5.2.4 SMS-BSS at Work (I): Removing Bottlenecks

Bottlenecks have been identified for successful business development from idea to a high-growth SME, and these bottlenecks should form the focus of SMS-BSS activities. In particular two topics are key issues: “Intellectual Property” and “Financing”. This is based upon experiences gained in the ScanBalt Intellectual Property Knowledge Network (EU FP6) ²¹ as well as the conclusions from a ScanBalt Innovation Task Force ²² and a Bridge-BSR financing expert group ²³. In addition the Bridge-BSR Innovation Council further discussed bottlenecks for successful SME development supported by two analyses performed in Bridge-BSR which explored the respective topics of Intellectual Property ²⁴ and Financing ²⁵. Both the analyses can be requested from the ScanBalt secretariat. See also “Methodology” for further details.

It is important to foreground the fact that “Intellectual Property” and “Financing” have different timings. Intellectual property is the basis for early stage establishment of triangle research projects (Consortia between public institutions, authorities and private companies) when commercially viable ideas have to be identified and integrated into an SME (SME Formation). Financing is pivotal at a later stage, when the key issue is to foster commercial development and exploitation of the ideas in SMEs with products or services on the market generating revenue (SME Growth). Obviously financing is also important in the entire process and a basic requirement for any development of ideas into business. Figure 4 shows the two identified key bottlenecks for successful development of life science SMEs ²⁶.

Figure 4: Key bottlenecks for successful development of Life science SMEs



The following sections describe two proposed SMS-BSS activities that specifically target these two key bottlenecks for successful development of life science and biotech SMEs.

5.2.4.1 IP Exploitation Group in the Baltic Sea Region

Since the 1990s innovation within life science has changed dramatically because today innovation takes place in an open innovation environment. Networks and start-up companies together with consortia of research entities contribute the majority of innovations while Big Pharma for example shifts its innovation policy towards the integration of such external know-

how based on IP. In 2002 IP-based license business grew up to nearly USD 100 billion ²⁷. It is further estimated that 50-70% of the global gross domestic product that is contributed from the private sector is based on the exploitation of intangible assets ²⁸. On a company basis the share of total company value based on IP is on average well above 50 percent ²⁹. Thus IP is a key instrument to foster life science innovation and enable successful exploitation of research results especially from triangle research consortia in life science. So far Europe is lacking behind in using this potential and building an adequate infrastructure to do so. It is an interdisciplinary approach as it needs to combine business, law, and the science and administration arenas.

The analysis of IP-bottlenecks in the Bridge-BSR project, performed by Steinbeis-Transfer-Institute for IP Management and Steinbeis Team North-East (see “Methodology” for further details), revealed troubling bottlenecks for the commercialization of life science research. The bottlenecks mainly stem from a lack of experience among university and SME researchers on the set-up of cross-border triangle research projects. Based on expert interviews that were further complemented with a substantial literature analysis (performed by Center for Intellectual Property Studies, CIP, Göteborg), four main dimensions of IP-bottlenecks were identified. These are the identification and definition of the relevant technology and intellectual property as well as the market situation and options for IP exploitation.

Bottlenecks exist especially in the definition and clarification of initial contributions of technologies and intellectual properties at the beginning of projects as well as in defining ownership and exploitation of research results. Additional bottlenecks are found in the lack of knowledge about opportunities for the commercialization and exploitation of research results based on IP and technology transfer. These bottlenecks are addressed with the indicator scorecard system developed in Bridge-BSR. For each of these dimensions indicators were prepared that enable the assessment of a triangle research project according to commercial viability and potential obstacles for future IP exploitation and technology transfer.

The following overview shows the main indicators for each dimension which need to be addressed to assess the commercial viability of research projects and thus insure avoidance of the mentioned bottlenecks:

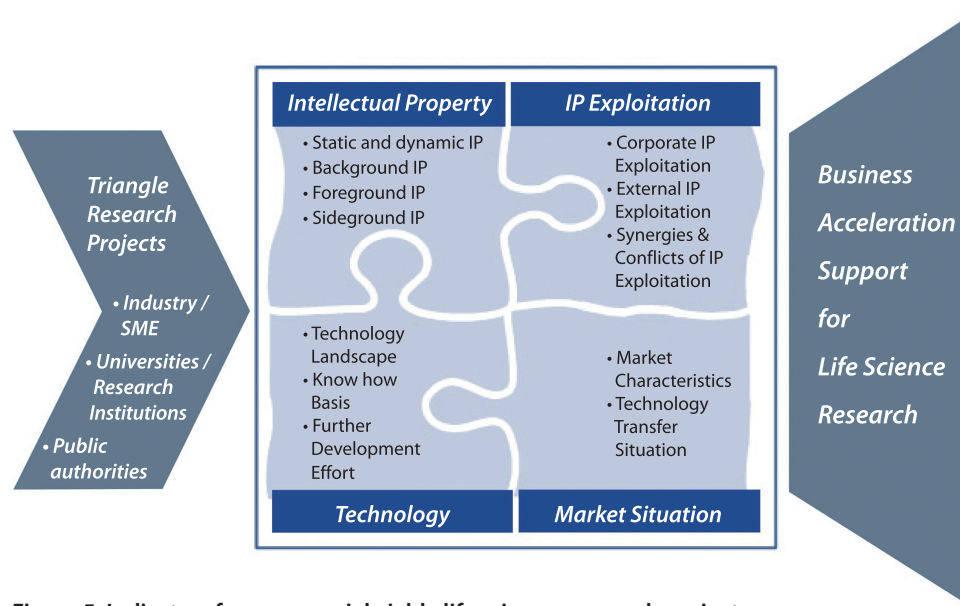


Figure 5: Indicators for commercial viable life sciences research projects

²¹ *Intellectual Property and Bioscience - Compendium of Working Papers from the ScanBalt IPKN Project*, Steinbeis Edition, 2006.

²² *Paper to ScanBalt ExCo, December 2007*, Frank Graage, Steinbeis Team Northeast (chairman); Ulf Petrusson, Chalmers Göteborg; Jaanus Pikani; Estonian Biotech Association; Stina Gestrelus, Medicon Valley Alliance; Bo Heiden, Chalmers Göteborg; Lise Vinkel Clausen, ScanBalt and Peter Frank, ScanBalt.

²³ *Composed by high level financing and investment experts, meeting once in 2008 for a 1-day workshop.*

²⁴ *Removing Intellectual Property Bottlenecks for Commercialization of Life Science Research*, Steinbeis-Transfer-Institute for IP Management / Steinbeis Team North East, February 2009.

²⁵ *Financing Bottlenecks for SMEs in ScanBalt BioRegion*, Bioforum Oulu, February 2009.

²⁶ *Prepared by Tero Piispanen, Finnish HealthBio, May 2009.*

²⁷ *Suma Athreye and John Cantwell (2007): Creating competition?: Globalization and the emergence of new technology producers; in Research Policy Vol.36/Issue 2, pp. 209-222.*

²⁸ *Wurzer, Alexander (2008): IP-Management - Schlüsselkompetenzen in einer Wissensökonomie, GRUR, No 7/2008, pp. 577-586.*

²⁹ *John Ballow, Roland Burgman, Göran Roos and Michael Molnar (2004): A New Paradigm for Managing Shareholder Value; Accenture Institute for High Performance Business, Wellesley MA.*

As a consequence of the analysis and the indicator scorecard system it is proposed to establish an IP Exploitation Group with researchers and industry representatives cooperating in triangle research projects. The experts group will provide a platform to share experience and disseminate best practice approaches for the four identified bottlenecks for IP commercialization.

The objectives of the group should be derived from the analysis of triangle research projects and thus cover the four main dimensions of IP bottlenecks. Dedicated subgroups should be set up covering each of the four main dimensions. The role of the subgroups is to foster the know-how development and practical application of instruments to overcome the bottlenecks. An example of such an instrument is the indicator scorecard system created by Steinbeis-Transfer-Institute for IP Management and Steinbeis Team North-East in the context of the Bridge-BSR project.

Such an initiative would facilitate the dissemination of practical know-how and accelerated movement up the learning curve among public and industrial researchers involved in cross-border triangle research. It is suggested to establish the cross-border IP Exploitation Group based on existing/planned triangle co-operations within ScanBalt BioRegion in order to integrate researchers already involved in cross-border triangle research projects. The IP Exploitation Group should therefore include experienced senior experts from industry and research institutions.

5.2.4.2 Closing SME Financing Gaps

There are over 200 potential life science investors in ScanBalt BioRegion according to an analysis³⁰ performed by Programme Director Tuula Palmén, Bioforum Oulu (Oulu Innovation) as part of the Bridge-BSR project. However, life sciences are typically only one of several investment fields for these investors. In a profiling analysis of the identified investors it became clear that a financing gap exists in particular in the financing of start-ups as the first financing for industrial proof of concept. In addition, adequate financing for clinical trials and marketing of pharmaceuticals 3-8 years after start-up presents another financing gap. Regional country data was collected by the Bridge-BSR Partners and supported with information from available reports such as Biotechnology in the European Union (2008) and the EVCA (European Venture Capital Association) Yearbook (2008).

Figure 6 shows the various financing phases in the development of life science and biotech SMEs. The financial gaps identified are marked with circles.

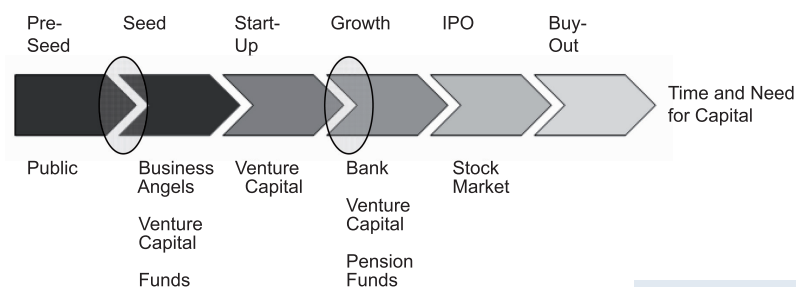


Figure 6: Financing of SMEs in Life sciences and biotechnology (Modified from Medicin Valley Investment Guide, Medicin Valley Alliance 2001)

The lack of financing willing to take risk in the early SME development phase lowers the number of spin-outs from universities and research institutions which pass from the initial phase where they are financed by public pre-seed financing. The private investments in biotech and life sciences have moved increasingly closer to the market, creating a widened gap to the public pre-seed financing. The identified gaps have been further accentuated and increased by the financial crisis where available capital willing to take risks for life sciences and biotechnology has been reduced dramatically. For example in Denmark only 6 companies were established in 2008 as opposed to 14 in 2007³¹.

The analysis performed by BioForum Oulu revealed wide differences in SME financing infrastructure and their practises among the countries within ScanBalt BioRegion. Therefore it is suggested to establish a flexible model for public-private partnership to support SMEs, a model that can adapt to diverse conditions, market demands and competencies within financing by linking together various initiatives within early stage financing. Several universities in the BSR have established technology transfer units, but in general they have inadequate resources and competencies

to promote the creation of new knowledge-intensive business. Only little or no time and resources are devoted to the development of new business plans and nurturing the project ideas.

³⁰ *Bridge-BSR: Analysis of SME Financing Bottlenecks and Investors and Initiation of SME Support Mechanism*, Tuula Palmén, BioForum Oulu, December 2008.

³¹ *Dansk Biotek*, publicly available statistics at http://danskbiotek.customers.composite.net/content/us/industry_facts.

As a consequence, it is suggested to link together science parks, universities, accelerator units (where incubator services are coordinated with venture capital and committed technical, clinical and market expertise) and SMEs through a series of horizontal activities which should include:

- ▶ Benchmark business accelerator activities in selected top-level Life Science Centers to support and improve the development of existing accelerator type activities, plus adapting and further developing best practices.
- ▶ Create a pool of experienced life science business managers who can act as evaluators of the innovations with commercial potential and mentor the process to prepare the companies for presenting to venture financing.
- ▶ Create easy-to-use business development tools like invention assessment tools for commercialization, management and Quality Management (QM).
- ▶ Network business acceleration units to establish a source of larger and healthier product and business ideas.
- ▶ Support the deal flow development (venture capital compatible) to investor networks addressing both the early as well as later financing gap (that requires syndication).

The scope is the creation of a SMS-BSS module, which can operate in a self-sustainable manner after an initial pilot phase promoting successful business development in ScanBalt BioRegion.

5.2.5 SMS-BSS at Work (II): Project Incubation and Management

Project Incubation and Management is a key priority according to the ScanBalt Innovation Task Force, the various preparative projects and discussions plus analyses in the Bridge-BSR Innovation Council and in the ScanBalt Executive Committee. The objective is to support SMEs in ScanBalt BioRegion to strengthen their innovation pipeline and economic performance in collaboration with universities and research institutes in cross-border collaborations and projects. The support and services of “Project Incubation and Management” should be a SMS-BSS package which includes:

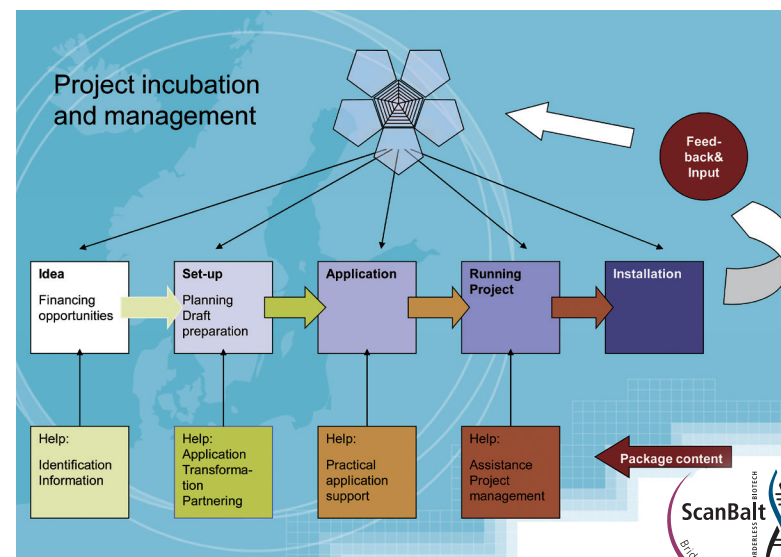
- ▶ Identification of ideas with a commercial potential for SMEs.
- ▶ Shared digests and overview of financing and funding opportunities delivered to partners.
- ▶ Set-up of triangle project consortia between SMEs and academic research.
- ▶ Practical application support.
- ▶ Hands-on project management assistance
- ▶ Dissemination support.

The key objective of “Project Incubation and Management” would be to ensure more effective screening for commercially viable project ideas, improved coordination between academia-SME cross-border RTD leading to more and better investments at the regional, national and supra-national level.

In ScanBalt BioRegion the tasks mentioned have so far been performed in a rather non-formalistic way which has resulted in several projects being established and co-financed by EU Framework programmes, structural funds, funds from the Nordic Council and various regional and national funds. However, a clear and more formalized but flexible structure building on SMS-BSS principles would improve the effectiveness by which ScanBalt BioRegion can promote cross-border project collaboration between SMEs and academia and ensure benefits from the effects of rationalization.

Figure 7 shows how the process in Project Incubation and Management could be organised.

Figure 7: Organisation of the SMS-BSS module Project Incubation and Management
(Prepared by Wolfgang Blank, BioCon Valley, June 2009)



5.2.6 SMS-BSS at Work (III): Global Matchmaking Programme

Life science technologies, investment opportunities and research collaborations are all becoming increasingly international in their perspectives as is the market for human resources. In addition new strong players are appearing due to strong investments in life science such as in Asia. As a consequence ScanBalt BioRegion should strive to build-up and support strategic active collaborations with life science meta-regions, national competence centres and regional clusters both within the EU and globally. Such collaborations would be of particular benefit for SMEs as they normally only possess limited resources for exploring collaborations with both academia and business abroad.

The ScanBalt BioRegion Global Matchmaking Programme should:

- ▶ Collect competence profiles of meta-regions, national competence centres and regional clusters outside ScanBalt BioRegion.
- ▶ Establish contacts to relevant competence profiles.
- ▶ Match complimentary competence profiles between clusters in ScanBalt BioRegion and relevant competence profiles abroad.
- ▶ Prepare consortia building.
- ▶ Promote coordinated public-private investments at the supra-national, national and regional level.
- ▶ Promote the implementation of SMS-BSS in the consortia.
- ▶ Integrate life science meta-regions, national competence centers and regional clusters abroad as affiliates of ScanBalt BioRegion in order to promote interaction and coordination with ScanBalt BioRegion clusters.

The ScanBalt BioRegion Global Matchmaking Programme should achieve the following objectives:

- ▶ Increase cluster-to-cluster interactions between ScanBalt BioRegion and other regions in order to enhance business, academic research and health care.
- ▶ Promote initiatives combining the skills and competences of private life science companies, universities and the healthcare sectors.
- ▶ Enable cross-exploitation of accumulated knowledge between the regional organisations of clusters and regions.
- ▶ Actively promote opportunities for coordinated public-private private investments between clusters in ScanBalt BioRegion and clusters abroad.

The ScanBalt BioRegion Global Matchmaking Programme should interact with established regional and national initiatives promoting life sciences collaborations abroad and support such initiatives when relevant. For example, it could benefit from experiences gained in the Medicon Valley Life Science Ambassador Programme and draw on established contacts.

About the Medicon Valley Ambassador Programme

Medicon Valley Alliance has developed a strategic globalisation initiative called the Medicon Valley Life Science Ambassador Programme. This programme is a strategic network of contacts and active collaborations with leading life science clusters in the world. It provides unique opportunities to access information more efficiently and create contacts with partners internationally. The concept in short:

- ▶ *Build a strategic network of contacts and active collaborations with 12 of the leading and emerging clusters in the world.*
- ▶ *Exchange of "Ambassadors" for 2-3 years between Medicon Valley Alliance and the 12 clusters.*
- ▶ *Develop new relations by scouting for business and research opportunities and by promoting networking between the participating clusters.*

Source: www.mva.org

5.2.7 Biosystems - an Example

Biosystems technology can serve as a thematic example of the implementation of the tools for bridging academia and SMEs proposed in this report. Other highly relevant thematic examples may be for example within cancer, cancer prevention and health economics. Biosystems technology is a cross-disciplinary field with public and private stakeholders from several sectors. However, the lack of cross-border public-private interaction between the stakeholders and the general lack of knowledge of the users (clinicians), suppliers (including academic suppliers of specific assays) and the markets impedes the introduction of innovative biosystems technologies. As a result biosystems technologies are not adequately implemented in SMEs and industries or in clinical routines. The EU FP6 co-financed project Boost Biosystems suggested initiating a thematic biosystems collaboration in ScanBalt BioRegion in order to support business development on the basis of cross-border public-private interaction. It concluded that ScanBalt BioRegion has the potential to become a global leader in biosystems technology if coordinated investments can be provided at the supra-national, national and regional level for initiating a hub, which can assist bridging to academia, SMEs and other industries.

The collaboration should be a node for key biosystems public and private stakeholders in ScanBalt BioRegion and once established, involve other EU-regions as well. The biosystems collaboration should integrate SMS-BSS and illustrate how it would work at the thematic level. The objectives of the biosystems collaboration would be to:

About BOOST BIOSYSTEMS

The EU FP6 co-funded support action BOOST BIOSYSTEMS focused on biosystems technology in both technical as well as disease related aspects. Boost Biosystems constituted an integrated set of support actions for breaking inter-sectoral barriers, networking and the promotion of RTD collaboration between SMEs and academia. Boost Biosystems promoted SMEs' competitiveness through partner matching for EU RTD projects. Some key results of BOOST BIOSYSTEMS were:

- ▶ *Over 1000 players within biosystem technology in ScanBalt BioRegion identified.*
- ▶ *88 bilateral talks between SMEs & academia took place at two brokerage events.*
- ▶ *Further support given to 45 SMEs for setting up EU-FP7 proposals or collaborations in this field.*
- ▶ *A dozen concrete proposals or bilateral collaborations were set up with the help of Biosystem partners.*
- ▶ *Strategy for a cross-border public-private biosystems hub developed.*

Source: www.scanbalt.org

- ▶ Identify hub and satellites for coordinated activities.
- ▶ Create fee financed biosystems brokerage events with SME presentations to promote public-private collaborations.
- ▶ Promote the integration of biosystems SMEs in EU projects.
- ▶ Continue to network key biosystems stakeholders from the public and private sectors.
- ▶ Marketing and branding biosystem technologies as a globally competitive competence of ScanBalt BioRegion.
- ▶ Enhance awareness of biosystems IP-management to facilitate public-private collaborations.
- ▶ Enhance awareness of biosystems IP-management to facilitate public-private collaborations.
- ▶ Attract human and financial resources.
- ▶ Enhance the understanding among regional, national and supra-national decision- and opinion makers of the potential of biosystem technologies to improve competitiveness and to solve problems of interest to society.

5.3 Talent as drivers for collaboration between Academia and SMEs

Human resources, or talents, are crucial for the collaboration between academia and SMEs as knowledge is located in the heads of people. Since life sciences and biotechnology operate with a very high degree of specialization it is often a necessity and an advantage to collaborate with neighbouring regions on talents – or to outsource tasks to where the talents are. It is a question of utilizing the available local/regional talents; increasing their mobility in order to supplement local/regional talent, retaining talents and attracting talents from outside ScanBalt BioRegion. A basic principle would be to establish strong cross-border collaborations based on competence hubs and satellites which promotes and attracts interactions with SMEs and industry in general. Talent is a key parameter in order to stay competitive and collaboration on talents need to be performed in a way that ensures mutual benefits and prevents brain-drain from individual countries. One important issue is that collaboration based on competence hubs and satellites may also promote distribution of tasks to where the talents are instead of moving those talents. This would lead to the strengthening of the spearhead competencies of the individual regions, increase the co-ordination of tasks between the regions, and enhance global competitiveness of the individual discipline concerned via connecting competence hubs and satellites.

This was a short summary of conclusions from discussions in the Bridge-BSR Innovation Council and in the ScanBalt Executive Committee which - together with the knowledge from previous projects and activities - provides the basis for the following recommendations.

5.3.1 Strengthen Cross-Border Knowledge Networks

The project ScanBalt Campus, co-financed by Interreg III B, ran for the period 2004-2007 with 31 partners. The project led to the establishment of 8 Cross-Border Knowledge Networks within various thematic areas based on simple criteria combined with a bottom-up procedure. After termination of the pilot project 4 knowledge networks are financially sustainable and independent of Interreg III B, which must be regarded as highly satisfying success rate based on the simple and fast bottom-up procedure. The Knowledge Networks undertake various tasks within specific disciplines according to their competencies by running workshops and organizing seminars and summer schools, among other activities. They play a significant role in the education and research infrastructure in ScanBalt BioRegion and are important tools to enhance academic collaboration with SMEs and industry in general. They constitute a practical set-up for cross-border collaboration in education and research - or science links - based on competence hubs and satellites, which means that any region having a specific competence may become a competence hub regardless of the size of the region itself.

Based on the success for the ScanBalt Campus Knowledge Networks it is recommended that EU, national and regional funds in coordinated investments are applied to strengthen the role of the Knowledge Networks in order to link together academic institutions, SMEs and other industries. It is crucial to point out the importance of a bottom-up approach which allows very light and simple procedures coupled to administration handled at the meta-regional level, thereby promoting

About ScanBalt Campus and Knowledge Networks – Science Links

The ScanBalt Campus project (Interreg III B) established the concept of Knowledge Networks as science links. Knowledge Networks are accepted based on open tenders with the following simple criteria:

- ▶ *Requirement of mobility between at least two countries in ScanBalt BioRegion.*
- ▶ *Activities should be based on win-win situations for the involved partners.*
- ▶ *Activities should strengthen links to industry.*
- ▶ *At least 5 partners from at least 3 different regions and two different countries all within ScanBalt BioRegion.*
- ▶ *If these requirements are fulfilled, further participants from outside ScanBalt BioRegion can be partners in Knowledge Networks.*
- ▶ *A Knowledge Network shall have its own management and follow rules established by the Network itself.*
- ▶ *The Management of a Knowledge Network has the right to participate in ScanBalt Executive Committee meetings.*
- ▶ *A Knowledge Network must respect and share the values and vision of ScanBalt BioRegion.*

8 Knowledge Networks were established in the ScanBalt Campus pilot project and 4 are still active undertaking various tasks according to their competencies. Other important results from ScanBalt Campus were the establishment of ScanBalt Academy as an external advisory body, the description and promotion of shared curricula and a number of workshops, courses and summer schools being held by the Knowledge Networks. 31 universities, hospitals and companies from 10 countries in ScanBalt BioRegion were partners in ScanBalt Campus. Source: www.scanbalt.org

speed and adaptability to needs and demands, two crucial parameters for staying competitive. If strengthening the role of Knowledge Networks is coupled with the establishment of a support infrastructure for Research, Development, Innovation and Education as mentioned in chapter 1 "Top of Europe as an "Ideenschmiede", it will be a very powerful tool to promote academia-SME and industry interactions and to improve coordination between academic institutions and regions.

5.3.2 Research Management Training

Young scientists at the start of their career as independent researchers are faced with an overabundance of new challenges, including the management of research projects, the acquisition of research funds and management of teams that are often of a multicultural character. They have a strong need for the tools necessary to manage these tasks and to gain knowledge regarding the possibilities of international cooperation and for the economic use of scientific results. Training in IP, innovation and management issues should provide already educated and excellent researchers with the means to better commercialize, innovate and uncover new funding sources. This is a prerequisite to create a globally competitive ScanBalt BioRegion as concluded by the EU co-financed project Trayss Prime. The tool would be to create cross-border Research Management Training.

The Research Management Training should be a regular offering for life science and biotechnology researchers in collaboration with graduate schools and professionals in ScanBalt BioRegion and also be available to other regions once established. The training should:

- ▶ Focus on hands on workshop character with interaction, exercises and case studies.
- ▶ Be coordinated by an experienced provider in collaboration with local host.
- ▶ Be located within ScanBalt BioRegion and have a co-organizer identified by tenders allowing the selection of potential partners and locations.
- ▶ Be open to any scientist or expatriate from ScanBalt BioRegion with a maximum of 50 percent from the host country.
- ▶ Be financed via participation fees, sponsors and contributions from the local hosts (such as accommodation and technical equipment). If possible, public funding opportunities and private sponsors should be attracted.

Research Management Training is intended to be a model for training modules and training offerings within other disciplines throughout ScanBalt BioRegion.

About Trayss Prime

The EU FP6 project Trayss Prime developed a concept for cross-border research management training in ScanBalt BioRegion and provided training through a number of workshops and seminars. The objectives of Trayss Prime were to:

- ▶ *Provide young life science researchers with an introduction to project management skills.*
- ▶ *Enable them to apply modern and state-of-the art management tools.*
- ▶ *Encourage them to international collaboration by introducing them to the possibilities in the European Research Area (ERA).*
- ▶ *Promote meetings with potential partners.*
- ▶ *Facilitate application for European research funds by providing an introduction to application procedures and process.*

Source: www.scanbalt.org

- ▶ Invite speakers mainly from the ScanBalt BioRegion Community including ScanBalt Academy and from local organisations for case studies and visits.
- ▶ Include excursions, fire side talks or other social events to allow for additional input and networking among the international group of participants.
- ▶ Provide evaluation of the programme and its organisation to continuously improve training.

5.3.3 Partnerships in PhD-education

Cross-border public-private PhD-Education should be promoted in ScanBalt BioRegion. This recommendation is inspired by the Nordic PPP PhD Programme launched by NordForsk (see text box). The intentions are to strengthen coordinated cross-border public-private PhD-education in life sciences and biotechnology by the involvement of regions, clusters, institutions and industries throughout ScanBalt BioRegion in order to meet needs and enhance adaptability to ever growing and fast changing demands.

The initiative should initially be regarded as an umbrella for multiple individual partnerships between universities, industries, funding agencies and regions but would ideally be coupled with the establishment of a BSR

support infrastructure for Research, Development, Innovation and Education mentioned in chapter 1 *Top of Europe as an "Ideenschmiede"*.

Involvement of SMEs and other types of industries in the process offer an incentive for authentic case studies and consequently the foundation for public-private cross-border collaboration on PhD programs. This should be further developed by an expert network which would have as its tasks to explore the possibilities and priorities for public-private PhD-education, to act as ambassadors and to promote cross-border funding of activities. These tasks could be handled by the ScanBalt Academy.

About the Nordic PPP PhD Programme

The aim of the NordForsk PPP PhD programme is to contribute to the opening up of the Nordic Research and Innovation Area, NORIA.

A PPP PhD project is a research project carried out in collaboration between an enterprise, a PhD student and a university. The main applicant is the enterprise where the PhD student will be employed. The PhD student should have at least one supervisor from the enterprise and one from the university at which the student will be enrolled.

The enterprise must be geographically located in a Nordic country, and must have the qualifications and financial means to ensure that the PhD project can be completed. The university must be located in a Nordic country different from the country in which the enterprise is located. The PhD student is required to divide the time between the enterprise and the university, spending at least 25% of the time at the partner where the PhD student is not regularly staying. There are no nationality requirements for PhD student or supervisors. The programme is open to applications within all sectors and all scientific fields.

Funding is allocated for 3-4 years, depending on the national university PhD programme requirements. NordForsk covers up to 50% of the PhD student's salary (maximum NOK 400 000 NordForsk funding) as well as costs related to travelling and participation in PhD courses etc. The other 50% of the salary costs are to be covered by the enterprise.

Source: www.nordforsk.org

The objectives would be to:

- ▶ Enhance cross-border knowledge exchange and collaboration between industry and academia in order to form a basis for lasting research collaboration.
- ▶ Offer PhD-students training in both the public and private sectors.
- ▶ Provide PhD-students with a comprehensive set of complementary skills, such as entrepreneurship and management of intellectual property rights (IPR).
- ▶ Offer life science and biotech enterprises the possibility to enhance the application of new research-based knowledge in innovation processes through strengthened research competence and collaboration with relevant academic communities.

5.3.4 On-site Pre-incubation and Entrepreneurship training

The Bridge-BSR Innovation Council recommends to promote on-site pre-incubation and entrepreneurship training throughout ScanBalt BioRegion and to develop concrete framework conditions for translation and transfer processes from science to market authorization. This approach of guiding innovation close to the idea providers is one of the most cost efficient ways of utilizing ideas. Long-term results from, among others, Gothenburg and the Gothenburg International Bio-science Business School (GIBBS) demonstrate successful utilization built on early pre-incubation.

About on-site Pre-incubation and Entrepreneurship Training

A pre-incubation process is a structured process for helping the potential entrepreneur, the researcher, to turn a 'good idea' into a viable business. Pre-incubation typically involves business counselling to help the researcher understand the potential of the idea and possibly some training in basic business skills and requirements. It can also involve preparation of a business plan and help for the entrepreneur with the formalities of establishing a new company. These activities are often pre-requisites for entering an incubator. Additionally, pre-incubation is understood as part of the learning process in higher education.

Source: Pre-incubation in Higher Education, Oulu University, 05.09.2005

5.3.5 Expatriates as a Brain Bank

Approximately 2000-2500 highly educated persons emigrate each year from Denmark including 125 with a PhD degree. Especially persons within Life sciences are likely to stay abroad more than 2 years and those with a PhD-degree are more likely to immigrate than those without³². The total pool of persons from Denmark engaged in bioscience research, business or research policy actually staying abroad is unknown but it most likely runs into the thousands. This picture can be recognized in the other Nordic countries and Germany. For Poland, the Baltic states and north western Russia the actual and/or percentual numbers are probably significantly higher due to lack of competitive working conditions at home³³.

These students, researchers, staff and professionals engaged in bioscience research, business or research policy working or studying abroad or recently returned represent an untapped source of knowledge and experience, a brain bank that SMEs, industry and academic institutions in ScanBalt BioRegion could use much more effectively in order to stay competitive and enhance collaboration between them. Likewise foreign expatriates residing in Top of Europe and engaged in bioscience research, business or research policy should be retained within the region, or failing this, serve as nodes for developing possibilities once back in their home countries.

Therefore the Nordic-Baltic Expats Forum was established as a pilot project in October 2008 (see www.nordexpat.eu). The Nordic-Baltic Expats Forum (NBEF) takes up the challenge of turning expatriates into an efficient source of brain power available for Top of

Europe. The launch of NBEF was funded by universities, companies, institutions and public authorities in BSR.

The visions and tools of the Nordic-Baltic Expats Forum should be further developed and strengthened through coordinated supra-national, national and regional investments. In addition the possibilities for coordination with EU services for researchers abroad like EUROAXESS should be explored in dialogue with the EU Commission as the Nordic-Baltic Expatriate Forum can

provide the strength of being oriented towards life sciences and having a regional approach, while it would benefit from collaboration with a well-established non-specific EU platform.

³² *Brain Drain eller Brain Gain, report, Danish Agency for Science, Technology and Innovation, 25 Jan 2007.*

³³ *According to discussions in the ScanBalt Executive Committee and in the Bridge-BSR Innovation Council.*

About the Nordic-Baltic Expats Forum

The NBEF Mission is:

- ▶ *To turn brain drain into brain gain.*
- ▶ *To inform expats of job, funding, career, and partnering opportunities in R&D on Top of Europe.*
- ▶ *To engage expats in leveraging opportunities for regional institutions, universities, and companies abroad.*
- ▶ *To help expats to share experiences, better practices, and to give professional and social support before, during, or after their stay abroad.*

NBEF targets:

- ▶ *Regional expatriates (citizens of a Top of Europe country) engaged in bioscience research, business or research policy, as students, staff members or professionals working or studying – or recently having worked or studied - abroad, either at another Top of Europe country or elsewhere.*
- ▶ *Foreign expatriates residing in Top of Europe engaged in bioscience research, business or research policy.*
- ▶ *Returned foreign expatriates (citizens of countries outside Top of Europe) engaged in bioscience research, business or research policy and who have worked or studied in Top of Europe and then returned to their country of origin.*

“The pharmaceutical industry’s competitiveness is more than ever dependent on the availability of talented professionals. With its focus on attracting expat bioscience researchers and life-science business professionals to the top of Europe, the pharmaceutical industry therefore sees the Nordic-Baltic Expats Forum as an utmost important initiative”. Ida Sofie Jensen, General Manager, The Danish Association of the Pharmaceutical Industry, October 2008.

Source: www.nordexpat.eu



6. About Methodology and Bridge-BSR

6.1 Methodology

The Bridge-BSR Innovation Council

The report "Smart Growth - Bridging Academia and SMEs in the Baltic Sea Region" was prepared by the Bridge-BSR Innovation Council, which met 3 times between December 2008 and May 2009. The recommendations in the report were adopted by the ScanBalt Executive Committee May 2009. The Bridge-BSR Innovation Council was composed of experts representing universities and research institutions, SMEs and other industries, cluster managers, tech transfer organisations, hospitals, regional authorities, ScanBalt Academy, the Nordic Council of Ministers and the EU BSR INNO Net. For composition see "Acknowledgement".

Planned analysis performed in Bridge-BSR

As background for the work of the Bridge-BSR Innovation Council three analyses were performed in accordance with the Bridge-BSR project plan:

- ▶ *Regional Innovation Strategies for Bridging Academic Research and SMEs, Medicon Valley Alliance, December 2008/ revised June 2009:*
The analysis of regional cluster innovation strategies in ScanBalt BioRegion was conducted in order to provide an overview. The analysis focused on strategies with impact on indicators which are publicly available for comparison. Output indicators

were for example patents, collaborations, licence deals, start-up companies, inward investments, new processes or products, IPOs or company mergers/sales, decisions on process in- or outsourcing, and multiplication factors for new jobs or revenues to the local society. Input indicators were public & private RTD, infrastructure in terms of research facilities, research excellence, human resources, pre-seed capital, incubators, entrepreneurial incentives / tax incentives for innovative companies, and so on. Visits and interviews took place to selected clusters and regions in order to conduct in-depth analysis of selected issues (BioForum Oulu/Oulu Region, BioCon Valley/Mecklenburg Vorpommern, IPPT-PAN/Warsaw region, Beijing and Israel).

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- ▶ *Removing Intellectual Property Bottlenecks for Commercialization of Life Science Research, Steinbeis-Transfer-Institute for IP Management / Steinbeis Team North East, February 2009:*

The first partial analysis focused on identification and analysis of the specific innovation regime in ScanBalt BioRegion, based on relevant literature sources and interviews with ScanBalt Innovation Task Force members³⁴. The identification and analysis covered the following tasks:

- (1) Analysis of the predominant type of innovation value chain and of relevant IP legislations,
- (2) Identification of the existing market actors and revenue models,
- (3) Identification of potential IP bases business models and relationship between existing and new value chains in life sciences.

Second part of the analysis was conducted as

literature and interview based identification and analysis of intellectual asset management policy. The analysis covers the following tasks:

- (1) Identification of intellectual asset management policy in the region (IPR guidelines, IP policies, technology transfer regulations),
- (2) Identification of indicators for the assessment of the range of intellectual asset applications. This will help to set up specific guidelines for the transnational cooperation of various actors,
- (3) Analysis of the IP background and foreground situation of two practical pilot actions.

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► *Financing Bottlenecks for SMEs in ScanBalt BioRegion, Bioforum Oulu, February 2009:*

In a desk study data on regional financing bottlenecks for SMEs were collected in ScanBalt BioRegion including an overview of the tax regulations in the various regions. Potential investors which can be mobilized to close the financing gaps were identified and characterized. In addition, SME financing gaps and potential investors were discussed in the ScanBalt Executive Committee. This was supplemented with available material from clusters, life science and biotech industry associations, venture associations, business angel associations, reports prepared by various consulting groups, and similar, plus internet search.

The partial analysis served as background for a 1 day workshop. Participants in the workshop were high level experts constituting a Financing Expert Panel from the 11 countries in ScanBalt BioRegion plus project partners, representatives from the ScanBalt Chairmanship, ScanBalt Academy and the ScanBalt Innovation Task Force. The workshop delivered input and recommendations in order to provide a clear picture of the financing situation for SMEs throughout ScanBalt BioRegion, suggested solutions and supplemented the analysis of investors. A particular topic for discussion was the establishment of a structure for ScanBalt BioRegion which may be instrumental in closing the financing gaps for research based SMEs. The possibility of establishing financing support mechanisms for SMEs in ScanBalt BioRegion was first raised by the ScanBalt Innovation Task Force. Based on the discussions in the Financing Expert Panel the analysis was finalized.

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Previous projects of particular relevance for the work of the Bridge-BSR Innovation Council

Additional support was provided by the results and experiences from a series of previous projects, especially:

► *ScanBalt CompetenceRegion (EU FP6):*

ScanBalt CompetenceRegion identified and characterized the various life science and biotechnology clusters in ScanBalt BioRegion³⁵. These can be divided into 3 categories:

- (1) Scientific Fountains (Mode 1 clusters) where a geographical concentration of knowledge producing activities is characterized by a high research and development activity and a large pool of human capital. Examples are the Latvian biotech cluster or the North-Poland Biotech cluster (today organised in Biobaltica),
- (2) Co-location clusters (Mode 2 clusters) where the Scientific Mountains produce spin-off's and / or attract companies who benefit from co-locating their own R&D activities in close proximity to the university research institutes. Examples are BioCon Valley in Germany or the Estonian biotech cluster,
- (3) Mode 3-clusters are characterized by a large and skilled workforce and impact on local business is high. Examples are the two bi-national clusters MedCoast Scandinavia (Sweden/Norway) and Medicon Valley (Sweden/Denmark).

³⁴ ScanBalt Innovation Task Force, worked in 2007 to identify key issues for Innovation in ScanBalt BioRegion. Members were: Frank Graage (Chairman), Steinbeis Team Northeast; Stina Gestrelus, Medicon Valley Alliance; Bo Heiden, CIP-Chalmers; Ulf Petrusson, CIP-Chalmers; Jaanus Pikani, Estonian Biotech Association; Lise Vinkel Clausen and Peter Frank, ScanBalt. The group discussed i.e. with banks, venture capital investors, SMEs and others.

³⁵ ScanBalt Competence region – A string of Competence Clusters, W. Blank et al., BioCon Valley, September 2006.

ScanBalt CompetenceRegion established the concept of meta-regional development based on competence hubs and competence satellites which is being implemented as a leading principle for ScanBalt BioRegion.

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► *ScanBalt Campus (Interreg IIIb):*

ScanBalt Campus (SBC) was established as a catalyst and umbrella for creating active transnational triple helix Knowledge Networks in ScanBalt BioRegion within research and education. Eight multi-partner ScanBalt Campus Knowledge Networks were established with concrete research and education ongoing in collaboration with industry involving approximately 50 SMEs in various projects. The Knowledge Networks increased transnational cooperation, coordination and mobility among universities, companies and hospitals within ScanBalt BioRegion in a bottom-up manner. An important priority for ScanBalt Campus was to develop the Knowledge Networks as a tool to bridge academic research and industry and to promote the integration of intellectual property management in each network. ScanBalt Academy was also initiated via the ScanBalt Campus project. The ScanBalt Academy is a body composed of highly distinguished scientists from academia and industry in ScanBalt BioRegion including Nobel Prize winners. The ScanBalt Academy serves as an external advisory body to ScanBalt BioRegion and ScanBalt. The vision is to:

- (1) Promote research quality in ScanBalt BioRegion,
- (2) Identify and promote fields of research where collaborative transnational public-private efforts in ScanBalt BioRegion can become global leaders,

(3) Be ambassadors for the purpose of attracting human, financial and industrial resources. In 2008 the ScanBalt Academy House was opened in facilities donated by Landesregierung Mecklenburg-Vorpommern.

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► *ScanBalt Intellectual Property Knowledge Network (EU FP6):*

The objective of ScanBalt IPKN is to facilitate regional cooperation and coordination of research and education in the field of intellectual property (IP) management. This facilitation acts to boost supply and demand as well as accessibility of IP knowledge throughout the ScanBalt BioRegion. The ScanBalt IPKN acts both to strengthen regional IP expertise - in bioscience IPR construction, IP management, and its implications on bioscience research and development - and to broaden general IP awareness and competencies in how to use IP to create value in the innovation process - from idea creation and protection to commercialisation and business development. An extended mapping of supply and demand of biotech IP management strategies in ScanBalt BioRegion was conducted.

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► *Trayss Prime (EU FP6):*

TRAYSS PRIME trained young European scientists from the life sciences in the use of modern and state-of-the-art management tools, and raised their awareness of international cooperation.

TRAYSS PRIME focused on Innovation Management, Intellectual Property Management and Science and Research Management. A core topic was EU Proposal Management. Training in management techniques, such as Total Quality Management, Science Ethics and Public Relations enabled TRAYSS PRIME participants to find new pathways for cost efficiency, customer focus and the exploitation of research results.

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► *Boost Biosystems (EU FP6):*

BOOST BIOSYSTEMS enhanced collaboration of SME and academia by initiating RTD consortia in the cross disciplinary field of BIOSYSTEMS technologies and networks connecting the players and stakeholders for a thematic cluster in the ScanBalt BioRegion. SMEs are key players as the engine of innovation but often lack the necessary academic and industrial partners for this interdisciplinary approach. BOOST BIOSYSTEMS constituted an integrated set of support actions for breaking intersectoral barriers, networking and promoting RTD collaboration between SMEs and academia.

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For further information on these and other projects see also www.scanbalt.org

Additional analysis

It was decided by the Bridge-BSR Innovation Council to further support the discussions with an analysis "The innovation agenda: Systemic perspective for the results of Bridge-BSR Project" based on systemic analysis techniques in order to ensure that essential and crucial issues were covered and to support the efforts of the BSR Innovation Council in developing recommendations for innovation policies and actions. The analysis was carried out by CEO Kazimierz Murzyn, Life Science Cluster Krakow and released 2 April 2009 to the Bridge-BSR Innovation Council. The analysis can be downloaded at www.scanbalt.org/bridge-bsr.

The analysis developed an initial systemic (holistic) view of the issues arising from the discussions in the Bridge-BSR Innovation Council, assuming that a systemic perspective would foster and facilitate further discussion and provide new input to the development of integrated recommendations. Since the problem in question is systemic and involved dynamic processes, tools and methods from the systems thinking field were used to perform the analysis. From a wider perspective the cluster can be considered as the system – an organised interconnected set of capabilities and resources that, within a given environment, produces results that are of interest of local stakeholders. Capabilities should be considered in any type of strategic considerations as the intangible resources that have the quality of being

measurable and manageable. They should be considered as enabling (or limiting) factors to regional development. Such an approach may help to systematize planned actions as well as to communicate with stakeholders in the region.

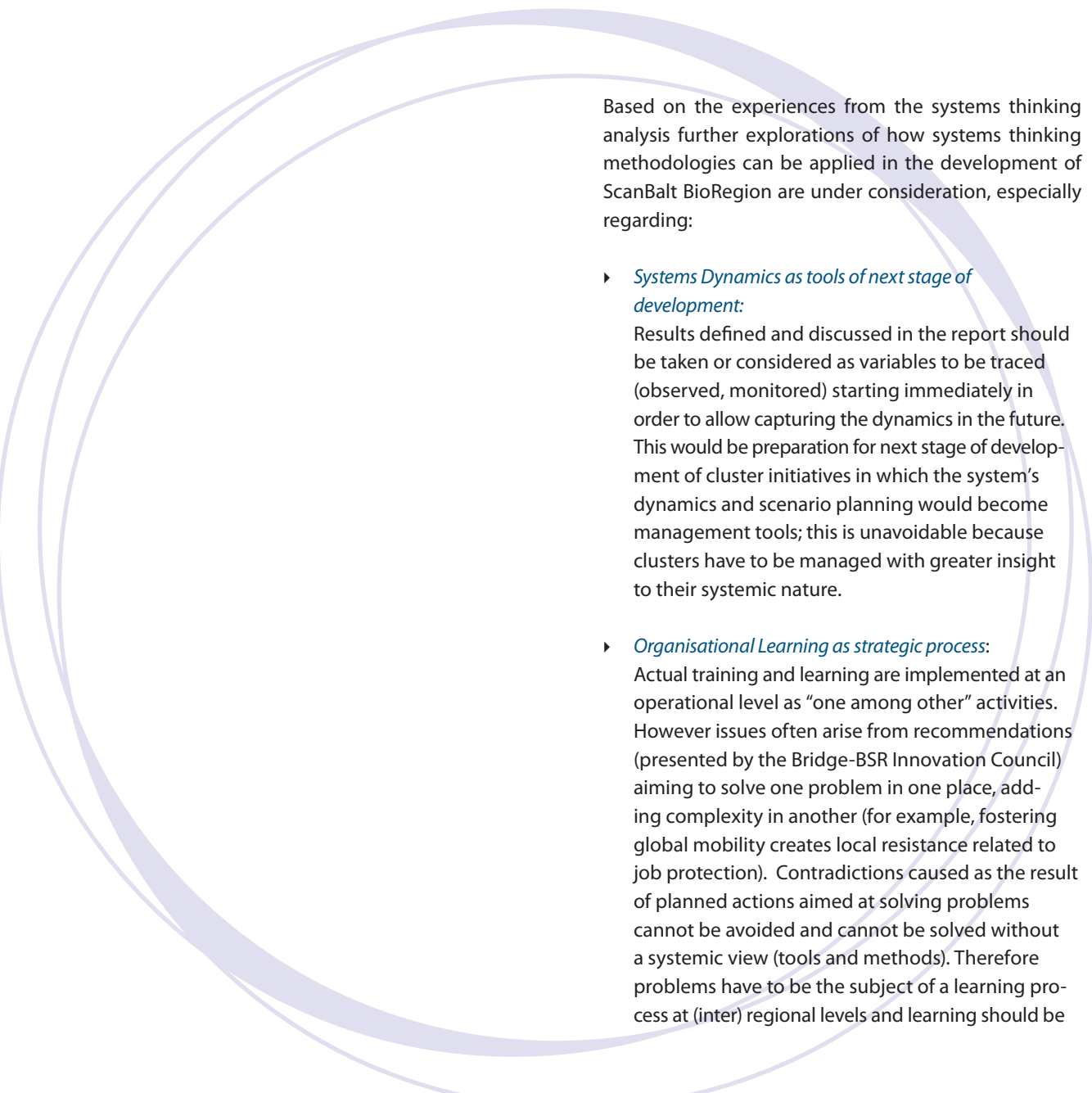
About Systems Thinking Methodology

One of the major breakthroughs in understanding the complex world of organizations is the field of systems theory. This field studies systems from the perspective of the whole system, its various subsystems and the recurring patterns in the relationships between the subsystems. Systems theory has greatly influenced how we understand and change organizations.

The application of this theory is called systems analysis. One of the major tools of systems analysis is systems thinking. Basically, systems thinking is a way of helping a person to view systems from a broad perspective that includes seeing overall structures, patterns and cycles in systems, rather than seeing only specific events in the system. This broad view can help you to quickly identify the real causes of issues in organizations and provide knowledge on where to work to address them. Systems thinking has produced a variety of principles and tools for analyzing and changing systems.

By focusing on the entire system, solutions can be identified that address as many problems as possible in the system. The positive effect of these solutions leverages improvement throughout the system. Thus, they are called "leverage points" in the system. This priority on the entire system and its leverage points is called whole systems thinking.

Systems Thinking is the use of systems approaches and the general logic that underlies them to view the world. It is used to better understand system behaviours and to identify systems principles such as feedback loops, stocks and flows, open versus closed systems, decentralized versus hierarchical systems, and self-organization.



Based on the experiences from the systems thinking analysis further explorations of how systems thinking methodologies can be applied in the development of ScanBalt BioRegion are under consideration, especially regarding:

▶ *Systems Dynamics as tools of next stage of development:*

Results defined and discussed in the report should be taken or considered as variables to be traced (observed, monitored) starting immediately in order to allow capturing the dynamics in the future. This would be preparation for next stage of development of cluster initiatives in which the system's dynamics and scenario planning would become management tools; this is unavoidable because clusters have to be managed with greater insight to their systemic nature.

▶ *Organisational Learning as strategic process:*

Actual training and learning are implemented at an operational level as "one among other" activities. However issues often arise from recommendations (presented by the Bridge-BSR Innovation Council) aiming to solve one problem in one place, adding complexity in another (for example, fostering global mobility creates local resistance related to job protection). Contradictions caused as the result of planned actions aimed at solving problems cannot be avoided and cannot be solved without a systemic view (tools and methods). Therefore problems have to be the subject of a learning process at (inter) regional levels and learning should be

advanced to the strategic level. In practical terms this implies that learning processes become criteria for ALL activities planned and performed within cluster initiatives.

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Hearing procedure

Draft versions of "Smart Growth - Bridging Academia and SMEs in the Baltic Sea Region" have in the process been forwarded for comments and suggestions to:

▶ [ScanBalt Executive Committee \(ExCo\)](#)

▶ [Members of ScanBalt](#)

55 Members of ScanBalt including 15 triple helix regional clusters and networks representing approximately 700 SMEs, other industries, universities, regional authorities and hospitals.

▶ [Baltic Development Forum \(BDF\)](#)

▶ [Council of the Baltic Sea States \(CBSS\)](#)

We would like to thank the hearing partners for their very valuable comments and suggestions and are grateful for the inspiration received.

6.2 Bridge-BSR

A key activity laid out in the ScanBalt strategy “Innovation on Top of Europe 2008-2011” is the EU FP7 co-funded project “Bridging Life Science Research and SMEs in the Baltic Sea Region – Putting Cluster Policies into Practise for the Benefit of SMEs” or in short, Bridge-BSR.

Cluster development is an integrated policy tool in the Baltic Sea Region to increase the impact of policies and to enhance cooperation between the public and private sectors. However there is a wide gap in transnational cooperation and cross-border efforts to support SME based entrepreneurship and innovation beyond the interests of the individual regions. Bridge-BSR develops tools to overcome these gaps in ScanBalt BioRegion.

Bridge-BSR identifies regional bottlenecks for bringing the benefits of academic research to SMEs, develops a regional innovation agenda, promotes mentoring, the use of best practises and bench marks, prepares action plans to remove bottlenecks, and initiates pilot activities. The partners represent triple helix clusters, public authorities, a tech transfer specialist, a National Contact Point and a transnational cluster collaboration.

The core activities of Bridge-BSR are as follows:

(1) An initial analysis of regional cluster innovation strategies with focus on the efforts to enhance the flow of knowledge between academia and SMEs, to create new start-ups and to support existing start-ups; (2) An analysis of IP-bottlenecks since these have been identified in previous projects and activities as a key issue for bridging academia and industry. Moreover, guidelines

for integration of IP-issues will be developed and disseminated; (3) Analysis of regional financing gaps and potential investors for SMEs since these have also been identified as key issues in previous projects and activities. Workshops, expert panels, and visits are tools for the analyses and serve to promote the targeted topics and to involve key stakeholders, decision- and opinion makers.

The Bridge-BSR initiates 3 pilot activities based on conclusions from previous projects and the ScanBalt Innovation Task Force: (1) Integration of IP-management in two existing Knowledge Networks. (2) Cross-border collaboration/syndication on financing. (3) Shared SME Support and Service.

An Innovation agenda for ScanBalt BioRegion with focus on bridging academic research and SMEs will be established utilizing the input from the 3 analyses conducted in the initial phase and experiences gained from the initiation of the 3 pilot activities. A high level Bridge-BSR Innovation Council will provide expert knowledge and guidance for the plan. The Council will represent clusters, SMEs, financing, intellectual property expert knowledge, regional innovation strategy expert knowledge, public authorities, EU innovation strategy expert

knowledge plus representatives from ScanBalt, ScanBalt Campus and ScanBalt Academy. The representatives in the Council are themselves key figures to promote and implement the innovation agenda through their status as decision- and opinion makers.

The analysis and the final Innovation Agenda will deliver both mentoring and implementation of best practices between clusters and networks in various development phases (mode 1, 2 and 3 – see page 25) and between new and old EU member states plus NW Russia. The activity will be based on the successful procedure developed in ScanBalt CompetenceRegion and consists of national/regional round table discussions in the Baltic States, Poland and NW Russia. The round table discussions will be followed up by visits and individual coaching. To measure the null meridian of cluster development and their impact on economy, a simple and easy to use Scoreboard will be developed and tested on a mode 1, a mode 2 and a mode 3-cluster.

The partners are selected to ensure dialogue between various types of EU regions, which can benefit from diverse structural funds tools.

For further information on Bridge-BSR see www.scanbalt.org/sw14944.asp or contact the **Bridge-BSR Coordinator Peter Frank** ScanBalt, pf@scanbalt.org, phone +45 27141078

7. Acknowledgement

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