

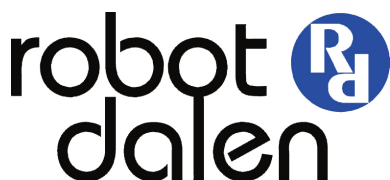


VINNOVA REPORT
VR 2010:16

FROM LOW HANGING FRUIT TO STRATEGIC GROWTH

International evaluation of Robotdalen,
Skåne Food Innovation Network
and Uppsala BIO

PHILIP COOKE, ALEXANDER EICKELPASCH & IFOR FFOWCES-WILLIAMS



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- promote sustainable growth and increased employment by acting to increase competitiveness and the emergence and expansion of successful companies.
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by

Philip Cooke
Alexander Eickelpasch
&
Ifor Ffowcs-Williams

Preface

In this evaluation report The Swedish Governmental Agency for Innovation Systems (VINNOVA) presents the second evaluations of the initiatives in the first call of the VINNVÄXT programme in 2003. The first evaluations are presented in the VINNOVA Report VR 2007:11.

The objective of the VINNVÄXT programme is to promote sustainable growth based on international competitiveness in regions, by developing regional innovation system's functionality, dynamics and efficiency to an international level. According to the evaluation strategy the initiatives are evaluated every third year. The overall objective of this second evaluation is on results and the capability for future competitiveness. Evaluation aspects are outcome and impact of the initiatives in terms of knowledge development, innovation and international competitiveness as well as organisational and leadership issues.

The evaluation has been carried out through a group of international peers representing competencies in "cluster building", regional innovation systems and programme evaluation, evaluating all three initiatives. For each initiative the group was complemented with two or three international experts representing the focus area of the initiative.

This evaluation report concerns the following three regional initiatives appointed as winners in 2003:

- Robotdalen
- Uppsala BIO
- Skåne Food Innovation Network

The evaluation is presented in the first five chapters. The last chapter gives input for a discussion on the next step in policy and programmes for supporting competitiveness through innovative clusters and networks for open innovation. It's based on the evaluation of the three initiatives as well as experiences from outside the VINNVÄXT programme.

VINNOVA in June 2010

Charlotte Brogren
Director General

Anne Lidgard
Director
Head of Transport and Environment Division

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1 Introduction

1.1 The VINNVÄXT programme

Robotdalen, Skåne Food Innovation Network and Uppsala BIO were the first initiatives to be funded by the VINNVÄXT programme which commenced in 2003.

As the original proposal stated: “The programme aims to promote sustainable regional growth by developing internationally competitive research and innovation environments in specific growth areas. This is done by funding needs-driven R&D to strengthen the cutting-edge competence of the respective environments and by means of strategic efforts for the development of innovation systems.”

The twelve initiatives that to-date have been supported through the VINNVÄXT programme have been picked through national calls and competition, with all the winners believed to have excellent growth potential. The objective is that the winners will become internationally competitive in their respective fields within 10 years. A unique aspect of VINNVÄXT is the long time horizon. VINNOVA will provide the winners with funds of up to 1.1 million euro per year for a period of 10 years.

1.2 Mid term evaluation of the winners of 2003

The initiatives in the VINNVÄXT programme are to be evaluated every third year in order to determine whether they are complying with the demands set by VINNOVA.

The first evaluation was made during the spring in 2007 focussing mainly on the process to organise and establish the innovation system. The six year mid term evaluation of the VINNVÄXT initiatives was established to have both a summative and formative (learning) approach focussing both on achieved results in comparison to goals and action plan as well as strategic issues related to the further development of the initiative. The focus of the evaluation was the following issues:

- *The quality of implemented research and innovation/ commercialisation strategies and results from an international comparison perspective*
- *The achievement of the initiatives when it comes to setting up the organisation, the processes and mobilising key actors that embodies the platform for future growth and international positioning in their respective growth area*
- *The conditions established for the sustainability of the initiative after the financing through the VINNVÄXT-programme has ended*

The evaluation also should be seen as a support and input to the strategic development of the initiatives and the action plan for the coming three years.

1.3 The Evaluation Team

The mid term evaluation of the VINNVÄXT-initiatives was carried out by an international team consisting of experts with:

- Academic and/or business oriented profile with excellent knowledge about state of the art on innovative clusters and innovation systems
- Academic and/or business oriented profile with excellent knowledge about state of the art in the specific field for the initiative

The experts on clusters and innovation systems participating in the evaluation of all three initiatives were:

Philip Cooke, University Research Professor in regional economic development, and founding Director of the Centre for Advanced Studies, University of Wales, Cardiff. His research interests lie in studies of Biotechnology, Regional Innovation Systems, Knowledge Economies, Entrepreneurship, Clusters and Networks.

Alexander Eickelpasch, Senior Economist, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin. Expertise in innovation policy, regional economics and service industries. Project Coordinator of the Evaluation of the Initiative “InnoRegio” on behalf of the German Ministry of Education and Research in Bonn.

Ifor Ffowcs-Williams, globally recognised cluster expert and CEO of Cluster Navigators Ltd and Chairman, Cluster Navigators Australia Pty Ltd. Cluster Navigators Ltd are a niche economic development consultancy, taking a cluster approach to the nurturing and upgrading of competitiveness agendas.

The following international experts were part of the evaluation team:

Robotdalen

Geoff Pegman, Managing Director at RURobots. Robotics expert with 20 years experience in the industry. Experience of directing, managing and participating in research and development programmes as well as the development of prototype equipment in the area of advanced robotics for industries.

Ken Young, professor at the International Manufacturing Centre at Warwick University and current Chair of the British Automation and Robotics Association. Background in industrial robotics but also has worked in service robot fields such as medical and agriculture.

Skåne Food Innovation Network

Frances Fortuin, Senior project manager responsible for the Innovation Expertise Centre of Food Valley Organization, a cluster of more than 200 agrifood companies in Wageningen, Holland. Researcher at Wageningen University.

Onno Omta, Professor in business administration and innovation management at Wageningen University, Holland. Research on innovation management and entrepreneurship in life sciences and agrifood.

Uppsala BIO

Mats Grahn, Member of Board of Directors, Alligator Bioscience AB, Former Corporate Vice President Marketing, Dako A/S, Denmark. M.Sc. in Engineering Physics from Lund University. More than 20 years of experience from biotechnological and biopharmaceutical industry, both in marketing and R&D.

Trevor Jones, professor, former Director General of the Association of the British Pharmaceutical Industry (ABPI). Honorary doctorates from five universities and fellowships from among others Kings College, London. Appointed to the World Health Organisation Commission on Innovation, Public Health and Intellectual Property Rights. He sits on the Boards of Allergan, Inc., Sigma-Tau, NextPharma, ReNeuron, SciClone and Synexus.

Ian Ragan, professor, director of CIR Consultancy Ltd., providing consultancy services to the pharmaceutical and biotechnology industries. He is also the Executive Director of the European Brain Council, and an advisor to the European Federation of Pharmaceutical Industries and Associations' (EFPIA) Innovative Medicines Initiative

The evaluations were arranged and facilitated by:

Peter Kempinsky, CEO and senior advisor, FBA Holding AB with long experience from working with innovative clusters and innovation systems in Sweden and internationally.

1.4 The evaluation process

The evaluations of the three initiatives were carried out in January 2010:

- Robotdalen – 17th to 20th January
- Uppsala BIO – 20th to 23rd January
- Skåne Food Innovation Network – 25th – 28th January

The evaluations are based mainly on the three year follow up report presented by the initiatives and discussions with different stakeholders and players at meetings during the site visit. The results from the evaluation of each of the three initiatives have been presented in a report to the board and management team of each initiative

In this report a short summary of the results from the evaluation of each of the three initiatives is presented together with general conclusions from the evaluations on the implementation of the VINNVÄXT programme.

Finally the report, based on the evaluations, also discuss the challenges that needs to be handle at a policy level in developing and designing the next generation VINNVÄXT programme. The report is presented by Philip Cooke, Alexander Eickelpasch, Ifor Ffowcs Williams and Peter Kempinsky.

2 Robotdalen

Robotdalen (www.robotdalen.se) is an initiative with the vision to take the lead in the research, development and manufacture of industrial, field and medical robotics. The key to success has been an environment in which players in the fields of advanced research, higher education and industry have collaborated and where innovations and new enterprises have been encouraged. The project has succeeded in mobilising stakeholders from throughout the region, including major companies such as ABB, Atlas Copco and Volvo. Sweden's first university course in robotics is located here.

2.1 Outcomes to date

Approaching international standing

Robotdalen has four core areas in robotics: Industrial Robotics, Logistics Automation, Field Robotics and Health Robotics complemented by the areas Technology and Competence Transfer and Innovation Support. The review team acknowledges that in some of the areas the international standing has been improved, in particular in academia.

Strong political support

Very apparent is the strong political support by the counties. The representatives from the counties and cities that the review team met were all strongly committed.

Robotdalen well recognized in Sweden

A number of activities that have been undertaken by Robotdalen have been particularly effective in strengthening the awareness of Robotdalen within Sweden, where Robotdalen is now a well established 'brand'. This awareness has yet to extend beyond Sweden,

Since its inception, Robotdalen has arranged annual conferences, the so-called "Robotdalen Day" to present current projects and co operations. Also an annual competition is held for the "Robotic Scientific Award". In 2009, this took place at the Volvo Democentre in Eskilstuna.

Robotdalen exhibited at different fairs such as the Scandinavian Technical Fair in Stockholm and at the Nordic Conference on robotics.

In addition, representatives from Robotdalen have participated in some international conferences abroad.

Highly capable and appreciated process management

The review team felt very positively about the management of the initiative. It appreciated the mind-set and willingness to speed up commercialization, as well as the

openness to ideas which was perceptible during the interviews with key people from academia as well as the business sector.

Robot till tusen/Robot for SME

‘Robot till tusen’ is probably one of the most important projects in Robotdalen. Partners include ABB, Prevas, the universities of Mälardalen and Örebro. More than 100 pilot studies in SME have been conducted. The aim is to strengthen the competitiveness of local SMEs by robotisation of production process. In addition this project helps the local robotics manufacturers in increasing their sales in Sweden, and opens up opportunities for students who are conducting the pilot studies to learn about the specific obstacles in implementing new technologies.

The review team appreciated the idea to use ‘Robot till tusen’ as a format for development in other areas, such as energy consumption.

Human capital growth – university education

Robotdalen has undertaken some co-operations with the universities. A course in Master of Engineering in Robotics at Mälardalen University has been established, and at Örebro University the post-graduate school RAP (Intelligent Systems for Robotics, Automation and Process Control) has also been set up.

Regional test bed

Giraffe AB – in the field of health robotics – is an excellent example of the region serving as a test bed for a start-up business, in this case for a business that has relocated from California. The company has had favourable negotiations with with a local bank regarding an innovative financing approach, and a local municipality as a customer. As a result, Giraffe has successfully sold several pilot units to the municipality.

A second example is the Automation Center in Västerås which is a resource available to by companies.

2.2 Future Challenges

Need to develop niches focused on lead markets

Robotdalen tries to capture a broad scope on robotics, in fields which differ very much from each other in terms of technology and markets. In the view of the review team Robotdalen is too diversified. The initiative should consider focusing tightly on niche markets where there is an opportunity to gain a leading position, such as industrial robots for SMEs, or ambient health care robotics (instead of Health Robotics).

Robotdalen has limited capacities to act as a facilitator across all areas.

Further, financial support should focus on pre-commercial activities for groups of firms, rather than single firms, offering financial leverage as well as encouraging local firms to work more closely with each other.

Benchmarking the global position of Robotdalen

While some activities are underway to more fully comprehend the position of Robotdalen on the world market, there is no clear systematic benchmarking. Such benchmarking will enable Robotdalen to better identify its niches and opportunities for international co-operation.

Low international profile

Although well known within Sweden, the international profile of Robotdalen has yet to be fully developed. Even within Europe there is limited awareness. Internationalisation will be crucial for further developing the initiative. The recent engagement of an international manager is a very appropriate step forward.

Developing links beyond the region

ABB remains a very important player in the region, and within Robotdalen. Robotdalen would now benefit by opening up more comprehensively to companies which are not yet integrated with the region, such as Motoman.

Robotdalen will also benefit by opening up to potential partners in academia, such as Lund university, and to industry in other parts of Sweden.

Building on entrepreneurial competencies

There were good examples presented to the review team demonstrating the entrepreneurial spirit within Robotdalen, including Giraffe AB, IB Cleaning AB, and Rotundus AB. Further examples like IRMA developed by Optiflex were convincing in their technical perspectives and it also showed the willingness of the actors to start a business. However, there was no detailed analysis or awareness on market opportunities, or financing the venture.

In order to ease the formation of companies it may be considered to put more effort on supporting them e.g. when writing a business plan or by mentoring successful innovation processes.

3 Skånes Livsmedelsakademi

Food Innovation at Interfaces/Skåne Food Innovation Network

(www.innovationigransland.com) is an innovation system for food products in Skåne.

The Skåne Food Innovation Network (SFIN) concept is to increase the return on investments in the food industry and to “create the health food of the future” with a high degree of value added. The creativity and innovation value is based on interdisciplinary and cross-border research. The areas of highest priority include health food and the development of nutritious foods for schools and hospitals

3.1 Outcomes to date

A more business mindset and entrepreneurial approach

When the review team visited Innovation at Interfaces in 2006, the evaluators had the impression that the initiative was mainly driven by academia. This has changed significantly to a much more business- and user driven approach, primarily due to changes in the management team.

Further, the review team was impressed by that some 40 local firms are co-financing is the initiative, each contributing 35,000 SEK p.a, nearly 10% of the initiative’s total income (17.4 million SEK) in 2009.

Dense, high quality networking

Over the last three years a dense networking structure has been developed. At present, there are 7 networking arenas which facilitate exchanges between members. These are the “CEO network”, consisting of 26 members; the “food researchers network”, consisting of about 120 researchers; the “human resources network”, consisting of 14 members; and the “advisory board of students”. Very recently, new arenas were established, or will be operational in 2010. Those are the “retailers’ network”, the “Chefs network”, and the “Head of R&D network”.

Very recently, also an “entrepreneur council” was established. The aim of the council is to assess applications for project to be funded by the initiative. Members are other entrepreneurs and coaches. The application procedure is relatively simple with a low threshold. Successful applicants are not only funded but are also supported by a mentor ensuring access to a broader network of business angels, or financiers. During the funding period there are defined milestones. Before the existence of the entrepreneur council the process of funding projects was less formal and more diffuse.

High level commitment through the Board and the CEO-network

It is very much appreciated by the review team that there is a high level of commitment through the board and the CEO network. The members of the board want the initiative

to become more commercially oriented and less academia driven. In addition, they want to develop SFIN as a platform for the food industry rather than funding single projects.

Highly capable, dynamic and motivated management team

The members of the review team were impressed by the efforts the management team has made to move the initiative into a more commercially oriented venture.

Trainee programme for attracting competence

The trainee programme for attracting competence is a further activity to be acknowledged. It is of high interest for the companies, and was initiated by the CEO network. The trainee programme will be launched early 2010. Price Waterhouse Cooper (a SFIN member) supports the idea and offers their international offices for graduates.

Interactive test beds may have potential

SFIN has supported the development of three food oriented prototype factories or incubators, LINC in Landskrona and CLUK in Karlshamn, and the Clinical Test Centre. This kind of support appears to be promising as it allows SMEs and entrepreneurs to economically test their product ideas or prototypes.

Strong regional and political support

Unlike other Swedish regions the region of Skane has been given the possibility for the economic and infrastructure development of the region. Thus, regional authorities of Skane have much more power to govern the development of the region than regional authorities in other parts of Sweden. Region Skane uses its leeways and brings its influence to bear. It is fully integrated into the initiative, as part of the board and as an important financier.

3.2 Future Challenges

Developing future funding and services with innovation perspective

SFIN seems to be quite optimistic regarding funding beyond the termination of VINNOVA's support in 2013. This mind set is based on SFIN's ability to access funding from different sources, such as Swedish government, the local authorities, the EU, and member fees. A further possibility is funding offered by EU Structural funds, and by the EU framework programme.

There are also encouraging plans to take the national lead for an application for a food KIC (Knowledge and Innovation Community) at the European Institute of Innovation and Technology.

However, during the interviews it remained unclear if additional funding will be sufficient to fill the gap.

Accelerating the internationalisation of local firms

Local firms need to accelerate their internationalisation processes. SFIN seems to be somewhat inward looking, and should put greater emphasis on supporting companies to enter markets abroad. This can be pursued e.g. by benchmarking, providing information about foreign markets, offering contacts to Swedish trade organisations, organising missions, etc.

Moving from generic projects to projects in selected niches

SFIN needs to focus its activities very clearly. There are currently too many projects spread over different fields. Areas of specialisation could include Green packaging and Cleantech, Institutional food, Organic food, and Functional food. These areas could be supported by the intensification of links to university competences.

Improving targeting and monitoring

Last, but not least, targeting and monitoring of business projects and the business development process has to be improved significantly. With the setting up of the entrepreneurial council the first steps in this direction have been taken.

4 Uppsala BIO

The long-term objective of Uppsala BIO (www.uppsalabio.com) is to promote the growth of the biotechnology sector in the region. A long history of successful research and close co-operation between academia and industry has led to the emergence of a number of products and companies in the fields of diagnostics, tools for biotechnological research and pharmaceuticals. The market is worldwide. Uppsala BIO is an initiative that involves the local biotechnology industry, the two universities and the public sector in the region with the aim of strengthening the competitiveness of the biotechnology sector in the future

4.1 Outcomes to date

The strategy of Uppsala BIO is based on an analysis of the strengths and weaknesses of the region. As a result, the initiative is aiming at serving the region “as the pathfinder for exploiting the knowledge in Life Sciences”. According to the opinion of the review team this is the appropriate way to strengthen the economic performance of the region in the long run.

There are several achievements during the last three years which are highly endorsed by the review team.

BIO-X: a well functioning bridging infrastructure

BIO-X successfully bridges the gap between academia and the business sector, providing the opportunity to develop research findings closer to commercial purposes, understanding the needs and conditions of researchers as well as companies.

BIO-X is concentrating on selective steps which are not fulfilled by the broad regional infrastructure in knowledge transfer, such as UUI, UUH, SLUH, etc. The main tasks for BIO-X are the selection of promising projects and the quite tight monitoring of the project as funding is subject to the project's progress. The selection of projects is handled by the scientific advisory board drawing on academia, business, and venture capital skills.

Six projects have been funded through BIO-X, leading to the establishment of two companies. In the view of the review team these are good results considering the serious claims in respect to coaching of the entrepreneurs, limited capacities, and financing.

Regional mobilisation

The efforts made by Uppsala Bio to mobilise the innovative potential in the region are acknowledged, initiatives such as the “project scouting” as a proactive way to capture ideas with commercial potential. As a result, the number of applications for BIO-X from the SLU increased significantly.

UUH has been encouraged to mobilise clinical potential with the Innovation Akademiska Project, compiling the first time in its long history a report on its research potential. This activity can be traced back to the activities of Uppsala BIO and also the increasing openness of the responsible staff at the UUH.

A good example in bringing potential partners together in an informal setting is the regular BIO pub gatherings.

To change the mindset of students and pupils respectively further operations were commenced. One is the coaching of students as project leaders. Courses were provided at the faculty of molecular biotechnology which will become part of the master's programme in 2010. In order to get pupils concerned with natural sciences cooperation has been activated between the UU and local high schools.

Built on collaborative culture

In a general view, the initiative has in the view of the review team made considerable progress in building on the collaborative culture of the region. There are a lot of regional organisations which provide companies with specific and complementary expertise and between which knowledge about each other and trust have developed over a longer period of time. Since its inception Uppsala BIO aims at building on the collaborative culture of the region by mobilizing networks and partners for specific actions. Apparently the initiative realised quite successfully the alignment of the existing institutional infrastructure.

Highly capable and appreciated process management

The management team has shown a considerable degree of openness to new ideas, responding well to the changing environment.

Good brand name established – in Sweden

Uppsala BIO has an accepted and well established 'brand' in Sweden. Whole progress has been made within Sweden, outside the country the perception of "Uppsala BIO" is negligible.

First steps in integration of Uppsala-Stockholm

Collaboration with the Stockholm region was identified in the three years mid term evaluation in 2007. Traditionally, there is a lot of co-operation in academia between Uppsala and Stockholm researchers. Taking this into account it was surprising that the initiative still is largely restricted to Uppsala region. In 2009, first steps were made in respect to the collaboration with the Stockholm region on a broader level. Under the leadership of Uppsala BIO a joint marketing project under the brand "Stockholm-Uppsala Life Science" was launched together with the county of Stockholm and the region of Mälardalen.

All in all, the review team was impressed about the efforts the management team and the valuable activities in order to strengthen the performance of Uppsala region. It also

appreciated the mind-set and willingness for speeding up the commercialisation of life science inventions which was noticeable during the discussions with both academia and the business sector.

4.2 Future Challenges

No evolutionary strategy

The Board had some discussions on the impact of VINNOVA's funding concluding in 2013, but only at a very initial level. There is no doubt that the responsibility for this key strategic issues is with the Board.

No strategic focus delivered by the steering board

Similarly, there is no strategic focus being delivered by the steering board for the forthcoming three years. Should Uppsala BIO focus on Discovery, Diagnostics, Tools, or all of them? There was also no clear statement as to how to handle the process when it comes to the SLU. Undoubtedly, there is remarkable potential at the SLU. But the question whether to exploit this further in the context of Uppsala BIO, or rather to omit this and to address it in other ways was not questioned. Uppsala BIO can be marketed best when it has a clear focus.

Benchmarking and exploiting the global position

It was remarkable that Uppsala BIO could not give an answer on benchmarking. For a strategic discussion on strengths and weaknesses of Uppsala BIO an up-to-date analysis is self-evident. Therefore, an in-depth determination of the international position of the Life Science sector in Uppsala and Stockholm region is needed immediately, and should be updated periodically. This positions system should also include "best" or "good" practice policies in other regions abroad.

Funding structure weak

The funding structure in Uppsala BIO is weak. A remarkable list of applications for the BIO-X incubator had to be rejected because of limited capacities. Uppsala BIO should further work on channelling promising projects which cannot be supported by BIO-X to partners in the innovations system

Access to venture capital

An equally important aspect is the lack of venture capital. This can be addressed by providing an interface to Stockholm-based and to international venture capital firms, rather than establishing a venture capital fund in Uppsala.

Integrating Stockholm region to capture new opportunities

There is a need to accelerate integration with the life science capacities in the Stockholm region; the capacities in Uppsala and in Stockholm are complementary to each other. There is an urgent need for action as in the forthcoming years the "New

Karolinska Hospital” will be established capturing clinical hospital facilities, research institutes and global pharma.

Stronger political support

Political support for this cornerstone economic development initiative, including the availability of local financing, could be much stronger. This situation will hopefully change as the new county governor is installed.

5 VINNVÄXT – general conclusions

Drawing on the evaluation of the three initiatives presented in previous sections, some general conclusions on the implementation of the VINNVÄXT-programme can be made. These conclusions highlight the positive impact of the programme, and identify some areas for further development.

The evaluation team acknowledges that the VINNVÄXT programme is already of international standing with unique features when it comes to supporting the development of competitive and innovative clusters. As a general conclusion, the evaluation the team emphasises that the initiatives are performing well, in line with the goals and expectations set by the VINNVÄXT programme.

Therefore it is our clear recommendation that support from VINNOVA will not only continue as scheduled, but that the accumulated learning to-date will be built on in extending this initiative so it can truly have impact on a national scale.

5.1 Activities to date: Positive impact

Co-funding with a ten-year perspective

The matching (at a minimum) of central agency funding with local funding builds in the very necessary local engagement. This local empowerment ensures that the development agendas for each initiative are well grounded in the local reality.

The ten-year commitment by VINNOVA acknowledges that economic development needs to have a long-term horizon. As is appropriate, the funding being made available by the public agency is being used to continually move the development agenda for each of the clustering initiatives forward; it is not being used for the ongoing subsidy of existing activities.

It is worth acknowledging the importance of the core funding from VINNOVA for the development of the initiative. The funding from VINNOVA will continue to play an important role in the further development of the initiatives through to the final year of support in 2013.

Social capital in place; triple helix in action

A key differentiator between an underperforming cluster and a high-performance, innovative cluster is the quality of social capital within the cluster. An underperforming cluster is more an agglomeration, a clump of related activities, where there is geographic but not social proximity. Thanks to the proactive management teams, each of the three clustering initiatives have succeeded in building a wide range of connections within their clusters, largely removing the traditional silos and the isolation of the local actors.

The businesses within each cluster are now more open to engaging collaboratively, drawing on their complementary capabilities; the various government agencies have tighter alignment around the needs of each cluster; and academia (from high schools through to universities) is well integrated into the development strategy for each cluster.

High quality facilitation and process management

The International Team was impressed with the calibre of each of the process management teams. Very capable staff are in place with all three initiatives.

A pay-off from VINNOVA's long-term financial commitment is that the services of professional and competent management have been secured.

'VINNVAXT' well respected

It is clear that the 'VINNVAXT' programme is very highly regarded across Sweden by firms, academia, and local government, and further afield.

The programme has earned considerable respect due to the high profile of the original competition; the substantial and long term financial support being offered; and the training and professional support given to the process leaders. Regions such as Varmland who were unsuccessful with their 'VINNVAXT' applications have now taken a triple helix approach to the development of their local economies, with significant results.

'VINNVAXT' may well be better known than 'VINNOVA' itself. The goodwill that has been built and is now attached to the name 'VINNVAXT' provides a solid foundation for a much needed extension of the programme.

Through the active participation of process leaders and VINNOVA staff at international conferences, including those organised globally by OECD and The Competitiveness Institute, 'VINNVAXT' has earned a position as an exemplar for other agencies around the world. VINNOVA, in collaboration with Sida/SAREC, have successfully taken this economic development approach to a number of African countries and been instrumental in establishing the Pan African Competitiveness Foundation.

The accumulated learning from these Swedish initiatives is being well shared and acknowledged around the world.

Processes for technical innovation and mentoring support in place

Each of the initiatives has well-tuned support in place to assist SMEs in the development of new technologies, new products and new processes. The availability of financial grants is enhanced through comprehensive mentoring support. The availability of the financial grants may well be the inducement; the long-term benefits could well arise through the mentoring support systems.

Local ownership in place

Two of the three initiatives are now clearly viewed as local initiatives that have the benefit of VINNOVA's support, rather than as a VINNOVA project that is being locally delivered with the help of local organisations. It is important for the longer-term sustainability of each initiative that ownership is held within each community.

Comprehensive training programmes

VINNOVA's ongoing support to the process leaders needs to be fully acknowledged. The extensive training that has been provided over six + years coupled with the regular bringing together of all the process leaders to share and learn from their experiences stands out on a world scale.

5.2 Activities to date: Scope for improvement

Urgency to upscale

In a country that already has a low level of entrepreneurship, the International Team highlights that each of the clustering initiatives are developing just a handful of new products and new firms with international competencies each year. There is a distinct lack of urgency.

This is having limited impact on the region's economy, with each cluster failing to fully build on its inherent strengths, and the risk that the cluster is losing international position relative to faster paced competitors.

Sweden has an urgent need to change gear to a higher paced, more comprehensive initiative. Scale has yet to develop within each of the clustering initiatives, and beyond them.

Strategic focus needed; Scope too broad

As with the development of many clustering initiatives around the world, the Swedish initiatives are evolving from a wide spread of activities that initially developed to service a predominantly domestic market.

There is now a clear shift globally to more specialised centres of excellence, each with a narrower and deeper range of competencies. Such centres have, or are developing, the competitiveness to service markets well beyond their functional region.

Urgency is needed in accelerating the development of the Swedish specialisations. There is a risk that the outside world is engaging more rapidly with some of the clusters than the cluster is engaging with the outside world, implying that the competitive position of the cluster is being eroded.

There is a noticeable reluctance by each of the clustering initiatives to identify and then foster the specialisations within the cluster, the niches where the cluster has a strong

opportunity for growth. These emerging niche areas are particularly likely to arise where there is a specific local lead market opportunity.

Today, public sector leaders, senior academics and alert firms are comfortable in addressing transversality in regional innovation. Traditionally, firms were more interested in specific and more narrowly targeted rents that have a more direct impact on their growth and profitability. If the projects and activities remain at the level of rent allocations, in essence the 'lowest common denominator' activities where agreement can be easily reached, the risk is that the private sector either withdraws from the initiative, or just pays lip service to it to appease public sector leaders. Accordingly, accomplished regions like Skåne anticipate building on their current cross-cluster projects.

A possible benefit from a strong focus on niches and cluster subgroups is that the more generic activities reaching across the cluster, and even across the regional economy, can be more tightly identified through this more bottom-up approach.

Open up to a stronger market driven structure and approach

This current emphasis leads to a science driven, rather than a market driven, approach to supporting the cluster's SMEs. Building competitive firms requires much more than a broad scientific capability and competency. Commercialisation activities require substantive strengthening.

Each of the clustering initiatives should by this stage in their development have their own independent legal identity in place, rather than being part of another organisation, such as a university.

Shift focus to pre-competitive support for groups of firms

The largest single budget item for each of the three clustering initiatives is for individual grants to a limited number of SMEs, with these grants being allocated through a reactive competitive process. In many cases the clustering initiative provides valuable mentoring advice alongside the financial support.

Each of the clustering initiatives are also engaged in upgrading the general business environment with projects that reach right across the cluster addressing, for example, education and training, and the development of the cluster's identity/brand.

There is a wide space between these two extremes for collaborative, pre-competitive projects for small groups of firms.

SME grants are being over emphasized as a mechanism to upgrade a cluster's competitiveness. In many countries financial support from public agencies is shifting from direct support to individual firms to working with groups of firms, particularly on pre-collaborative agendas. The rationale for this shift centres on (1) creating an environment where local firms have the trust to more effectively engage with each other

and (2) the financial leverage that comes when public funding is applied to collaborative engagement amongst a group of firms.

Collaborative projects could include:

- Pre-competitive R&D projects; the development of platform technologies (such as new packaging) that are common to a number of firms;
- Joint purchasing of common materials and services;
- Joint training;
- Joint market development initiatives within Sweden and in export markets, such as establishing common facilities, joint participation in trade fairs and missions;
- Co-development of key assets, such as investment in new machinery and key staff.

These projects should in many cases include support from a university, including the Business School.

These activities could be undertaken with full openness and transparency, with no restrictions on the participating companies. At other times the activities will be confidential to a smaller group of participants who contribute financially to the initiative.

Under resourced Management Teams

The Management Teams are the key ingredient in building an innovative cluster. While the calibre of the existing team members is excellent, each is severely stretched in undertaking its responsibilities. The availability of management support is seriously inadequate. At the extreme, one of the three clustering initiatives has no dedicated full-time professional.

A key role for the management team is in maintaining frequent face-to-face contact with all the senior stakeholders within the cluster: the more dynamic firms, the local academics, local political leaders, and the large number of publicly funded support organisations.

The information that is obtained from these frequent contacts is particularly valuable in identifying commonalities amongst small groups of participants that can be supported by collaborative engagement. The proposed shift from the current focus on individual grants to the identification of collaborative projects involving a number of firms will require additional staff that become very familiar with the leading companies within the cluster, and based on this knowledge are able to explore collaborative possibilities.

The emphasis of the process management team should be on 'Facilitation' rather than 'Project Management'. Wherever possible others within the cluster with a passion for a particular project should be encouraged to take the lead, spreading the workload to engage others and to minimise the danger of staff burnout. This can be assisted by the establishment of a range of project-based **Cluster Action Teams (CATs)** led by the private sector (or where appropriate academia) that self-destruct on task completion.

Linking to local actors in the regional innovation system

The management teams need to move beyond a 'Project Management' function, handling a narrow range of activities that support the clustering initiative, to one of facilitating and acting as an overall umbrella coordination mechanism for the cluster.

There is an important opportunity to tightly align the current clutter of support agencies around the cluster's agenda. Each clustering initiative has an important role to play in better coordinating the funding and resources currently held by up to 50 separate support agencies within each region so that these additional resources can be more effectively focused on developing the cluster.

Leverage through linking

Clusters are not self-contained systems. Each cluster can benefit through linking with other complementary clusters:

- 1 **Within the region:** linking with related clusters. The boundary between local clusters often provides a very fertile arena for new business development (and indeed the incubation of new clusters). Together, the region's clusters are the base of the region's innovation system.
- 2 **Within Sweden:** developing complementary links with similar clusters, aimed in part at positioning the cluster as Sweden's centre of excellence within its specialisation.
- 3 **Globally:** carefully identifying target clusters around the world that complement the local capability, then forming links at a multiplicity of levels, including business-to-business, academic institutions and training organisations. These specialist clusters will tend to be beyond the Baltic; there is a danger with energy being dissipated on forming alliances with clusters that may be geographically close but are of importance primarily to political leaders.

Review the governance structures

Firstly, the establishment of a private sector-driven **Executive Board**. During the start-up stages a clustering initiative benefits strongly from having public sector support, in part as this provides legitimacy to the initiative. However, there is a risk if the public sector remains the dominant player (even though public agencies may well be the main financiers) that business is a hesitant player. The emphasis should now shift to business taking the lead, with the public sector and academia being strong partners.

Businesses should be represented on the Executive Board only by their CEOs so that the full range of issues confronting the businesses (that will extend well beyond technology) can be more comprehensively addressed.

A clustering initiative needs to be able to move at the speed of business. The culture of the initiative and of the Board should be that of the private sector, with a focus on learning-by-doing rather than paralysis-by-analysis.

Secondly, the establishment of a broadly constituted **Advisory Board**. This is a high level-coordinating clearinghouse, in part aligning the wide range of support organisations around the cluster's strategic agenda. The role of this Board should include engagement with the other clusters in the region, addressing cross-cluster systemic issues ... the regional innovation system. Alongside senior political representatives there should be high-level representatives from academia, ideally the Rector(s), and from the region's cluster groups. An Advisory Board of around 20 people could be optimum, meeting possibly twice a year.

Revisit the boundaries of the 'Functional Region'

As the clustering initiative matures, the boundaries of its 'functional region' may well evolve. In the case of Uppsala BIO, for example, the functional region should now include Stockholm, with the clustering initiative selectively targeting (to its advantages) the competencies within Stockholm such as venture capital funding that fill capability gaps.

5.3 Implications for VINNOVA

The following comments are centered on VINNOVA's lead role and the opportunity for VINNOVA to **turbo-charge** to a higher level the excellent VINNVAXT programme. The accumulated experiences provide the base for a scale-up that could now have a major impact on Sweden's economic performance.

Comprehensively extend VINNVAXT

The successful VINNVAXT programme should now be substantially extended to much more comprehensively cover the Swedish economy. This extension should be undertaken in close partnership with Tillvaxtverket.

The training and support activities that are in place for the current winners should be extended to cover all Swedish initiatives of this type, even when funding is not being made available by a national organisation.

Increase the focus on internationalisation

The enhanced competitiveness that should come with the increasing specialisation of each cluster presents the opportunity for much greater emphasis on export development and internationalisation. One aspect is the proactive branding and promotion of the cluster to attract international attention.

VINNOVA has a key role to play in the development of closer alignment by each of the clustering initiatives with other national organisations, including 'Invest in Sweden' and the 'Swedish Trade Council'. There is scope for a much more aggressive investment and in particular talent (such as skilled migrant) attraction emphasis, broadening out the specialised capabilities within the cluster.

Strong international links need to be developed: cluster-to-cluster; business-to-business; university-to-university, further extending the local niches.

Stronger emphasis on capturing knowledge, innovation, and competencies from other clusters

VINNOVA's national position gives the organisation a central role to play in highlighting exemplars of linked local clusters, and in taking the lead in the linking of related clusters across Sweden.

However, in this global era the linking should not be restricted to Sweden. It is noticeable that the EU is now placing increased emphasis on the linking of related clusters within Europe, as one means of counteracting competition from the generally larger Asian and American clusters.

Accelerate the funding shift from national to local public funding

Each of the clustering initiatives currently has an over dependency on VINNOVA's funding. This needs to be reduced well prior to the 2013 cut-off.

There is scope to increase the funding from the private sector, but if the role of the clustering initiative is to continually move the development agenda forward (rather than act in a more limited way as an industry association), then it is unrealistic to expect the majority of its funding to just come from the participating businesses. Additional funding will need to come from local public sources and regional institutions such as the universities as well as participating firms.

Certainly businesses should be contributing strongly when they are benefiting from activities such as training courses and market development.

Accelerate governance shift from public sector to private sector

Even though the three clustering initiatives remain predominantly funded by public agencies, VINNOVA should be ensuring that the leadership of each initiative is by this time firmly coming from the private sector. Governance structures should respect the merits of high level triple helix engagement, with business as the dominant actor.

Accelerate shift from individual company support to support for groups of firms

VINNOVA has the opportunity to increase the leverage on its financial commitment by signaling to all VINNVAXT winners the merits of engaging with groups of firms, rather than the current individual support.

Establish performance indicators

VINNOVA needs to urgently insist that performance indicators are introduced for each VINNVAXT winner. These indicators are needed for each clustering initiative at two levels:

- 1 **The overall growth of the cluster.** The hard data here could include the total number of firms; their revenues and % export sales; total employees; and the number of firms with international operations, such as an investment overseas or a licence arrangement. This data gathering should be kept simple, with consistency over time.
- 2 Hard data relating to the **scale and the impact of the intervention.** This data could include quantitative data relating to activities, meetings, visitors, and web site visits, coupled with the views of the cluster's stakeholders on the value added by the initiative.

The information should be gathered by an independent source. Many clustering initiatives undertake an annual firm survey to gather baseline data on their cluster's performance. There is a danger in over engineering the data gathering; keep it simple, and the format should be maintained from year to year so that direct comparisons can be made within each cluster, and across the clusters.

6 Beyond VINNVÄXT: Policy Responses

This chapter gives inputs for a discussion on the next step in policy and programmes for supporting competitiveness through strategic collaboration. The chapter outlines some of the questions and areas that needs to be addressed on a policy level. The discussion is summarized in guidelines for designing a new programme and it's based on experiences from VINNVÄXT and Tillväxtverkets cluster programmes as well, as from regions in Sweden and abroad.

6.1 Policy Responses needed

Support development of RIS and clusters based on exemplars

Developing the point made in the previous section about the policy challenges associated with integrating clusters in regional innovation systems, reference is made to Skåne, Värmland and Vestra Gotland Region (VGR) as Swedish regions for and from which important lessons may be drawn about future innovation policy at regional or national levels. This is because each operates within the frame of a regional growth programme in which clusters are key carriers of regional development. Importantly, each has, to varying degrees, integrated their respective clusters to form innovation platforms. These *innovation platforms* may be envisaged conceptually as having clusters as the legs of the table or platform. The table or platform represents a tremendous field of opportunity for innovation in the 'structural holes' or 'white spaces' among the clusters. Such integrating platforms may be formed in three ways.

Scale up through effective funding of more initiatives with support to process management – a new marine cluster

First, as is shown in regions that have long-established clusters, it is possible for cluster managers, for example those who manage the specific cluster Technology Centers, to scale up cluster activity by creating a 'conversation' about developing a new cluster. A regional development agency may be a crucial facilitator of such an initiative, but equally it may come from below, including from a single firm that perceives advantage in clustering its activities across normal company boundaries.

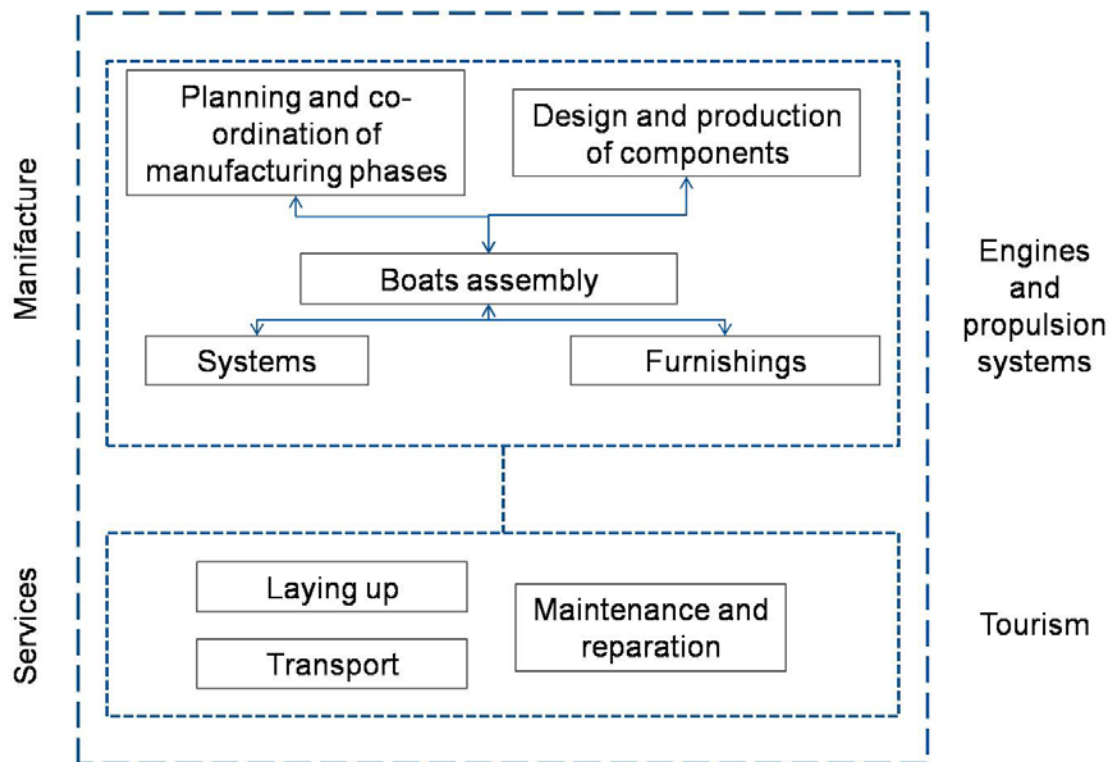
The case to be discussed below is from Italy's Marche region, but it has obvious relevance for VGR where a major part of Sweden's yacht production is concentrated. Recently, SMTF VGR's marine technology cluster has commissioned new modular designs for improved facilities such as bathrooms, kitchens seating areas and so on in response to criticisms of traditional boat designs from women consumers.

The marine cluster project was launched by the Marche region in October 2004 with the goal of establishing a new, technically specialist yacht and shipbuilding system in Ancona. In 2008 agreement to implement this decision was reached among the relevant

clusters and networks of enterprises in the region. The initiative will develop a system of goods and services related to navigation, namely shipbuilding, pleasure craft, accessories and infrastructure for tourism and commerce and horizontally connected to the other main regional sectors like wood-furniture, textile-clothing, manufacture, mechanics and electronics with the aim of further integrating the different clusters.

The innovative dynamic of this cluster is that it utilises the existing skill sets and entrepreneurial strength from the diverse sectors in the Marche region and coalesces them into forming an effective manufacturing productive system in both shipbuilding and in the building of pleasure crafts. Competences, entrepreneurship and experience of cluster management in related industries means process management gains natural support but assistance from the RDA (SVIM) is crucial in accessing State and EU regional development funding. The innovation in the marine cluster is internally driven by the interaction between previously demarcated industries, a powerful example of the concept of related variety.

Figure 1. Schematic Marche Marine Cluster



Source: Marche Region

Support for process management is evidenced where several leading companies from other regional clusters have synergies with the shipbuilding and pleasure craft sector. The Group Poltrona Frau, for example, diversified towards the nautical sector such as the agreement with Ferretti Group for a set of innovative and research based products

tailor-made for the interior decoration of the Pershing yacht series. Mobilificio Meneghini (a furniture company) created a special brand “Meneghini Yacht Line” for the realisation of luxury yacht kitchens. The key conclusion to be drawn from this example is that clusters can revitalise themselves by cross-pollination to those displaying ‘related variety’ which in turn brings efficiencies due to knowledge spillovers and good absorptive capacity among neighbouring technology producers.

Stimulate cross-fertilization of knowledge and innovation nationally and internationally – Bayern Innovativ

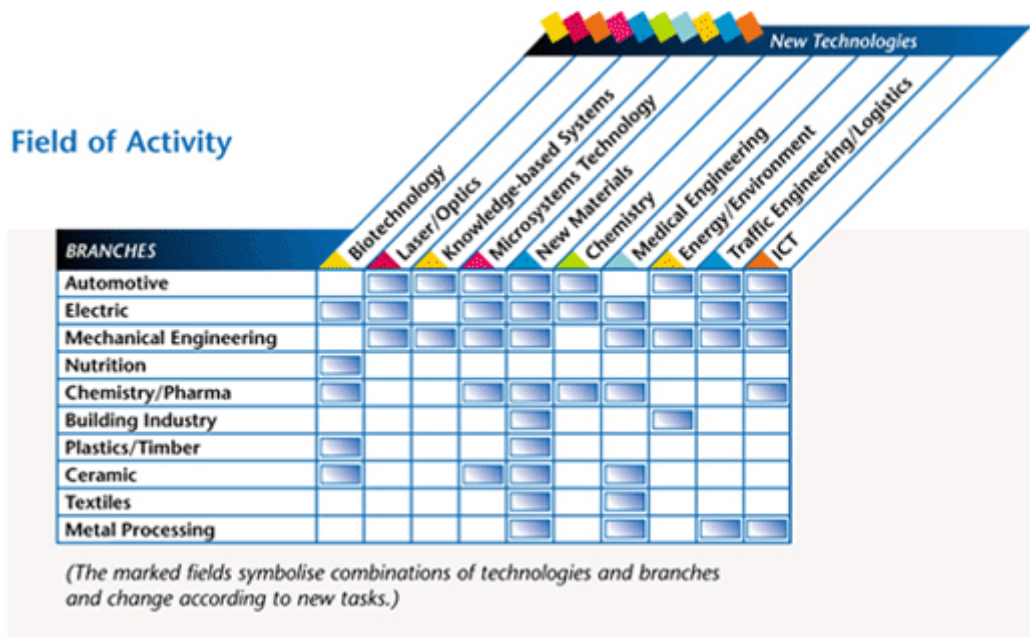
A second way in which innovation is known to be stimulated concerns ‘The Matrix’, a method initiated in the region of Upper Austria and perfected in Germany by the *land* of Bavaria through its innovation agency, Bayern Innovativ. Here the agency identified key industries that were beneficiaries of cluster policy paid for by Bavaria’s resource windfall when it sold its share in the regional energy supplier. These were cross-tabulated against key technologies to find the inter-disciplinary and inter-industry innovation potentials of ‘related variety’ in the regional economy. Many innovations have ensued from the over 1,000 per year ‘conversations’ facilitated between neighbouring sectors concerning technological applications and resulting innovations. Part of the new platform thinking involves recognition of the importance of enhancing sustainable development as part of a new green vision concerning renewable energy and clean technologies.

How does *Bayern Innovativ*’s proactive regional innovation policy work? Fig. 2 gives an indication whereby matrix management of potential innovation opportunities at intersections between industries, some having been beneficiaries of earlier cluster programme investments, and technologies occur. These are points where conversations among distinct and by no means obviously neighbouring business sectors are facilitated. Accordingly, where these facilitate personal discussion between experts and customers, sustainable cooperation networks are developed.

More than 1,000 new co-operations are initiated annually – examples include:

- *Laser technology* adapted to beam nanoscale droplets onto microarrays for rapid bioanalysis
- *Mechatronic systems* for car engine management that have been transferred to bus steering systems
- *Portable fuel cells* that have been applied in automotive electronics

Figure 2. Bayern Innovativ: Technology Platforms (http://www.bayern_innovativ.de/ 2009)



Hence, *Bayern Innovativ* (BI) initiates business-driven project co-operations across disciplines and branches, taking into account the latest results from the scientific community. Over the past decade the agency has forged new pathways and created a portfolio of cooperation platforms and networks that have generated an extended, sustainable network structure. Both the platforms and the networks are in demand at regional, national and international levels.

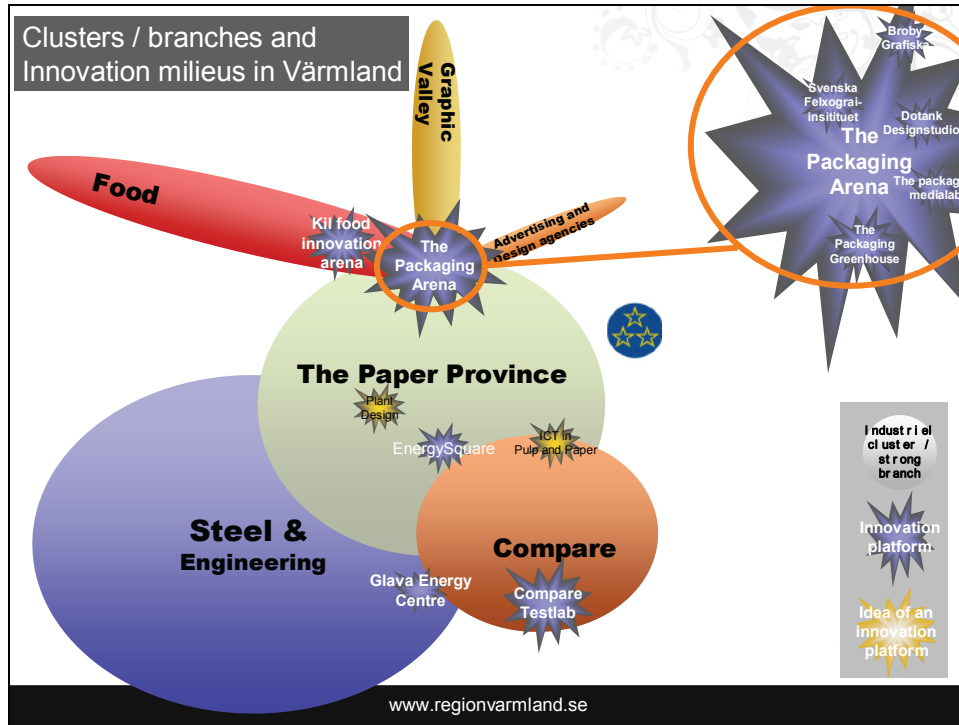
Building vertical and horizontal functional linkages – research & innovation as drivers

Finally, Sweden provides an exemplar of a third way of building Regional Innovation Platforms within a regional innovation system format that is framed by a Regional Growth Programme. This is practised most completely in Region Värmland. The region is a driver in the forward thinking of its numerous clusters. In line with good international practice, the region conducted a ‘global megatrends’ analysis, identifying 10 key trends of relevance to the region’s industry and society. In this each cluster organized action plans in response. Areas like ‘innovative environments (living environment)’, ‘entrepreneurship’, ‘clustering’, user-driven innovation, competences and information and communications closely echo many of the cluster priorities (e.g. the Packaging Arena; Paper Province, Compare and Graphics Valley; Fig. 3). These were exposed to a scenario analysis process and the results informed the regional development programme.

Of importance here is the manner in which the inter-locking nature of Värmland’s clusters was revealed, this being an important source of future economic welfare given the high degree of knowledge and innovation interactively transferring from research to industry in the region and beyond it. The Regional development Programme was approved in 2008 during which year the Glava Energy Centre and Kil Innovative Food

Arena initiatives were established, followed in 2009 by Karlstad University setting up a Care & Wellness Centre and in 2010 by the ten regionally funded cluster professorships in Karlstad University. In future-orientation, innovative thinking and interest in the consumer Region Värmland, its regional innovation system and its clusters are exemplary elements.

Figure 3. The Värmland Regional Innovation System & its Clusters



Source: Region Värmland

Supporting a broader business participation and mindset

Cluster interaction is important both locally and globally. This is evident, for example, within the Packaging Arena’s open-plan office with the Packaging Media Lab, Service Research Centre and a possible future IncuPac incubator in the same complex in the heart of Karlstad’s main downtown retail centre. Communications abroad are very strong in Japan, growing in India, whence the Packaging Arena agent was a visitor in early February 2010, and emerging in China. As a key part of the Värmland regional innovation system, the Packaging Arena contributes immensely to the cohesion of the regional economy as shown in Fig. 3.

The Packaging Arena can be seen to occupy a position at the heart or cross-roads of the leading clusters in the region of Värmland and to be very closely involved with many such initiatives and facilities, notably ‘Graphics Valley’ in Sunne where the Swedish Flexography Institute and Broby College are located alongside firms like Flexigraph, supplying large firms like Nestlé, Unilever, Tesco and large Swedish brands like

Lofbergs Lila coffee.. Broby College is a school for graphic media, especially printing, though it now runs courses in packaging design, photography, scriptwriting, graphic research, web design and digital media arts no longer primarily aimed at packaging alone. It is important for Sweflex an association of over 100 Swedish flexography firms. Furthermore, the Paper Province another well-established cluster of paper manufacturers has close research links with the Packaging Arena.

Establish a partnership with Tillväxtverket on growth and innovation

The Packaging Arena (TPA) is a Tillväxtverket supported cluster initiative where Tillväxtverket is supporting the cluster process management project. There are obvious learning gains to be exchanged between Tillväxtverket and VINNOVA's VINNVÄXT programmes. Foremost are the following three. First, successful cluster building is a multi-level phenomenon. This means relationships between localities in which clusters may be implanted work best when there is good articulation between the cluster (e.g. TPA) and its neighbours, the region that frames their relationships and assists their co-evolution, the national level where Swedish innovation and development agencies have initiated successful policy streams, and the supranational level of the European Union. Most Tillväxtverket clusters access and utilise efficiently European Union Structural Funds (both ERDF & ESF) and are active in international partnerships that access EU Science & Technology Framework Funds for research.

Because of relatively generous funding the first three VINNVÄXTs are at early stages in thinking of augmenting their resources from EU regional assistance funds. However, it is likely to become a priority, as will accessing resources from sales of services to cluster businesses and others, something at which, with their fewer resources, the Tillväxtverkets have become adept. Second, in the Värmland exemplar at least, strong evidence of innovative potential from exploring the 'white spaces' between and among clusters was evident. This innovation platform building process will be crucial for innovation impulses in future, rivalling university academic entrepreneurship in all probability. Accordingly its implications require careful consideration as the basis for a future Swedish national innovation programme.

Finally, clusters in both initiatives are exploring internationalisation, somewhat belatedly in some cases. There is much learning of experiences to be gained from both initiatives, particularly in Asia, where 'Four Motors' type agreements between regional governors seem to be an absolute pre-requisite to the evolution of trade relationships.

Alignment of tools and programmes at VINNOVA

Such interactions, early stages of which are underway, suggest the need for alignment of tools and methods between the two agencies on what should become a joint national innovation system building programme with strong regional and multi-level governance characteristics as described. Some clusters in both programmes utilise project management software that both minimises administrative resource to implement and enables cross-cluster project performance comparison. This would be much better as a

joint ‘knowledge management system’ than the less than accomplished cluster monitoring processes on display in some of the clusters visited. VINNOVA could benefit from exploring the validity of such software, suitably adapted, for its own project management responsibilities. The relative absence of good and comparable metrics regarding activity indicators is one of the ‘soft spots’ requiring attention in a new national innovation platform programme.

6.2 Towards a new VINNVÄXT programme model

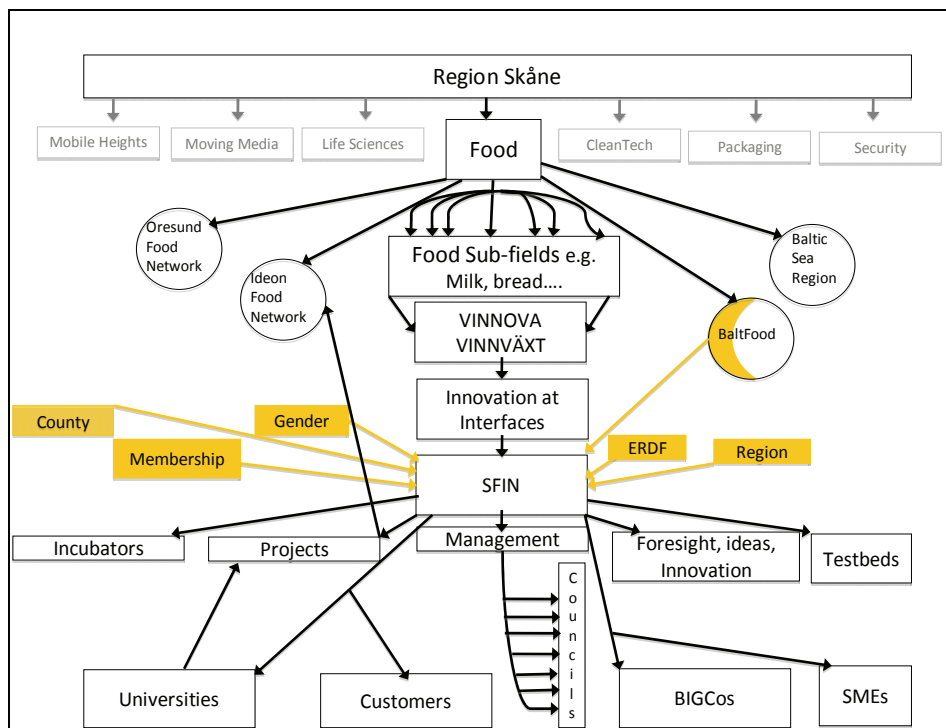
The principal Aim of the new VINNVÄXT programme model would be based upon the positive findings emerging from both the VINNVÄXT and Tillväxverket programmes that stress two things:

- the importance of efficient vertical governance of the programme;
- the importance of the horizontal interactions among regional and national clusters (the Värmland model and adaptations).

This core Aim is expressed in the following:

Support demand driven and knowledge based innovation through clusters and other network groups.

Figure 4. Skåne Food Innovation Network in Region Skåne Regional Innovation System



Source: Centre for Advanced Studies

That this process is proceeding well, beyond Värmland is testified to in the evidence the International Evaluation team gathered in Skåne where it focused on the performance of the Skåne Food Innovation Network (SFIN). As may be seen from Fig. 4, Region Skåne is also moving quite strongly in the direction of multi-cluster platform integration of related variety clusters. Among the other clusters being supported are many that have obvious links with the food industry, notably Packaging, CleanTech, Life Sciences and Moving Media. This is especially true when consideration is given to the close interactions among Värmland clusters in related fields. In national terms these inter-regional cluster interaction potentials must be stimulated. They must also involve large firms like IKEA Food, Tetrapak, Smurfit Kappa, Procordia, Konsum IKA and StoraEnso (the first and last of these involving also Småland clusters and large enterprises)

Design principles of a possible Swedish National Innovation Platform Programme

- 1 It should be a flexible programme based on learning from the best experiences of the VINNOVA and TVV programmes
- 2 A base line requirement would be rigorous training (e.g. Reg Lab (Sweden) or REG X (Denmark) as providers in process management competence-building and support
- 3 The programme should display tight integration with other public agencies as appropriate to leverage funding. Swedish inward investment agency and other industry development bodies like KKS ALMI, Innovation Bridge, and Research Institutes Sweden are key candidates for multi-level platform policy elaboration
- 4 Programme grants should only be given to groups of actors, i.e. clusters plus large firms; larger firms collaborating pre-competitively; cluster-to-cluster; ‘white space’ inter-clusters
- 5 Dialogue (as practised by KKS) may be preferred to traditional competition (VINNVÄXT) because of dangers of failing to fund winning clusters – ‘picking winner’s syndrome’.

Programme components

These would include flexible programme funding, where relatively simple (1) funding may escalate to more complex (5) funding regimes in a mixed project support portfolio. An indicative suggested portfolio array is presented below:

- 1 Process management project grants
- 2 + Commercialisation grants
- 3 + Innovation grants
- 4 + R&D grants
- 5 + Other (e.g Training)

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