VINNOVA REPORT
VR 2009:34

FIRST EVALUATION OF THE SECOND, THIRD AND FOURTH ROUND OF VINNOVA VINN EXCELLENCE CENTRES

FASTE, SUS, FUNMAT, CHASE, GHz, MOBILE LIFE, iPACK, HERO-M, PRONOVA, BIOMATCELL, WINGQUIST, SUMO, BIMAC INNO, WISENET and AFC

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About VINNOVA

VINNOVA, Swedish Governmental Agency for Innovation Systems.

VINNOVA´s mission is to *promote sustainable growth*
by funding *needs-driven research*
and developing *effective innovation systems*.

Through its activities in this field, VINNOVA aims to make a significant contribution to Sweden´s development into a leading centre of economic growth.

VINN Excellence Centers provide a forum for collaboration between the private and public sectors, universities and colleges, research institutes and other organisations that conduct research. The Centres deal with both basic and applied research and they work to ensure that new knowledge and new technological developments lead to new products, processes and services. VINNOVA's ambition is to establish 25 different VINN Excellence Centers that will be funded for a period of 10 years.

The VINNOVA Report series includes external publications and other reports from programmes and projects that have received funding from VINNOVA.

Research and Innovation for Sustainable Growth.

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Preface

In this evaluation report The Swedish Governmental Agency for Innovation Systems (VINNOVA) present the first evaluations of the second generation of Competence Research Centres (CRCs) that include 15 centres.

In 1995, NUTEK launched the first generation of CRCs providing a ten-year investment in 28 Competence Centres at 8 Swedish Universities. The first generation of CRCs during 2005-2007 has, generally speaking, been very well received by Swedish society. Also, in a European context, the Swedish CRC programme has a very good reputation. Due to those circumstances VINNOVA have initiated a second generation of CRCs that VINNOVA calls “VINN Excellence Centres”. The aim is to achieve concentration of resources in university research to deliver strong industrial impact. This is done by creating excellent multidisciplinary research environments at the universities in which industrial companies, public partners and research institutes actively participate. At present VINNOVA is running 19 VINN Excellence Centres. The 15 centres evaluated in this report have been operating two years, and have almost finished Phase 1.

The evaluation of Phase 1 is focused on the measures taken to build an effective organisation and the potential for long-term output and outcome to the partners; industrial-, public- and academic partners, e.g. start up performance. The evaluation is an opportunity for evaluation teams to give advice and recommendations on how each centre can be even more efficient and effective. It is also an opportunity for the scientific/industrial experts to get to learn about the centre at an early stage and discuss scientific issues that are critical for the future. The evaluations will also give an impact on the Swedish CRC programmes and assist their progression towards world-leading research programmes. Although each CRC has a formal name, centres are often generally referred to by an acronym. In this evaluation the following VINN Excellence Centres were reviewed:

FASTE- Faste Laboratory - Centre for Functional Product Innovation
SUS- Center for Sustainable Communications
FUNMAT- Funactional Nanoscale Materials
CHASE- Chalmers Antenna systems Excellence Center
GHz- GigaHertz Centre at Chalmers
MOBILE LIFE- Mobile Life Centre
iPACK Ubiquitous Intelligence in Paper and Packaging
HERO-M Hierarchic Engineering of Industrial Materials
PRONOVA- AlbaNova VINN Excellecne Center for Protein Technology
BIOMATCELL- Biomaterials Structure Dynamics and Properties
WINGQUIST- Wingquist Laoratory Excellence Centre for Efficient Product Realization
SUMO Supramolecular biomaterials structure dynamics and properties
BIMAC INNO- BiMaC Innovation
WISENET- Uppsala VINN Excellence Center for Wireless Sensor Networks
AFC Antidiabetic Food Center

At this stage, all 19 centres in the VINN Excellence Center Programme and the four centres in the Berzelii Centra Programme have experienced their first evaluation.

On the 18th of October 2009, the VINNOVA top management had a seminar together with the generalist evaluators that have evaluated all centres. This was an important opportunity for the evaluation team to share its expediencies and insights of the conditions of those centres. This kind of seminar is of great important for the development of VINNOVA in order to get insights to develop this kind of investments for the future.

On behalf of VINNOVA I want to express great appreciation to all the international evaluators. I especially want to give our gratitude and sympathy for the generalist evaluators, Prof. Anne H Anderson, Prof. Douglas Reeve and Prof. Per Stenius, that has met 23 centres in the Swedish system. All evaluators accomplished their extremely hard work with great enthusiasm and professionalism. Their reports will be of great value, not only for the further development of each individual centre, but also for the VINN Excellence Centre Program and VINNOVA as such.

VINNOVA in December 2009.

Charlotte Brogren
Director General

Contents

Introduction

Fifteen VINN Excellence Centres with funding from VINNOVA were evaluated between August 2008 and October 2009 after approximately two years of operation in the program. The evaluators have made an effort to provide constructive comments and recommendations to each of the centres and to VINNOVA with the express intent of contributing to the continuing, and even greater, success of the VINN Excellence program. The evaluators conclude that, at the centres, there is a high level of scientific quality and productivity, significant contribution to the development of technical competence, and a high degree of industrial and societal relevance.

The aim of the evaluations was to assess:

1 scientific quality and productivity
2 relevance – scientific utilization, commercialization and society
3 organization – leadership, governance and management

and to make recommendations to strengthen individual centres and the VINN Excellence Centre program.

The evaluation process was directed by Mattias Lundberg and Erik Litborn, of VINNOVA. International evaluators were identified by an arms-length process; generalist evaluators were selected on the basis of their knowledge of university-industry research systems and expert evaluators on the basis of their knowledge in the subject area of a particular centre. Appointment of evaluators, arrangements and logistics were carried out by Dr. Thomas Eriksson of AB Realisator Management Consulting.

The generalist evaluators were:

Professor and Chair **Doug Reeve**, University of Toronto, CANADA (Chair)
Professor and Dean **Anne Anderson**, University of Dundee, SCOTLAND
Thirty scientific expert evaluators, of which twelve, forty percent, were female, from fifteen countries participated; they are listed in the appendix.

Evaluations were conducted according to specifications laid down by VINNOVA; the specifications can be found in the appendix. Each centre prepared an evaluation report. Each centre was evaluated by a team consisting of two scientific experts and two generalists that visited a centre for a day and had a series of meetings with the centre; first, the scientific evaluation interview with the scientific experts, and second, the generalist evaluation (with participation of the scientific experts). At the interviews, each centre was represented by academic and industry partners, including centre leaders, researchers, university administrators, and members of the centre Board. The evaluators also met separately with centre PhD students.

This report is coauthored by the evaluators: the overall impressions and recommendations to VINNOVA by the generalists; and individual centre reports by the generalists and participating experts.

Acknowledgement

We thank the many centre participants for their efforts in setting up instructive and efficient facilities and presentations for the evaluation. We thank the VINNOVA team, particularly Mattias Lundberg and Erik Litborn, and also thank Thomas Eriksson of AB Realisator Management Consulting, for their excellent support of the evaluation process.

The generalist evaluators wish to thank the expert evaluators for their partnership, and most particularly for sharing their abundant knowledge.

Program Level – Overall Impressions and Recommendations

The centres are engaged in high-level, scientific and engineering research that address many of the important challenges society faces. Their work contributes to the development of high-level competence through training of university students and through engagement of industry partner personnel. There is an impressive range of projects being under taken on a wide spectrum of important topics from biomedicine to engineering to communications technologies. The centres are national leaders in their fields; much of the science is internationally leading or internationally recognized.

The centres have been successful in creating effective partnerships between universities and industry. Part of the success of the centres is due to significant industry financial support, in cash and in kind, often beyond the required match with VINNOVA. Universities have also contributed cash and significant resources in personnel and facilities. Not only has there been an increase in university scientific infrastructure, but in addition, centre partnerships have provided access, for university students and faculty, to the invaluable resources of industry scientific and technical infrastructure. The centres have also been successful in competing for other research funding, nationally and to a certain extent, internationally, thereby increasing the research enterprise beyond the core VINNOVA/partner funding.

Across the centres evaluated, there are a large number of companies participating and, on the whole, there is excellent engagement of industry partners. In many centres there is good mobility of staff and students moving between the partner companies and the centre. Several of the larger companies participate in more than one centre. Swedish companies are dominant although it is recognized that some of these companies are Sweden-based elements of international companies. It was noted to some centres that the number and range of interests of company partners could be increased to some benefit. In particular, further engagement of smaller companies, although challenging, would benefit many centres and have longer term advantages for the Swedish economy. The evaluators believe that the work of the centres strengthens the international position of Swedish companies as important players in the worldwide research and development efforts in a number of key domains.

There is significant industry partner participation in articulating partners' needs and therefore in guiding the research. There is productive translation of science to the companies; however, innovation and technology development is generally left to the companies. Hiring of graduates of the centres by the company partners is common and a good indicator of success in producing people of high competence for Swedish industry, and this is one pathway for increasing the national capacity for the intended innovation and technology development. Although the direct evidence of commercialization

successes to date was modest, overall, the evaluators were impressed by the prospects of centre research benefiting the Swedish economy and Swedish Society.

Some of the centres have existed in one form or another for several years while others have begun with the VINNOVA funding and are only in the start-up phase. Some centres are highly successful and substantial research and educational enterprises. They have a clearly articulated scientific vision and mission for the centre which are shared by all, from PhD students to senior academics to company partners. In some centres however, there is still work to be done in developing a common culture and identity and then using this to shape centre activities. One aspect of this process is the use of a visual identity for internal and external communications and web sites.

In some centres the evaluators were impressed by the engagement of the Board and the way Board chairs and members were powerful advocates for the centre and its activities and provided support to the Director and Management Teams. In several centres the evaluators were concerned that there are a number of weaknesses in organizational structures and processes which, if addressed would serve to strengthen centres, to widen breadth of vision, to sharpen intellectual acuity, to increase reach and to increase resilience. These weaknesses are common to a number of centres, as examples: some Board rosters warrant review and renewal; Management Teams would benefit from being formalized or restructured; there is a need for more formal structures and processes for overview and review of centre science and strategy; and International Scientific Advisory Boards are underused or not used at all. In some cases centres have insufficient administrative support; one symptom of this being uneven, often incomplete, reporting of data requested for the evaluation.

The evaluators met many of the PhD students working in the centre. It was evident that they were competent and working diligently on their science. Many students had an evident sense of their role in the centre and the benefits of being engaged in an industry-focused activity. In some centres a very high proportion of the students were from the same university; these centres had not been successful in attracting students from outside their own university or outside Sweden; the evaluators see this as symptomatic of a lower level of participation in the competitive environment of international science than is desirable.

Many centres do not score well from a gender perspective. In those centres most of the Professors, Board members and managerial group members are male; it should also be noted that most centre Directors are male. A high proportion of the students are male. The evaluators recognize that there are challenges in achieving gender balance in many technical areas. However, centres might be expected to engage more assertively with the gender balance agenda at all levels. VINNOVA is to be commended on highlighting this issue by requiring centres to report on gender balance in reports and at evaluation meetings.

The evaluators found in some centres that university representatives on centre Boards were engaged in projects funded by the Board, creating the appearance of conflict of

interest. It is recommended that Board membership be altered to avoid this. Universities should draw its representatives from the ranks of senior administrators or senior academics not directly involved in Board-funded projects. The evaluators think VINNOVA should have a representative present at centre Board meetings, namely the staff member responsible for the centre program. However, there would appear to be a conflict of interest for that staff member to be a voting member, particularly when the effectiveness of the Board is under review by evaluators commissioned by that staff member. The VINNOVA representative should have observer status only at Board meetings.

The generalist evaluation team sees a need in all centres for a formal advisory group that focuses on the continuous development of the overall research program (as some centres already have). Newly formed groups might be called the Centre Advisory Group (CAG). The group should be comprised of senior scientists of the centre and senior scientists or engineers from partner companies. The group should be chaired by an industry scientific or engineering leader and report to the centre Director. The group should meet regularly, for instance, two or three times per year, in advance of the centre Board meetings. It should have a view of the entire centre research program and give attention to the continuous development of the research program. The group should be the senior deliberative body for idea generation, project development, project prioritization, and review of projects and, most importantly, strategic analysis for the centre. In this way, through the Director, the group will provide input to the Board.

For centres to achieve success in international-caliber science, regular review by a panel of distinguished, arms-length, experts constituting an International Scientific Advisory Board (ISAB) is essential. Some of the more successful centres have already well established ISABs but their constitution and regulation varies between centres. The practice of continuous on-going international peer review of centres is common around the world and VINNOVA is advised to prepare a set of guidelines for its funded centres by selecting from the best practice internationally.

The evaluation team was often frustrated by the difficulty in interpreting financial reports. Centres are complex institutions to evaluate, both scientifically and organizationally, but inconsistent and confusing reporting of finances, for example, the mix of cash and in-kind contributions and allocations, makes the evaluation all the more difficult. Some centres reported on related research programs, others not. Some reported on bilateral projects in one way as if they were part of the centre's activity, but then remained ambiguous about how they were supported both by cash and in-kind. The evaluators also noted inconsistencies in the reporting of overhead particularly within the university contributions.

The evaluators were concerned that perfectly legitimate in-kind contributions to the centre were sometimes not reported, because the centre had sufficient alternative “matching” contributions to meet the agency requirements; failure to report this information would leave the evaluators with an impression that company engagement is much lower than it actually is. Reporting of the type of in-kind contributions – whether

they be for equipment contributions, staff time, intellectual property etc – was inconsistent and often not helpful in assessing the real nature of a centre's activities.

Recommendations to VINNOVA

There is potential for VINNOVA actions to improve and enhance the VINN Excellence Centre Program.

The first six recommendations below arise out of the recognition of clusters of specific recommendations made to individual centres and are cast as challenges to overcome through VINNOVA action to achieve greater centre and program performance, particularly in the start up phase of a centre.

Vision, Organization, and Visual Identity

1 That VINNOVA, in order to overcome the challenge of crafting effective vision and mission statements, offer instruction and mentoring programs
2 That VINNOVA, to assist centres in creating criteria and mechanisms for selection, review, and termination of projects, review best practice, develop guidelines, and offer training to centre Management Teams
3 That VINNOVA, in order to facilitate development of effective and efficient centre organizational structures, systems and processes, review best practice, develop guidelines, offer instruction, mentoring, ongoing consulting service. Consideration should include the Board and executive/financial/administrative assistants.
4 That VINNOVA, to assist centres in creating visual identity/brand and websites, review best practice, develop guidelines, and facilitate ongoing consulting service.

International Scientific Advisory Boards

5 That VINNOVA, in order to ensure effective use of International Scientific Advisory Boards (ISAB):

a Review best practice and develop guidelines (membership, frequency, agenda, mandate, form of reporting (For instance an ISAB should be structured to have three independent (arms-length) international experts providing benchmarking and a robust critique of the centre's science on a regular, at least annual, basis, submitting a written report to the centre Board and Director.)
b provide an ongoing service for identifying and approving ISAB members, for instance by using the same procedures as are used for the selection of the scientific experts for the evaluation team
c Monitor ISAB reports

International Recruiting

6 That VINNOVA, to assist centres in recruiting outstanding students internationally (and nationally):

a direct centres to increase direct recruitment activities (ad placement, frequency, recruiting at conferences and on visits
b 2) direct centres to increase international profile of the work and the people

c 3) create a VINNOVA fund for short-medium term research exchange-type postings in Sweden for PhD students and Post Docs (e.g. Marie Curie and Gadolin Scholarships.)

Reporting by Centres

7 That VINNOVA require that Annual Reports be submitted by centres having a common, systematic format prescribed by VINNOVA and that the reports be vetted by VINNOVA for completeness and conformity with the guidelines; further, the form of the Annual Report should anticipate subsequent Evaluations Reports

8 That VINNOVA require that Annual or Evaluation Reports be co-authored by the centre Manager and the Management Team, that all be signatories to the report, and that the report should be approved by the Board prior to release, so as to commit the senior members of the centre more strongly and more personally to those documents on which the centres will be judged

9 That VINNOVA require that the summary of an Annual or Evaluation Report be written for an educated, non-specialist audience thereby making the scientific goals of the centre and the economic potential of the results accessible. And further, that in future, Stage 1 evaluation reports should contain more science, in particular progress and key findings to date

10 That evaluators of Stage 1 (so as to be able to judge actual achievements versus planned developments) be given with the evaluation report: the proposal evaluation, the Stage 1 work-plan, and existing individual project plans

11 That during the period of evaluation evaluators be permitted access to password-protected parts of centre web sites where project plans and reports should be available

Financial Reporting by Centres

12 That VINNOVA review the financial reporting guidelines and format with a view to: simplifying and clarifying financial reports; providing unambiguous instructions for completion of the tables (including allowable sources of in kind contributions); and providing guidelines for reporting highlights and key data. There should be consistency between the Annual and Evaluation Reports.

13 That VINNOVA provide guidance to centres for capturing and reporting more complete, allowable in kind contributions from industry and from universities.

14 That financial management and reporting include the transfer of any year-end surplus to the following year.

15 That VINNOVA review and approve financial reporting annually and prior to evaluations, for completeness and conformity with the guidelines.

Evaluation Interviews

16 That the centre leadership be prepared to present key findings to the evaluation team, focusing in the morning on the science, expanding and updating the science provided in the report, and in the afternoon focusing on key organizational issues. Duplication of information already provided in the report should be avoided. Presentations should be scaled to be deliverable, if there are no interruptions, in twenty minutes. Presentations will be used as a guide for free ranging discussion at

the discretion of the evaluation team session chair. It is further recommended that the centres be given explicit guidelines for the morning and afternoon presentations, handouts of slides, name-cards on the table, etc.

Intellectual Property

17 That VINNOVA takes steps to insure that students and staff who through their association with the centre are requested to sign over their rights to intellectual property are doing so under informed consent.

18 That VINNOVA provide significant input to the process of resolving centre IPR issues.

Innovation and Commercial Realization

19 That VINNOVA establish a means of sharing best practice for including small and medium sized enterprises (SMEs) among industry partners and a means of stimulating greater SME engagement with the centres

20 That VINNOVA facilitate the development of skills and knowledge that lead to innovation and entrepreneurial action arising out of research of the centres

21 That VINNOVA establish a prestigious prize to recognize outstanding partnership between universities and industry in order to stimulate and reward innovation (For example the Synergy Awards for Innovation - in Canada).

Understanding Centre Development

22 That VINNOVA commission a study of the organizational development and growth of centres such as those supported by the VINN Excellence Centre Program and the Berzelii Centre Program in order to learn from those experiences and thereby formulate strategies and methodologies to enhance the smooth start-up, nimbleness, efficiency, and effectiveness of university-industry centres.

Assessments of the Individual Centre

Evaluation of the FASTE Centre at Luleå University of Technology

Introduction

On Monday, August 25, in the morning, the Centre Director, Lennart Karlsson and colleagues of the Faste VINN Excellence Centre, briefed the Scientific Experts of the evaluation team, Luciënne Blessing and David Barton, on the scientific progress and range of projects. The meeting in the afternoon was also attended by the Generalist Evaluators, Doug Reeve and Anne Anderson, and the Vice Chancellor, Pia Sandvik Wiklund. The discussion covered organization and management, finance, interaction with industry and university, intellectual property, vision and strategy, student recruitment and educational activities. During both the morning and afternoon sessions, the Centre project leaders, staff, graduate students and representatives of all industrial partners were present and engaged in the discussions. The evaluation team also spent some time after the lunch with six of the PhD students, discussing their background, research topics and their experiences within the Faste Centre. We thank all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The long-term vision and the mission statements are clear and, if achieved, will contribute to sustainable growth of the economy. The concept of Functional Product Innovation should not only lead to new products, processes and services, but will have an even greater impact through their integration. However, the concept is not visibly embedded in each of the research tracks.

Leading International Collaborative, University-Industry Research

The long-term commitment to the program of the partner companies is clearly visible in their engagement during the discussions and the importance they obviously attach to the concept of Functional Product Development. This is underpinned by the fact that in each Research Track at least two companies are actively involved. The collaboration takes various forms: full involvement in Tiger Team workshops, financing PhD students, being involved in the undergraduate and graduate education, and through various other projects funded by different agencies. The intellectual property issue, however, needs attention: lack of clarity seems to exist about the specifics regarding ownership and right of exploitation.

Centre Core Competency - People and Facilities

The number of people involved at various levels of seniority gives a suitable critical mass for the successful running of a Centre. The team is experienced in running large projects, also in collaboration with industry. However, not all the areas relevant for developing the concept of Functional Product Innovation to its full potential seem to be covered, notably the area of Service Engineering. For a multi-disciplinary program, it is surprising that, according to the report, since May 2008 all the Work Package Leaders (WPL) are from the Division of Computer Aided Design. Unfortunately, the report did not show clearly, which divisions and competences are currently involved in each of the Research Tracks. The list of personnel available to the Centre does not seem to focus on the core concept of Functional Product Development, and it is difficult to see the relevance of some of those listed to the program.

The Experimental Studio is an excellent, state-of-the-art facility that can contribute strongly to the development and verification of the knowledge, methods and tools to support Functional Product Development. Care should be taken that competent personnel are and will remain available for developing methodologies involved in the use of the studio. In particular, expertise from the social sciences is necessary as a strong focus is on human behaviour.

Research Program

Scientific Leadership - Project Generation, Development and Selection

Unfortunately the report template did not require much detail to be given about the scientific achievements of the Work Package and Project Leaders (PL), so that the scientific leadership is difficult to judge other than through the publications listed. Many of these were not directly linked to the program, as the program has only recently been founded. Overall, the number of publications directly linked to the program is encouraging and will help establish the reputation of the Centre.

Research Project Critiques - Science, Methodology and Technological Outcomes

The report template did not allow sufficient technical detail to be presented on the research projects. However the presentations and the discussion provided much more of the necessary detail to understand the focus and the achievements to date. In particular the contributions and examples of the industrial partners were very helpful. Still, the methodology could hardly be covered in sufficient detail within the available time. More importantly, however, the link to Functional Product Development or Innovation in several of the presentations was not clear: many of the issues seem to relate particularly to collaborative (distributed) product development. This is an important topic in its own right and also relevant for Functional Products, but not exclusively. A clearer focus on the typical characteristics of Functional Products is necessary in each of the Research Tracks.

It is too early in the program for firm conclusions about the technological outcomes to be drawn. Neither the report nor the presentations provided the detail necessary to

assess or even understand the outcomes achieved thus far. However, some examples of the uptake of the results by the industrial companies were given.

The presentations highlighted some close links between the topics of the Research Tracks that thus far were not explored. Development of a synergy between the Research Tracks is necessary, not only at the level of Work Package 1.

In some projects, there is the need to tackle the more challenging issues specific to Functional Products, rather than to focus on the parameters of the physical product. For example, the service, political, business and life-cycle aspects need to be considered. Although the vision explicitly mentions environmental impact, this did not seem to feature strongly in the work carried out thus far.

Relationship to International Groups

The international collaboration is very strong with some other research groups, such as with Stanford University, but substantial collaborations with the other leading groups mentioned in Section 2.3 of the report do not seem to exist as yet. In particular, substantial collaboration with other research groups that focus on Functional Products (or Product Service Systems) such as in Japan, the Netherlands (Delft -Mechanical Engineering), Germany (Transregio 29 of Bochum and Berlin Universities) is essential.

Overall View - Productivity, Critical Size and Value-added of the Centre

The Centre has made a promising start in achieving its research mission, but needs to focus on the key research challenges to create more meaningful connections among individual research topics. The strong links with the companies are a definitive strength and should ensure good value-added of any relevant results of the Centre.

Centre Partners

The evaluation team were pleased that so many industrial partners were present at the evaluation and engaged so actively in the discussions.

Partners' Needs Identification and Articulation

The Faste Centre is to be congratulated on the effort they have devoted to identifying and responding to industry needs. From the report and from contributions at the meetings it was clear that industry is very actively engaged with the Centre. The use of the Tiger Team approach where academics and industry come together in Radical Innovation Workshops, seems to have been an effective way of identifying projects which have industry value and are appropriate for the Centre to tackle. From questions at the meeting it is apparent that industry partners are also aware of the needs of the academic partners. It will be important that this successful approach to project identification also takes cognizance of the long-term vision of the Centre (see above) so that projects pursued within Faste are industrially relevant and also aligned with the strategic goals of Faste in developing a distinctive research agenda.

Partner Participation in Innovation and Technology Translation

The evaluation report provided very little detail of how the academics and industry partners worked together to achieve innovation and technology translation. The bulk of Centre funding is used to support PhD students who work on projects of relevance to industry partners. The report was not very clear on how this works in practice. From discussion at the evaluation meeting it emerged that most of the PhD students work on projects of relevance to several industry partners but the mechanisms for interaction and the time spent at industry sites was not very clear.

Recommendation:

- 1. That students be proactively linked with companies in a planned program of cooperation and education.

Partner Complement

The nine industry partners: AB Sandvik; BAE Systems Hagglunds; Gestamp HardTech AB; LKAB; Metso Panelboard; Volvo Aero Corporation; Volvo Car Corporation; Volvo Truck Corporation; seem an appropriate number and range of industries. Some of the partners have long-standing links with LUT on which the Centre can build.

Organization and Management of the Centre

The Board's Role

There was some uncertainty concerning the role of the General Assembly (GA), consisting of CEOs or CEO representatives of each of the industry partners (Chaired by the Vice Chancellor), and the role of the Board, a sub-group of the industry partners. The organization chart should reflect that the GA is the supreme council of the Centre. It seems that the Centre Director is appointed by the GA; it is stated in the report that the Director reports to the Board.

Management Team Structure, Processes and Performance

There is a well-developed system for management of the Centre led by the Centre Director, aided by the Centre Administrator and administrative assistants. This is the core of the Executive Committee established to manage day-to-day operations with very frequent meetings. There is also apparently very good coordination with industry partners. The scientific work is managed through Work Package Leaders (WPL) and Project Leaders (PL). There is an effective forum for scientific discussion with the group of WPL and PL meeting monthly with all scientific personnel. An effort has been made to provide leadership training to a number of WPL and PL.

However, the Evaluation Team has concerns about the conceptual development of the Centre and some missing process or structure to undertake such strategic development.

Recommendation:

- 2. That the vision and mission of the Centre be reviewed in order to establish a coherent and compelling statement that is distinctive and motivating.

There is some confusion (certainly to the generalist reader) as to the meaning and relevance of Functional Product Development (FPD), Distributed Collaborative Engineering (DCE) and Simulation Driven Design (SDD) in relation to one another. Perhaps the Executive Committee would be well served by integrating the Professor of Functional Product Design into its deliberations. In addition there are apparently key disciplinary elements that are missing from the Centre as a whole; Service Engineering, Social Science and perhaps even Distributed Collaborative Engineering.

Recommendations:

- 3. That steps be taken to bring Service Engineering expertise into the Centre in a deliberate and substantive way.
- 4. That steps be taken to bring Social Science expertise into the Centre in a deliberate and substantive way to make best use of the Experimental Studio.
- 5. That the Executive Committee of the Centre include a representative of the Functional Product Design discipline as this is a core discipline in the Centre.

Another challenge for the leadership of the Centre is to create an inclusive, enabling and unique culture. For the Faste Centre perhaps the university-industry collaboration might be central to this culture.

International Scientific Advisory Board's Role

The membership of the International Scientific Advisory Board warrants an update.

Recommendation:

- 6. That membership of the International Scientific Advisory Board be reviewed to ensure that leading foreign specialists in all important areas of the Centre - notably Functional Product Development and Distributed Collaborative Engineering - are represented.

Relationship to the University and University Units

It is clear that the Centre has excellent support from the top level of the University (the Vice Chancellor). However, there is some lack of cohesion among divisions with interests in the Centre. The Division for Computer Aided Design has been dominant in establishing the Centre but is seems that other Divisions are not so well integrated as is desirable. There is apparently no involvement from Social Sciences, something that would greatly enhance optimal utilization of the Experimental Studio.

Communication Strategy and Execution

More attention should be paid to communication strategy and execution.

Recommendation:

- 7. That the visual identity and exposure of the Centre should become a matter of emphasis within the precincts of the Centre and beyond - for example, on building signs, posters, business cards, etc. and with a brochure, newsletter, etc.

Long-term Planning

There was little evidence of the processes for long-term planning and no discussion of vision of plans for the long term.

The Evaluation Team was impressed by the current leadership of the Centre but was concerned by the small number of professors in the central leadership. It is suggested that resilience of the Centre and its long-term prospects would be enhanced by long-range succession planning.

Recommendation:

- 8. That the Chair of the General Assembly (the Vice Chancellor) should prepare to recommend a plan for succession of the Centre Directorship for presentation to the General Assembly not later than the VINNOVA review of 2011.

Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The Faste Centre academic leadership group is relatively small with only three professors. As the Centre develops its strategic vision it will need to consider how additional expertise in its key areas of activity can be brought into the Centre either through recruitment or collaborations (see above).

The evaluators had some concern about the relatively small number of PhD students reported (five including the industrial PhD student) as participating in the Centre. The number of PhD students in related fields but not funded by the Centre was not clear. Given the level of funding, one might expect a larger student group.

The Faste Centre has good international connections and exchanges with leading centres. The Centre should consider how these links might be utilized to increase competence and to assist in recruiting a more diverse pool of researchers and PhD students. At present the great majority of staff and students are from LUT with only 33 % of students from other universities and only 17% of students from outside Sweden.

Recommendation:

- 9. That proactive recruitment of students, researchers, and new professors beyond Luleå and beyond Sweden should be undertaken to increase the internationalism of the Centre.

Mobility of Personnel between University and Industry

The evaluators were pleased to learn of the Volvo Adjunct Professors and a first industrial PhD student. The Centre should consider how to build on this excellent start. In particular the career aspirations of Faste researchers and students should be considered and mobility between the two sectors encouraged.

Gender Perspective

The Centre is aware of the need for action in this area. We were pleased to learn of activities to sensitize members of the Centre to this issue. The planned project with Professor Eva Gunnarson is important in this respect., Whether this is funded or not we would recommend that Professor Gunnarson is engaged as an active member of Faste rather than a member of the International Scientific Advisory Board. In terms of recruitment it will be important to be proactive in seeking qualified women to recruit to the Centre – improving the international recruitment profile could also be helpful in addressing this.

Recommendations:

- 10. That Ewa Gunnarsson be included as a collaborator in the Centre to enhance focus on gender issues.
- 11. That proactive recruitment be undertaken to recruit women - students, researchers, and new professors - to move towards gender balance.

Contributions to University Education

The evaluators were pleased to learn of a number of interesting initiatives where Faste is contributing to education, notably, the courses on Product Development and Creative Product Development which have significant industry involvement and offer excellent industry experience for students.

Financial Report for Stage 1

Income Sources

The Centre is well supported in Stage One by the University and by the nine industry partners with cash contributions of 7 m SEK and 3.8 m SEK respectively and in-kind contribution from industry of 5 m SEK (VINNOVA cash contribution in Stage 1 is 7 m SEK). The Centre has done exceedingly well in winning funding from a wide range of other programs as listed in Table 9 (Note that other VINNOVA programs account for 18 m SEK). An excellent facility has been established through other funding namely the Experimental Studio. New office space has also been funded creating a spacious, attractive and modern area for establishment of the Faste Centre home.

Expenditures

Insufficient detail was provided on expenditures at LUT, by research group and by individual, and so further data was requested. As expected, the expenditure overview shows that after overheads (40%), salaries dominate expenditures.

Recommendations to the Centre

Our recommendations are:

- 1. That students be proactively linked with companies in a planned program of cooperation and education.
- 2. That the vision and mission of the Centre be reviewed in order to establish a coherent and compelling statement that is distinctive and motivating.

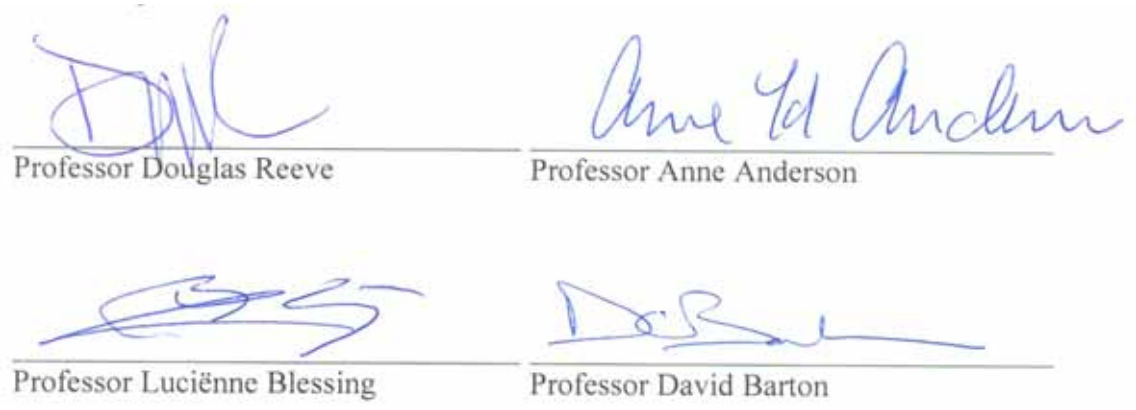
- 3. That steps be taken to bring Service Engineering expertise into the Centre in a deliberate and substantive way.
- 4. That steps be taken to bring Social Science expertise into the Centre in a deliberate and substantive way to make best use of the Experimental Studio.
- 5. That the Executive Committee of the Centre include a representative of the Functional Product Design discipline as this is a core discipline in the Centre.
- 6. That membership of the International Scientific Advisory Board be reviewed to ensure that leading foreign specialists in all important areas of the Centre - notably Functional Product Development and Distributed Collaborative Engineering - are represented.
- 7. That the visual identity and exposure of the Centre should become a matter of emphasis within the precincts of the Centre and beyond - for example, on building signs, posters, business cards, etc. and with a brochure, newsletter, etc.
- 8. That the Chair of the General Assembly (the Vice Chancellor) should prepare to recommend a plan for succession of the Centre Directorship for presentation to the General Assembly not later than the VINNOVA review of 2011.
- 9. That proactive recruitment of students, researchers, and new professors beyond Luleå and beyond Sweden should be undertaken to increase the internationalism of the Centre.
- 10. That Ewa Gunnarsson be included as a collaborator in the Centre to enhance focus on gender issues.
- 11. That proactive recruitment be undertaken to recruit women - students, researchers, and new professors - to move towards gender balance.

Recommendations for VINNOVA

Our recommendations are:

- That evaluation reports should be reviewed by VINNOVA so that the quality and detail of text and data are assured and that the guidelines for reporting are followed.
- That financial management and reporting include the transfer of any year-end surplus to the following year.

Luleå August 25, 2008



Professor Douglas Reeve | Professor Anne Anderson

Professor Luciënne Blessing | Professor David Barton

Evaluation of the SUS Centre at Royal Institute of Technology

Introduction

On Tuesday, August 26 in the morning, the Centre Director, Helene Wintzell, and colleagues of the Sustainable Communication VINN Excellence Centre, briefed the scientific experts of the evaluation team, Roland Clift and Kim Davis, on the scientific progress and range of projects. The meeting in the afternoon was also attended by the generalist evaluators, Doug Reeve and Anne Anderson. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. There were organizational issues that warranted further development and necessitated a new report and a further evaluation meeting that took place on Monday, March 2, 2009. The new Centre Director, Mattias Höjer, led the presentations by the Centre. We thank the all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Research Program

The vision and mission of the Centre was presented and discussed at some length. The vision for the Centre is a timely and important one with considerable potential benefits for Sweden. The research team is excited by the vision; nevertheless, there needs to be a clearer definition of the focus of the Centre including the definition of "sustainability" and how it is to be interpreted and measured in the projects making up its work. In this regard the emphasis is, and should be, on IT as enabling sustainability as distinct from sustainable IT. In particular the social dimension of sustainability needs to be articulated in a way that may be made operational in the work of the Centre. This must include defining the extent to which the Centre's program includes the distinct topics of social responsibility in company operations and the social impacts of providing goods and services, such as delivering services more sustainably.

These observations echo feedback from a recent meeting of the International Scientific Advisory Board which commented, in a report made available to the evaluation team, that while the Centre's broad ambition is exciting, a stronger statement is needed with a clearer articulation of the agenda integrating the current projects. Without this development it will not be possible to develop a future common understanding of sustainability in this context nor of approaches to measure sustainable development. Identifying the common intellectual ground, methodologies and frameworks should also guide selection and development of future projects.

The projects comprising the program need to be of sufficient ambition, impact, substance and size to advance the intellectual agenda of the Centre as a whole.

It is suggested that the Management Team and Board clarify whether the program is to focus on industrial or post-industrial societies (like Sweden) or whether it should include globalized trade as in the SETAC-UNEP initiative

Recommendations:

- 1. That the Management Team and the Board revisit the wording of the following:
  - title,
  - vision,
  - mission, and
  - strategy statements

  of the Centre, focusing on sustainable society as the goal of the Centre's media and communications research efforts;
- 2. That the whole Centre scientific team undertake to discuss and respond to the International Scientific Advisory Board's comments regarding the need for establishing common intellectual ground among the projects and using that to develop common frameworks and apply common methodologies to projects;
- 3. That the Project Generation Process ensure that projects undertaken are of sufficient scale and scope to enable achievement of the larger goals of the Centre.

Leading International Collaborative, University-Industry Research

While we recognize that the Centre has an unusual profile, there are other research activities internationally that pursue components of its research agenda and therefore may be complementary. These parallel activities should be explored for possible synergies and benchmarking.

We note that the companies engaged in the Centre to date are dominated by the ICT sector and the media industry. Given the sharper definition of the Centre's research agenda, further users of ICT for sustainability should be identified and involved in the Centre's work.

Recommendations:

- 4. That further efforts be made to identify leading international comparators for the Centre as a whole or its constituent research themes, in order to benchmark its activities and to seek high-level international partnerships
- 5. That the Centre undertake to review its research in the context of industry practice to expand its scope to a wider range of industrial sectors, such as retail, transport and logistics, and the built environment at the scale of region, city, building, household or office (involving organizations in addition to Boverket)

Centre Core Competency - People and Facilities

An impressive range of interdisciplinary skills has been assembled already by the Centre. We welcome the appointment of new academic staff, particularly to bring expertise in behavioral sciences. However if the Centre wishes to go beyond short term behavioral changes and explore new business models relevant to sustainability issues,

innovation in companies and deployment of ICT, it also will need to engage academic staff with a background in study of business processes and innovation.

Recommendation:

- 6. That the Centre identify business school partners who can explore business models appropriate to the new territory of novel media and communications technologies for sustainable society.

Research Program

Scientific Leadership - Project Generation, Development and Selection

We welcome the continuing attention to processes for generating, developing and selecting new projects. Note that these processes will be helped by clearer definition of the common academic ground integrating projects. Due diligence to identify existing projects elsewhere, particularly in the technical fields, should be part of the selection process. This will help to identify potential international partners for the Centre.

Research Project Critiques - Science, Methodology and Technological Outcomes

Projects should be viewed as components of an overall strategy so that they are interrelated and clearly not discrete projects with their results presented piecemeal.

Relationship to International Groups

See above.

Overall View - Productivity, Critical Size and Value-added of the Centre

The publication record of the Centre to date is modest. Generation of a more coherent agenda should aid in improving the Centre's publication record, measured not just by number of publications but by prestige and impact of the conferences and journals in which they appear.

Recommendation:

- 7. The Centre needs to significantly raise its research productivity through publication of refereed papers in high quality conferences and journals

Centre Partners

Partners' Needs Identification and Articulation

The evaluators were pleased to learn of the Centre's systematic Project Generation Process which involves all industry and public sector partners. The priority given to projects with two or more partners willing to contribute seems helpful in encouraging collaboration with industrial partners.

Developments in ICT are very rapid and the potential applications to achieve sustainability are very wide ranging. This means that it is not just the current industrial needs of partners that need to be identified. Innovative thinking is needed to explore the

possible future needs of industry and the way these may enable or require new business models to implement sustainable practices.

Recommendation:

- 8. That the Centre continue to develop its project generation and selection processes, in particular to identify recognized and emergent industry needs and incorporate them in the process.

Partner Participation in Innovation and Technology Translation

The Centre partners have been involved in the wide range of projects undertaken in Stage 1. It is encouraging to note that most projects have involved more than one partner. In general however, the extent of partners' interaction with the Centre to date, as reflected in the level of support in cash and in-kind, has been rather modest.

As the Centre moves to Stage 2, it will be important to ensure that projects involve significant participation and support from partners, at higher levels of engagement than was reported for many of the Stage 1 projects

Partner Complement

The Centre lists the following company and public sector partners: The Bonnier Group; Boverket; Ericsson; Joltid; Folkets Hubb; STING; TeliaSonera; Tidnings Utgivarna; VTI.

Unfortunately Joltid and VTI have apparently not been able to participate in the Centre's activities.

The remaining partners are drawn primarily from the IT, publishing and public service sectors. As the Centre refines its vision and strategy focusing on a sustainable society and the role of innovative and communication services in supporting this, the partner complement should be expanded. There are many industrial sectors where the imaginative deployment of information and communications technologies could have significant benefits in achieving a sustainable society.

Recommendation:

- 9. That the Centre leadership and the Board undertake, as a matter of urgency, expansion of the number and range of partners particularly in industrial sectors including those noted above: retail, transport and logistics, and the built environment at the scale of region, city, building, household or office.

Organization and Management of the Centre

The Board's Role

To date the Board has played a strong role in the development and renewal of the Centre leadership and Centre programs, particularly through the transitions of the last year. Several Board members have dedicated significant time to this and are to be

complimented for their commitment to the success of the Centre. The Board is to be renewed for Stage 2 (starting in July, 2009) and a nomination process is underway.

The evaluators were concerned that the proposed new Board is too heavily dominated by the ICT sector, with too little representation from other sectors such as the built environment. Also it was not clear why there should be two representatives of Community Hub and two professors, one not from KTH, in addition to the Vice President of KTH. The Board is elected by the partner group, the assembly of all the partners. The function of the Board is to represent the partners' interests both in terms of partner needs, providing the directional guide for the Centre, and in terms of financial interests. Ideally Board membership renewal would follow successful recruitment of new partners in industries not yet represented; we recognize that such new partners will take time to recruit.

It was noted in the evaluation session that Board member participation normally is not regarded as in kind contribution by VINNOVA. Board members are expected to act not as agents for their companies but as advocates for the Centre, and to have an oversight rather than a managerial role.

Recommendation:

- 10. That the responsibilities of the Board to the Centre be articulated explicitly and that a transparent and formalized process for selection of the Board for Stage 2 be established

Management Team Structure, Processes and Performance

The management team has undergone significant change in the last year. Helene Wintzell was Director until February 28, 2009. Mattias Höjer became Director on the day of this evaluation after only two months of preliminary work with the Centre, although he was involved in the preparation of the original Centre proposal. It is evident that senior members of the academic staff (Professors Finnveden, Grillner, and Turpeinen) have been very active in the Management Team over the last few months. Although there are undoubtedly a number of refinements in management team structure and processes yet to come, this team effort was impressive and Associate Professor Höjer seems a suitable choice for Director.

The evaluation team was concerned that the role of the Director as described in the report is too heavily focused on administration and execution with too little emphasis on leadership. Many of the duties described should be executed by an administrative assistant. It is important that the roles and responsibilities of the Board, the Director and the Management Team be reviewed in the context of an organization chart, with a view to maximizing prospects for achievement of the highest intellectual aspirations of the Centre.

Recommendations:

- 11. That the Centre Director and Management Team articulate their roles and responsibilities and prepare an organizational chart for the Centre;

- 12. That the Centre employ a full time administrative/financial assistant.

International Scientific Advisory Board's Role

The International Scientific Advisory Board met on January 15, 2009. The Centre provided a useful report of the meeting. The Board is well constituted. We note that it plans to meet annually.

Relationship to the University and University Units

The Centre is a highly interdisciplinary unit having members from five departments. There appears to be excellent cooperation within the Centre. An important and commendable feature is that all PhD students have two supervisors from different departments. Because of the highly diverse nature of the research, it is important that the Centre have some unique, cohesive physical space that will support its goals.

Recommendation:

- 13. That the University find appropriate space for the Centre in a location that will stimulate interdisciplinary interaction.

Communication Strategy and Execution

The Centre is clearly close to articulating a cohesive research concept; however, several of the Centre's essential communication elements need to be reconsidered as noted above: the title of the Centre, its vision, mission and strategy statements. In addition, the original Centre acronym "SUS" is no longer used and so another is needed; Communication for Sustainability – "C4S" – is suggested as an example. It is important and urgent that these elements be reviewed and renewed as the first step in development of a communication strategy, visual identity and branding.

Recommendations:

- 14. That a strategy for communication with all relevant industrial sectors be developed and implemented;
- 15. That the Centre establish a visual identity and brand;
- 16. That the website be modified to be more informative.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team had the opportunity to meet with six of the PhD students from the Centre. We were pleased to note that half the group was female. The students gave a good account of the advantages of the Centre as a means of stimulating interesting interdisciplinary connections.

In the evaluation report we learned that of the 9 current PhD students, 5 are female and 2 have first degrees from outside Sweden. As the Centre develops its international profile, we would anticipate that the overseas proportion might increase.

Mobility of Personnel between University and Industry

In Stage 1 there were some clear examples of useful mobility between university and industry. The almost full-time participation in the Centre of Malin Picha from the Swedish Newspaper Publishers' Association is commendable, as is the engagement of Anders Rockström formerly of TeliaSonera. As the Centre moves into Stage 2, these activities should be expanded, for example by a more extensive program for the PhD students to spend time in partners' organizations, perhaps incorporating an industrial doctorate program, and by encouraging a wider range of partners to spend time at the Centre.

Gender Perspective

The evaluators were pleased to learn of the efforts the Centre had made to achieve a gender balance in leadership and decision-making processes, in research teams, the management team and the Board. We note that subsequent changes of personnel have impacted on this balance and recognize that the Centre is still attempting to ensure that future leadership etc is gender balanced. We note that the Centre is engaged in a number of KTH and VINNOVA activities around gender. The gender perspective is at least equally important in the research themes undertaken in the Centre; we anticipate that this will become evident in the outputs of projects as they develop.

Contributions to University Education

The Centre is to be commended for the development of an interdisciplinary seminar series and doctoral level course which involves the collaboration of researchers in the Media Technology and Environmental Strategies departments. The academics also contribute to a range of undergraduate and graduate level courses which result in student projects linked to the research themes in the Centre.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; we note that Stage 1 started on January 1, 2007 and ends December 31, 2008. As planned for Stage 1, the Centre is well supported by KTH (2.3 MSEK in cash and 5.8 MSEK in kind) for a total institutional contribution of 8.1 MSEK. Six industry partners provided 0.4 MSEK each in cash for a total of 2.4 MSEK and, with Community Hub, provided in kind totalling 5.7 MSEK for a total industry/public sector support of 8.1 MSEK. Total Centre support from these sources for Stage 1 is 23.2 MSEK.

It is noted that Centre academic participants have won funding from other sources (15 grants) for research related to the Centre mission totalling approximately 40 million SEK. However it is also noted that, of the 15 grants reported, 8 expired in 2008 and 3 expire in 2009.

Recommendations:

- 17. That the Chair of the Board work with the Centre leaders and other members of the Board to win greater cash contributions from industry, with larger companies paying more than smaller ones at contribution levels set by the Board;

- 18. That the Centre undertake to win greater funding for related projects from other funders and launch applications for funding of larger scale national and international projects.

Recommendations to the Centre

In summary, our recommendations are:

- 1. That the Management Team and the Board revisit the wording of the following:
  - title,
  - vision,
  - mission, and
  - strategy statements

  of the Centre, focusing on sustainable society as the goal of the Centre's media and communications research efforts;
- 2. That the whole Centre scientific team undertake to discuss and respond to the International Scientific Advisory Board's comments regarding the need for establishing common intellectual ground among the projects and using that to develop common frameworks and apply common methodologies to projects;
- 3. That the Project Generation Process ensure that projects undertaken are of sufficient scale and scope to enable achievement of the larger goals of the Centre.
- 4. That further efforts be made to identify leading international comparators for the Centre as a whole or its constituent research themes, in order to benchmark its activities and to seek high-level international partnerships
- 5. That the Centre undertake to review its research in the context of industry practice to expand its scope to a wider range of industrial sectors, such as retail, transport and logistics, and the built environment at the scale of region, city, building, household or office (involving organizations in addition to Boverket)
- 6. That the Centre identify business school partners who can explore business models appropriate to the new territory of novel media and communications technologies for sustainable society.
- 7. The Centre needs to significantly raise its research productivity through publication of refereed papers in high quality conferences and journals
- 8. That the Centre continue to develop its project generation and selection processes, in particular to identify recognized and emergent industry needs and incorporate them in the process.
- 9. That the Centre leadership and the Board undertake, as a matter of urgency, expansion of the number and range of partners particularly in industrial sectors including those noted above: retail, transport and logistics, and the built environment at the scale of region, city, building, household or office.
- 10. That the responsibilities of the Board to the Centre be articulated explicitly and that a transparent and formalized process for selection of the Board for Stage 2 be established
- 11. That the Centre Director and Management Team articulate their roles and responsibilities and prepare an organizational chart for the Centre;
- 12. That the Centre employ a full time administrative/financial assistant.

- 13. That the University finds appropriate space for the Centre in a location that will stimulate interdisciplinary interaction.
- 14. That a strategy for communication with all relevant industrial sectors be developed and implemented;
- 15. That the Centre establish a visual identity and brand;
- 16. That the website be modified to be more informative.
- 17. That the Chair of the Board work with the Centre leaders and other members of the Board to win greater cash contributions from industry, with larger companies paying more than smaller ones at contribution levels set by the Board;
- 18. That the Centre undertake to win greater funding for related projects from other funders and launch applications for funding of larger scale national and international projects.

Recommendations for VINNOVA

Our recommendation is:

In conclusion

- The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Stockholm March 2, 2009

Professor Douglas Reeve

Professor Anne Anderson

Professor Roland Clift

Senior advisor Kim Davis

Evaluation of the FUNMAT Centre at Linköping University

Introduction

On Wednesday, August 27, in the morning, the Centre Director, Lars Hultman, and colleagues of the FunMat VINN Excellence Centre, briefed the Scientific Experts of the evaluation team, Marie-Paule Delplancke-Ogletree and Martin Stutzmann, on the scientific progress and range of projects. The meeting in the afternoon was attended by the Generalist Evaluators, Doug Reeve and Anne Anderson, Centre project leaders, staff and graduate students and representatives of the industrial partners. The discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank the all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The research program of the center is targeting key issues for improved mechanical, thermal and electronic properties of components in important economic areas such as automotive and tool industries and sensor applications. In many cases, this requires process developments with the potential to become enabling technologies. The program targets fields where the Swedish industry is particularly strong and competitive. It will help the industries to keep their competitive edge in the international market. Furthermore, the developed technologies have potential to make those future technologies more sustainable than the present ones.

Leading International Collaborative, University-Industry Research

Without any doubt this center has a very strong and strategically well-developed network both with worldwide operating companies and with small and medium enterprises. In many cases, these relationships are built on a long history of bilateral co-operation. The industrial partners also include start-up companies arising out of the university environment. Because of their internationally recognized scientific excellence, the leading groups in FunMat are valued partners in a large number of international collaborations.

Centre Core Competency - People and Facilities

In the fields of silicon carbide based sensors and MAX phase development and characterization, the FunMat groups are leading in Sweden and are among the top ten in the world. This is the result of a long-term commitment to these topics and of a very thoughtful and successful hiring policy. Furthermore, the Center now has managed to build up world-class facilities both in synthesis and characterization of the materials and devices of interest. The division of tasks between university groups and industrial partners is well thought out and allows maximum of synergy.

Research Program

Scientific Leadership - Project Generation, Development and Selection

Almost all research projects have been designed and initiated based on a thorough and continuous dialogue between university and industry partners. There is a good balance between the respective interests of both sides. In particular, potential conflicts have been avoided from the start. The present research program bears witness of the fact that all major groups have participated to the formulation of the research themes. The reviewers appreciate that this is a dynamic process based on external and internal evaluation and takes into account the fluctuations in the scientific staff and short-term strategic changes of partner companies.

This favorable situation is only possible due to the outstanding scientific leadership of the center and the constructive support of the Center Board.

Research Project Critiques - Science, Methodology and Technological Outcomes

The science and methodology of the majority of the projects are well conceived and well adapted to achieve their respective technological targets. The projects T5.P3 and T5.P4, in comparison, are more up-stream with well-defined scientific challenges and methodology, but their potential industrial applications are still to be specified and demonstrated.

Relationship to International Groups

The FunMat research center is clearly aware of international developments in relevant fields. They contribute to the state of the art through their active participation in numerous international projects notably in the EU and the USA.

Overall View - Productivity, Critical Size and Value-added of the Centre

Based on the assessment above, our overall view concerning the productivity of the center is excellent. Particularly noticeable is the efficient and timely implementation of the Center activities. This has allowed the Center to reach a critical size at an astonishing pace. The evaluators appreciate the new synergies between groups that now cooperate for the first time because of the existence of FunMat. They strongly recommend continuation in this way.

Centre Partners

Partners Needs Identification and Articulation

The FunMat Centre is to be congratulated on the effort they have devoted to identifying, and responding to, industry needs. From the report and from statements at the meetings, it was clear that industry is very actively engaged with the centre. The long term efforts of the Director and other senior colleagues to network very actively with industry, and to share the long term vision of the Centre, have clearly laid a strong foundation for FunMat. The evaluators were very impressed by the Board representatives at the meeting, who clearly appreciated the value of the Centre and its scientific aspirations

and how research of the highest international quality is of real benefit to the industry partners.

Partner Participation in Innovation and Technology Translation

The evaluation report provided a clear account of how the academics and industry partners worked together to achieve innovation and technology translation. The bulk of Centre funding is used to support Ph.D students who work on projects of relevance to industry partners. The report explained the additionality of the Centre funding by allowing the academics to work with groups of companies. This seems to be working very effectively with three patent applications filed and one spin out company launched to date.

Partner Complement

The Centre has 12 industry partners: ABB AB; Accelerator; Ford Motor Company/Volvo; Impact Coatings; Ion Bond; Sandvik; Norstel; Sandvik Tooling; SECO Tools; SKF R&D; Volvo Technology; ZnOrdic. The Board has given consideration to growing this set but keeping the total manageable. Nearly all the companies are making significant contributions in cash and in kind.

Organization and Management of the Centre

The Board's Role

The Centre has a small Board that is elected by and represents the constituent members of the Centre. The Chair, Thomas Liljenberg, (together with Trine Vikinge, another board member), was present for the evaluation and satisfied the Evaluation Team that the Board is vigorous and thorough in discharging its duties.

Management Team Structure, Processes and Performance

The Management Team appears to be well structured and functional, consisting of the Centre Director, Lars Hultman, the Deputy Director, Anita Lloyd Spetz, the Research Coordinator, Magnus Oden, and the Admin Coordinator, Therese Dannetun. The organization chart should be revised to reflect more accurately that the Management Team (Centre Director) reports to the Board that, in turn, reports to the "General Meeting of the Parties".

International Scientific Advisory Board's Role

The present International Scientific Advisory Board is not sufficiently independent. It is recommended that the International Scientific Advisory Board be restructured to have three independent international experts providing benchmarking and a robust critique of the Centre's science on a regular, at least annual, basis.

Leadership in Innovation

The Centre has a good record of innovation with several patents and a spin-off company already.

Relationship to the University and University Units

The Centre has been successful in establishing a unified work space, which is strong evidence of the strong support of the senior levels of LiU.

Communication Strategy and Execution

The Centre has made excellent progress in establishing a useful public website. The Centre has created a visual identity that is well deployed in the LiU workspace.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The FunMat centre is well connected internationally. This is reflected in a staff with international background (33% with PhDs from outside Sweden) and experience, and in the recruitment of PhD students – 31% from outside Sweden, 46% from outside Linköping.

Mobility of Personnel between University and Industry

The evaluators were pleased to learn of the mobility between the sectors. The move of staff such as Dr Hogberg from FunMat to industry partners on a part-time basis is welcome, and the presence of industry personnel in the Centre on a substantive basis (Mats Johansson from SECO, 50% in FunMat) is particularly positive. Several of the PhD students also discussed moving easily to the industry partner premises to conduct work.

The secondment of ABB and Volvo Adjunct Professors and establishing the correspondence of industrial PhD students, are also very positive. Former PhD students are hired at most of the partner companies and serve now as excellent contacts for FunMat. The Centre should consider how to build on this excellent start. In particular the career aspirations of researchers and students should be considered and mobility between the two sectors encouraged.

Gender Perspective

The Centre is aware of the need for action in this area. The evaluators were pleased to note that half of the senior staff at the Centre are female and that two newly recruited junior academics are female (via the distinctive FunMat tenure track route which offers enhanced security to young academic staff). We learned of funding applications to work on gender and related issues. The presence of several young female PhD students is also to be welcomed.

Contributions to University Education

The FunMat Centre is mainly making a contribution to education via the ongoing activities of the university staff who run many courses in the research areas covered by the Centre. These courses are enriched by new research findings emerging from FunMat.

Financial Report for Stage 1

Income Sources

The Centre has been successful in more than matching VINNOVA funding of 7 m SEK in Stage One with a total estimated cash income of 7.9 m SEK from the LiU (4 m) and industry partners (3.9 m) and a total estimated in-kind contribution of 17.4 m SEK from the LiU (6.2 m) and industry partners (11.2 m). The Centre (in particular with Lars Hultman as the principal investigator) has also been successful in winning significant funding from other agencies for work related to Centre efforts (Linnaeus Grant 100 m SEK for 2007-16, Strategic Research Centre Grant 45 m SEK for 2006-2010 and just recently European Research Council 20 m SEK). Industry partners should recognize the significant advantage this brings participating companies.

The Evaluation Team noted that not all partners made cash contributions in Stage One and that some contributions from large corporations were not at a sufficient level. To correct this, the Evaluation team recommends that for Stage 2 the contributions of the industrial partners are above a minimum threshold in cash and in kind and are commensurate with the size of the organization and the potential benefits of membership in the Centre.

Expenditures

Expenditures appeared to be well managed. It was noted that there will be a surplus at the end of Stage One due to some delays in recruitment and that it will be carried over to Stage Two.

Recommendations to the Centre

Our recommendations are:

- That the FunMat Centre keep up the very good work, in particular in executing world-class science in industrially relevant domains, in realizing productive partnerships with large and small companies, in excellent recruitment strategies for international staff and students, and in winning resources from the university and numerous funding agencies.
- That the International Scientific Advisory Board be restructured to have three independent international experts providing benchmarking and a robust critique of the Centre's science on a regular, at least annual, basis.
- That for Stage Two, the contributions of the industrial partners are above a minimum threshold in cash and in kind contributions and are commensurate with the size of the partner organization and the potential benefits of membership in the Centre.

Recommendations for VINNOVA

Our recommendations are:

- That in future, Stage One evaluation reports should contain more science, in particular progress and key findings to date.
- That the Centre leadership be prepared to present key findings to the Evaluation Team, focusing in the morning on the science, expanding and updating the science provided in the report, and in the afternoon focusing on key organizational issues. Duplication of information already provided in the report should be avoided. Presentations should be scaled to be deliverable, if there are no interruptions, in twenty minutes. Presentations will be used as a guide for free ranging discussion at the discretion of the Evaluation Team session chair.
- That the International Scientific Advisory Boards be structured to have three independent international experts providing benchmarking and a robust critique of the Centre's science on a regular, at least annual, basis, submitting a written report to the Centre Board and Director.
- That the membership of International Scientific Advisory Boards be established by the same procedures as are used for the selection of the scientific experts for the evaluation team.
- That VINNOVA takes steps to insure that students and staff who through their association with the Centre are requested to sign over their rights to intellectual property are doing so under informed consent.

Linköping August 27, 2008

Professor Douglas Reeve | Professor Anne Anderson

Prof Marie- Paule Delplancke- Ogletree | Professor Martin Stutzmann

Evaluation of the CHASE Centre at Chalmers

Introduction

On Thursday, August 28, in the morning, the Centre Manager, Ingmar Karlsson, and colleagues of the Chase VINN Excellence Centre, briefed the Scientific Experts of the Evaluation Team, Anja Skrivervik and Visa Koivunen, on the scientific progress and range of projects. The meeting in the afternoon was attended by the Generalist Evaluators, Doug Reeve and Anne Anderson, Centre project leaders and staff, representatives of the Chalmers' administration and representatives of industrial partners. The discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The Chase center has sound and well-focused vision on timely research topics. Topics are related to future wireless communication systems and standards, very important medical applications, satellite communications and antenna design, antenna measurement systems and techniques. The research groups provide world-class scientific contributions, both in terms of quantity and quality of the research. It is likely that this work will lead to inventions that provide a competitive edge to Swedish industry in these research areas. For example, the effort taken in MIMO systems is crucial for wireless device manufacturers to be competitive in global markets in the future.

There is strong engagement from the personnel of some of the participating companies that indicates that the relevance is high also from industrial point of view.

Leading International Collaborative, University-Industry Research

The framework agreement between the Center and industry provides good opportunities to conduct research and produce high quality intellectual property. An atmosphere conducive to sharing information and trusting the partners in the Center is provided by this framework. Chase is seen as a platform to generate new projects and networking among the partners, and this opportunity is highly appreciated by university and industry partners. Some of the industrial partners have strong in kind contributions (more than stated or reported) and close co-operation with doctoral students from Chase. Researchers from some industrial partners spend time in the university research labs where work-space has been specifically allocated and they communicate with graduate students on a regular basis. Face-to-face discussions and cooperation greatly improve the scientific output and development work.

All projects are very collaborative, and show a good mixture of academia, big companies and small-and-medium-sized enterprises (SMEs). Chase is not really

international per se. It is based on close cooperation among the partners that requires frequent meetings and geographical closeness. However, Chase academic partners have strong international science-based links and are well established in the research community.

Centre Core Competency - People and Facilities

Principal investigators in different research areas are well-established world-class scholars. Their leadership in conducting research ensures the high quality of research. Most of the fundamental research is done under the Charmant Center while Chase is dedicated to more applied research and technology transfer to industry.

Student recruiting is through competition; this ensures that talented people will join the center. There is a strong commitment of the PhD students to the center. The diverse background and education of the students is highly beneficial.

The research on antenna systems and radio technologies requires very expensive and modern equipment that needs to be updated on a regular basis. The Chase Center facilitates sharing the infrastructure and resources among the participants and providing measurement services and expertise in building demonstration systems.

Some of the companies show enthusiasm and great involvement in the actual technical work done in the projects.

Research Program

Scientific Leadership - Project Generation, Development and Selection

Excellent scientific leadership is provided by the individual leaders of the research projects. There are basically two ways of generating new research projects. The project may stem from the strong basic research done in the academic research groups or may originate from the needs of the industrial partners. It is important to have both mechanisms because some of the industrial topics that lead to important innovations would never come up in academia.

The duration of the projects is two years and the renewal is obtained through competition with the new and existing projects. There is often a parallel basic research project going on in Charmant that allows the students a smooth continuation of the research regardless of funding decisions.

Research Project Critiques - Science, Methodology and Technological Outcomes

The methodologies are sound and stem from fundamentals of engineering and physics that are shared by all the research groups. The tools and methods used are state-of-the-art and are tailored for the special needs of each project. Four out of five projects are vertically integrated and involve at least two industrial partners and two academic domains. The fifth is related to measurement techniques and it connects with user needs from the other projects while providing them advanced measurement services.

There is a steady flow of high quality papers coming out of the research projects. In some cases it is hard to point out the Chase contribution in the papers.

Relationship to International Groups

The international links of Chase are twofold: the principal investigators are well established in the international research community and participate in international research and cooperation programs such as EU programs and networks of excellence.

Researchers from foreign universities visit Chase frequently. The students have the opportunity and funds to visit foreign universities and attend international short courses in their research areas.

Overall View - Productivity, Critical Size and Value-added of the Centre

The overall scientific performance of Chase center is impressive both in terms of quality and quantity of the research. It is regrettable that the Chase report did not do justice to the fine research work done in the projects. The Center has the critical mass for conducting world-class research. The size is well balanced between industry and academia.

The main added value of the Center is to provide a dynamic and efficient platform allowing industry and university to collaborate in productive environment. This Center fills the gap between basic research work done in academia and development work done in companies. Moreover, the program allows companies to recruit talented people who have been educated in Chase projects.

The industrial partners have exceptional privileges of access to expertise, new talent, facilities and intellectual property through the Chase Centre. In the opinion of the evaluators the Centre industry partners are contributing significantly less cash than is appropriate for the value they receive. Companies, particularly the large ones, should be expected to contribute much more cash funding in addition to ‘in kind’ funding, to advance research in these key technologies for their own profitability and for economic growth in Sweden.

Centre Partners

Partners’ Needs Identification and Articulation

The report was unclear on how the interaction with industry partners operated and how industry needs were identified. At the evaluation meeting this became clearer. The selection criteria for projects emerged, with the requirement that at least two companies are interested in the outcomes of any project that is proposed for Chase support.

Partner Participation in Innovation and Technology Translation

The evaluation report provided very little detail on how the academics and industry partners worked together to achieve innovation and technology translation, and so it was hard to determine the nature and value of the in-kind contributions of partners. The bulk of Centre funding is used to support PhD students who work on projects of relevance to

industry partners. From discussion at the evaluation meeting, it emerged that most of the PhD students work on projects of relevance to several industry partners and that there is real value in the interaction with industry both in terms of the scientific challenges presented by the companies and the facilities which Chase researchers access at the company sites.

Partner Complement

The Chase Centre has 15 industry partners ranging from large multi-nationals to SMEs: Ascom (Sweden) AB; Bluetest AB; Arkivator AB; Ericsson AB; Ethertronics; Medfield AB; Micropos Medical AB; Perlos AB; Qamcom; Saab Space AB; Saab Microwave Systems AB; Rosemount Tank Radar; Sony Ericsson AB; St Jude Medical Inc.; Swe-Dish Satellite Systems AB. The Centre is to be congratulated on the number of industry partners it is engaging.

This group represents a good cross-section of companies with interests in antenna across a very wide range of applications. Little consideration has been given to date by the Board of Directors about the desirability of expanding the number of industry partners.

Organization and Management of the Centre

The Board's Role

The Board was elected by the Partner Assembly through a laudable process of nomination and voting; information on the candidates was distributed in advance. The industry partners provided five out of seven Board members. The Chair of the Board represented the Business Region of Göteborg. Chalmers was appropriately represented. During the discussion the Board asserted that they were an activist board. However, the Evaluation Team expected greater assertion of the Board on behalf of Chase in creating the future vision for the Centre and in ensuring effective management. The Board is particularly remiss in not securing appropriate levels of funding from industry and the university.

Recommendation:

- 1. That the Board be more assertive in being champions of the Centre, actively engaged in shaping the future vision of the Centre and advancing the cause, most particularly, winning greater funding and other resources, for the Centre.

Management Team Structure, Processes and Performance

The report appendix provides a list of members of the Management Team that does not include the Centre Manager. When asked about this, the Centre Manager made it clear that he was on the Team and indeed was the Chair. Generally the Centre leadership appears to be quite functional with respect to scientific strategy and project execution. There has been good cooperation among senior members of the Team for some time, pre-dating the Centre, and there is clearly a high level of commitment and engagement by members of the Team.

However, there is apparently a need for greater coordination in the management of the Centre with all Management Team members taking ownership of the whole of the Centre, most glaringly as evidenced by the exceptionally poor quality of the report. The report text was far beneath international standards. The report appendices were incomplete in many instances. Overall, the report gave a poor impression of the Centre; fortunately, this was corrected by the face-to-face meetings between the Evaluation Team and the Centre.

Failure of the Management Team as whole to take ownership of the Centre is also evident in the lack of assertion of the Team with respect to industry funding. It is essential that the Management Team step up and achieve levels of industry funding worthy of their scientific efforts and levels required to Stage Two funding by VINNOVA.

Recommendations:

- 2. That the report of the Centre to the evaluation team be co-authored by the Centre Manager and the Management Team and that all be signatories to the report and that the report should be approved by the Board of Directors prior to submission.
- 3. That the Management Team, including senior academic leaders, vigorously engage in the winning of greater funding from industry.

International Scientific Advisory Board's Role

The International Scientific Advisory Board membership as presently constituted is not what is expected. The Board must be constituted of at least three, independent (arms-length), international experts.

Recommendation:

- 4. That the International Scientific Advisory Board be constituted of at least three, independent (arms-length), international experts.

Relationship to the University and University Units

The Centre is well supported by the Department of Signals and Systems and is also well linked to the Charmant Centre. There appears to be good support from the central administration with respect to intellectual property and contractual matters. However, during the discussion, it was clear that the intellectual property arrangements were not well understood by all.

Recommendation:

- 5. That the new intellectual property agreement be regularly monitored.

The Centre has yet to establish a "Chase Centre" physical space independent of the other units.

Recommendation:

- 6. That the Centre establish a "Chase Centre" physical space to aid in creation of the Chase identity and culture and to facilitate cooperation among university and industry partners in Chase.

Communication Strategy and Execution

The web site is quite useful and informative and the Centre has a small brochure for handing out. However, more effort is required.

Recommendation:

- 7. That the Centre further develop the Chase brand, to establish a visual presence within Chalmers and in their representation of Chase work product in scientific and business communities.

Personnel of High Competence

The Chase centre is to be commended on its ability to recruit a cohort of PhD students from a variety of countries. Six of the nine PhD students who met with the Evaluation Team had first degrees from outside Sweden.

Mobility of Personnel between University and Industry

The evaluators were pleased to learn of the industrial PhD student and the active involvement of industry personnel in Chase, including some spending significant time at the Centre. The Centre should consider how to build on this. In particular the career aspirations of researchers and students should be considered and mobility between the two sectors encouraged.

Gender Perspective

The Centre is aware of the need for action in this area. At present all the academic staff are male. There are only two women out of nine PhD students in Chase although the proportion of women in some related masters programs at Chalmers is much higher (Medical Technology - 50%). To try to make progress on gender balance the Centre is attempting to obtain funding to recruit a talented female post doc at present and has invited two senior female academics as visiting fellows at Chase.

Contributions to University Education

The evaluators learned of several contributions to university education that have been facilitated by CHASE, such as two PhD courses which have been extended and enriched by input from the Centre. The Centre contributes to the European School of Antennas.

Financial Report for Stage 1

Income Sources

Contributions of industrial partners are much lower than expected. The productivity and stature of the Centre academic leaders is exceptional and the research enterprise

surrounding the Centre is substantial, estimated at SEK 36 million in 2007. However, more detail on other funding is desirable.

Recommendation:

- 8. That reporting of the research funding from other sources, granted and applied for, be thorough and complete.

Companies have very generous access to intellectual property. All researchers assign their rights to inventions to Chalmers Intellectual Property Rights AB (CIPRAB). CIPRAB in turn offers companies participating in the project that generates an invention a royalty-free right (non-exclusive) to any such invention. Companies in Stage One contributed only SEK 80,000 per annum in cash (the maximum amount per company). It is recommended that, for Stage Two, industry partners contribute significantly greater cash and in kind funding with large companies contributing a greater share than small companies. For larger companies funding of one graduate student (SEK 800,000 per annum) would be an appropriate minimum contribution.

Recommendation:

- 9. That for Stage Two, industry partners contribute significantly greater cash and in kind funding with large companies contributing a greater share than small companies.

The Board has an obligation to act on behalf of the Centre to establish more appropriate levels of funding from industry partners.

The report gives almost no detail concerning in kind contributions from industry. It is however clear that industry engineers and scientists are well engaged with projects and that there are significant in kind contributions. Through discussions it was apparent that the in kind contribution of industry in the form of test apparatus, large scale equipment, etc. might not be fully accounted for; it is a significant value to the Centre and should be estimated and reported.

In discussions it was stated that in kind contributions from Chalmers are mainly in the form of research funds from outside agencies used to pay students, staff and professors and that little in kind money was available directly from Chalmers. The evaluation team will recommend to VINNOVA that it clarify the rules for the allowable sources of in kind contributions from universities to Centres.

Expenditures

Centre expenditures are not thoroughly or completely reported but appear to be in line with the scientific mission.

Recommendations to the Centre

Our recommendations are:

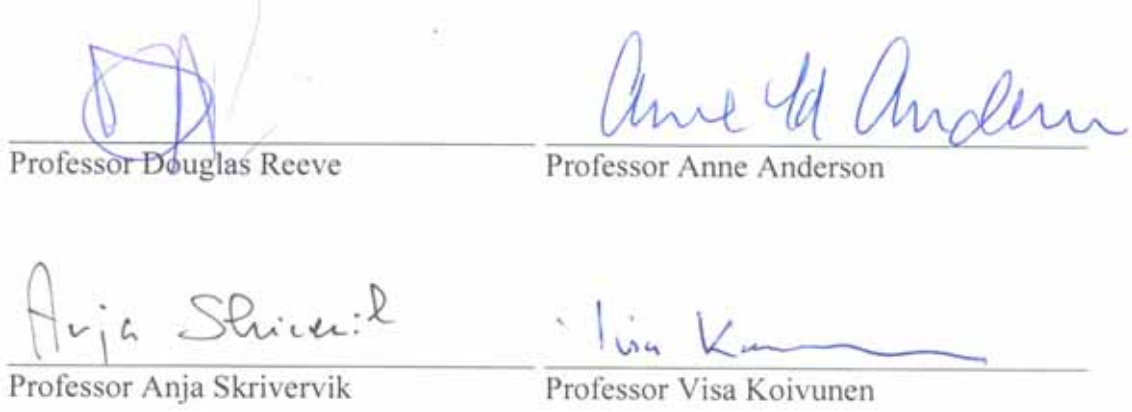
- 1. That the Board be more assertive in being champions of the Centre, actively engaged in shaping the future vision of the Centre and advancing the cause, most particularly, winning greater funding and other resources, for the Centre.
- 2. That the report of the Centre to the evaluation team be co-authored by the Centre Manager and the Management Team and that all be signatories to the report and that the report should be approved by the Board of Directors prior to submission.
- 3. That the Management Team, including senior academic leaders, vigorously engage in the winning of greater funding from industry.
- 4. That the International Scientific Advisory Board be constituted of at least three, independent (arms-length), international experts.
- 5. That the new intellectual property agreement be regularly monitored.
- 6. That the Centre establish a "Chase Centre" physical space to aid in creation of the Chase identity and culture and to facilitate cooperation among university and industry partners in Chase.
- 7. That the Centre further develop the Chase brand, to establish a visual presence within Chalmers and in their representation of Chase work product in scientific and business communities.
- 8. That reporting of the research funding from other sources, granted and applied for, be thorough and complete.
- 9. That for Stage Two, industry partners contribute significantly greater cash and in kind funding with large companies contributing a greater share than small companies.

Recommendations for VINNOVA

Our recommendation is:

- That VINNOVA clarify the rules for the allowable sources of in kind contributions from universities to Centres.

Gothenburg August 28, 2008



Evaluation of the GHz Centre at Chalmers

Introduction

On Friday, August 29, in the morning, the GigaHertz Centre VINN Excellence Centre Director, Jan Grahn, the Centre project leaders and staff, and representatives of the industrial partners, except for NXP Semiconductors, briefed the Scientific Experts of the evaluation team, Dominique Schreurs and Iain Thayne, on the scientific progress and range of projects. The meeting in the afternoon was attended by the Generalist Evaluators, Doug Reeve and Anne Anderson, Centre project leaders, and staff, representatives of Chalmers administration and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank the all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The Centre has adopted a vertically integrated approach, driven by applications of strategic importance to the member companies. This approach offers many exploitation opportunities in the lifetime of the Centre which have the potential to contribute significantly to sustainable economic growth. Four project areas have been identified :

- High efficiency switched mode power amplifiers and transmitter architectures (SMPA)
- Robust and wide-bandgap transceiver circuits (WIDEBAND)
- THz Sensors (THZ)
- Frequency generation (FREQ)

New technologies are being developed across many levels from emerging gallium nitride (GaN)-based and silicon laterally diffused metal oxide semiconductor (LDMOS) devices, through a wide range of new topologies of microwave and millimeter-wave integrated circuits (MMICs) for a wide variety of signal generation, amplification and conditioning targeting a range of applications from low GHz to ~ 200 GHz. Important new test and measurement capabilities are being added to fully characterize these various components. In addition, novel baseband digital signal processing (DSP) algorithms are being developed.

Leading International Collaborative, University-Industry Research

As detailed below in the section on the core competencies of the Centre, there are a number of clear examples of world leading collaboration taking place. The best examples are where there are obvious and immediate needs for technology solutions from more that one industrial partner. In these cases, highly motivated teams have been established quickly and are generating internationally leading outputs. The successful

cooperation with WIN foundry in Taiwan should be noted in particular. This success is testament to the high quality of the management and environment of the Centre.

Centre Core Competency - People and Facilities

Many of the researchers associated with the Centre in both academia and industry are undertaking internationally competitive research; this is evident in each of the four project areas. These constellations are complemented by the available infrastructure both within Chalmers and at the two contributing university departments, Microtechnology and Nanoscience (MC2) and Signals and Systems (S2), and the engineering contributions of the industrial partners: altogether, this is a formidable and impressive combination.

SMPA – this is the strongest grouping in the Centre, and reflects the very obvious need of the majority of the industrial partners for higher efficiency power solutions at microwave frequencies. There is a clear synergy and cooperation between all collaborators who were able to articulate very clear goals, and fully quantify the project deliverables in the project planning documentation. Infineon Technologies, NXP Semiconductors and ComHeat Microwave are supplying leading performance bare die and packaged, internally matched, power amplifiers (PA) for advanced evaluation in Chalmers. The test benches that have been established enable a wide range of advanced characterization, much of it novel; this is vital to the design of leading performance switched mode power amplifiers. The type of data being generated, in particular the bare die characterization, is exactly that required by designers in Ericsson and Saab and an excellent example of the added value the Centre brings by grouping component manufacturers with systems solution providers.

The quality of the PA solutions developed by the team is exemplified by the "Young Researcher Achievement" Award at IMS 2008 – this is a clear indicator of the world leading work that is being developed by this group.

The PA design activity is complemented by some very impressive work in DSP being undertaken by Chalmers in S2, exploiting their strong background in this area.

WIDEBAND – this theme exploits the unique in-house GaN HEMT MMIC technology of Chalmers developed recently in MC2 utilising their extensive nanofabrication facilities. Models have been provided to Saab for transceiver MMIC design. A significant number of MMICs have been designed, manufactured and are being tested by both Chalmers and Saab. An important feature has been the development of noise models for the GaN high electron mobility transistor (HEMT) technology required for low noise amplifier (LNA) realization. This has been achieved using the pre-existing noise measurement facilities and industry standard design tools of MC2.

The performance of the prototype MMICs is highly encouraging and largely in-line with expectations from simulation, which provides confidence in the validity of both the methodology and capability of the researchers and engineers undertaking the work.

THZ – at present, this is perhaps the weakest theme in the Centre, however this is more indicative of the degree of industrial engagement rather than any criticism of the quality of the researchers undertaking the work. A further complication is that the very high performance component manufacturing is being undertaken in a research institute (Fraunhofer IAF, Freiburg) rather than by a major semiconductor manufacturer. A significant delay was reported in delivery of the first pass components. This is unavoidable as there are currently no mainstream foundries offering the advanced millimeter wave compound semiconductor (III-V) HEMT technologies required.

The above notwithstanding, the team has designed some very impressive sub-systems based on models generated previously within MC2. The first pass wafers have recently been completed and are under test using the state of the art, on-wafer, mm-wave characterization facilities of Chalmers – in the event that the MMICs perform as expected, the position of this theme will be significantly improved.

It would be beneficial to strengthen the linkage between Chalmers and Omnisys Instruments, hopefully the realization of MMIC demonstrators will enable this, and in addition, provide a solid base for further iteration in any continuation activities in Stage Two.

FREQ – this theme has been somewhat delayed by finalizing negotiations between Chalmers and WIN Semiconductors for access to an emerging III-V heterojunction bipolar transistor (HBT) MMIC technology. The outcome however, is very positive for the Centre, offering free access to two wafer runs in 2008 using a technology targeted specifically at low phase noise oscillators.

The research conducted in this theme is an excellent example of vertical integration, from basic physics experiments to elucidate the mechanisms governing phase noise performance, enabled by the infrastructure in MC2, to circuit design and prototyping required by both Saab and Sivers IMA. The activities of this theme give the Centre first access to models required to design high performance oscillators using the WIN foundry, which will enable the Centre and its partners to have a world leading position in this important field.

Research Program

Scientific Leadership - Project Generation, Development and Selection

The Centre, from the Director down to the project level, is led by highly competent scientists. The Centre is currently targeting two clearly defined programs, which are each subdivided in two projects. The topics selected for these projects address state-of-the-art issues and are in close concordance with the needs of the industrial partners. The goals, such as circuit specifications, could have been quantified more extensively from the start. Further, it would be expedient to demonstrate the use of standard project management tools (for example Gantt Charts). The available documentation made it very challenging to identify whether milestones and deliverables had been met in a

timely manner and/or if significant changes in project direction had been required to mitigate unforeseen circumstances.

Research Project Critiques - Science, Methodology and Technological Outcomes

The adopted methodology across the projects is adequate. Since this evaluation is after 18 months, the outcomes are still limited though highly promising. The project on switched mode power amplifiers has advanced the most. The young researcher achievement award at the recent IMS conference is an outstanding achievement, as already mentioned above. The project on THz sensors is strongly dependent on an external foundry that is not part of the Centre, and experienced a significant delay in fabrication. For several of the researched topics, the aim is not necessarily to reach state-of-art performance, but rather to have a good balance between performance and potential commercialization.

Relationship to International Groups

The centre has extensive formal and informal cooperation with international groups, mainly on the European level. The Centre recognized the problem of limited attention towards microwave research in the FP7 work program, and took the initiative to create European Radio and Microwave Interest Group (EuRaMIG) to have impact on the FP7 work program. This would not have been possible without the strong industrial involvement already present within the centre. Finally, there is a highly valuable international advisory board in place; unfortunately it only met once during Stage One of GigaHertz Centre.

Overall View - Productivity, Critical Size and Value-added of the Centre

The centre has 53 researchers equivalent to 26.5 FTE. The involvement is not equally spread over the four projects, but the necessary critical mass is present in each of them. There is some imbalance in terms of resources contributed by various companies within projects, but this has been clarified during the evaluation. The research output in terms of inventions is adequate. There is an imbalance in terms of publications between projects, but this is justified with regard to the long MMIC fabrication times. The cooperation with industry has clearly generated added value to the research at Chalmers. The number of PhD students is rather low for a Centre of this size, but this was partly justified during the discussions. Master thesis students are involved only marginally.

Centre Partners

Partners' Needs Identification and Articulation

The GigaHertz Centre is to be congratulated on the effort they have devoted to identifying and responding to industry needs. From the report and from contributions at the meetings it was clear that industry is very actively engaged with the Centre. The evaluators were impressed by the Board representatives at the meeting, who clearly appreciated the value of the Centre and its scientific aspirations and saw real benefit of engaging with the GigaHertz Centre. The evaluation team was particularly impressed by the approach to collaborative project planning.

Partner Participation in Innovation and Technology Translation

It is clear from the report and from the presentations, that the essence of GigaHertz Centre is very active collaboration between Chalmers and the industry partners. The work plans for each project include accounts not only of the partners involved but their contributions in time and in cash. From the discussions at the presentations it is clear that this is working well and that industry partners are often spending more than their allocated time on projects due to their interest and enthusiasm. Other encouraging indications of the strength of the interaction with industry partners included an Industry PhD, posts shared between the Centre and industry and the fact that the Centre offers office and lab space to industry partners. The Centre has also agreed clear goals for success by 2016 which include 15 examples of documented technology transfer as well as 5 out of the 10 GigaHertz Centre PhDs being employed by the partner companies. A concern was expressed whether this was an achievable goal, as two-thirds of the present PhD students are non-European and may leave Sweden after completion of their degree. The industry partners stated that more than 50% of foreign PhD students do join Swedish companies, and this was confirmed during the discussion with the PhD students.

Partner Complement

The Centre has 7 industry partners: Comheat Microwave; Ericsson; Saab; Infineon Technologies; NXP Semiconductors; Omnisys Instruments; Sivers IMA. There was excellent representation of the partner companies at the review meetings. In discussion it emerged that even though some of the partners are fierce competitors, their participation in GigaHertz Centre was working well. The fact that two of the companies are located elsewhere in Europe, was additional evidence of the value that industry places on the Centre. Other companies have expressed an interest in joining and the Board will consider this for Stage Two.

We learned that the Board actively considers additional members and that the Chair, who is from Ericsson, had made efforts to invite Nokia to join GigaHertz Centre, although in the end Nokia declined. The companies are making significant contributions in cash and in kind.

Organization and Management of the Centre

The Board's Role

All industry partners and Chalmers are represented on the Board. The Board Chair and all but one member of the Board were present in the evaluation and the missing member (who was called away by family matters) sent a most helpful letter. Clearly the Board is actively engaged with the Centre and has been supportive in bringing corporate connections and resources to the Centre. The Board is active in establishing the vision and mission of the Centre and in development of projects. The Board has been active in developing interest in and promoting microwave research in Europe. The Board has been active in prospecting for new Centre member companies.

Management Team Structure, Processes and Performance

The Centre Director is clearly at the heart of the organization and has been effective in coordinating all university and industry partners and in leading the development of a "GigaHertz Centre" identity. The evaluation report was thorough and provided the information required by VINNOVA in a well-organized fashion. It was clear and concise with respect to organizational matters. However, the report used a great many technical acronyms without explanation. The summary, which should be readable by non-specialists, was, because of the acronyms, impenetrable to the generalist evaluators.

International Scientific Advisory Board's Role

The constitution and utilization of the International Advisory Board (IAB) has been exemplary. There was some discussion about prospects for the Stage Two IAB; the membership may remain unchanged and the ISAB is intended to meet annually.

Relationship to the University and University Units

The Centre is well supported by the MC2 and S2 Departments. The Chalmers administration has also been appropriately supportive.

It is suggested that Chalmers organizes an exchange of best practices among VINNOVA Centres at Chalmers. As there is some overlap in science with the Chase Centre.

Recommendation:

- 1. That the Centre undertake to facilitate collaborative links with the Chase Centre

Communication Strategy and Execution

The Centre has taken appropriate steps to establish a "GigaHertz" identity. The website is informative and well organized. The Centre has a logo that is used well in print, presentation materials and the web.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The Centre has experienced some difficulties in recruiting PhD students. After some delays the Centre now has 6 PhDs including 1 Industry PhD. This is rather less than might be anticipated from a Centre of GigaHertz's size and reputation. Two of the PhD student cohort are Swedish, three are Iranian and one is Chinese. All are male. Although it is admirable that 100% studied for their first degree at universities other than Chalmers and 67% from overseas, four out of six PhD students were recruited from the Chalmers International MSc program. The Centre has few masters students engaged in projects, which is disappointing.

Recommendation:

- 2. That the Centre take steps to recruit outstanding students nationally and internationally for the PhD level and to recruit Masters theses project students from among Chalmers undergraduates.

Mobility of Personnel between University and Industry

The evaluators were pleased to learn of mobility between the sectors. There was considerable evidence of mobility including visits by PhD students to companies, the considerable time spent at GigaHertz by the Industry partners, and the office facilities for Industry at the Centre. There are also several staff with joint positions involving substantial time at the Centre: Sten Gunnarsson of Sivers IMA and GigaHertz Centre project leader in THZ project; Rik Jos of NXP Semiconductors in the Netherlands spending 20% of his time at the Centre and acting as an Adj. Prof.; Hans-Olof Vickes of Saab acting as an Adj. Prof. Several of the PhD students also discussed moving easily to the industry partners sites (including those outside Sweden) to conduct work and visit partners.

The Centre should consider ways to build on this excellent start. In particular the career aspirations of researchers and students should be considered and mobility between the two sectors encouraged.

Gender Perspective

The Centre is in a very poor position as regards gender balance. All academic staff are male. All company representatives and board members are male. All members of the International Advisory Board are male. All PhD students are male. All GigaHertz Centre members at the evaluation meetings (but for one at the morning session) were male. Even the language of the report is inappropriate with references to ‘man hours’. The Centre staff at the meeting did not seem to take this as seriously as we would have expected although they did mention a possible bid to VINNOVA for funding under the relevant funding scheme.

Recommendation:

- 3. That the Centre take steps to address the lack of women among students, staff, academics and the Board and make these plans a clear and detailed priority for Year 1 of Stage Two.

Contributions to University Education

GigaHertz Centre has little input into university education. Apparently this arises from historical features of the organization at Chalmers. This is unfortunate and undoubtedly contributes to the Centre’s recruitment difficulties.

Recommendation:

- 4. That the Centre academics undertake undergraduate teaching, as course leaders or guest lecturers, to raise the profile of the Centre with prospective graduate students.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage One. The Centre is well supported by the industry partners with cash (6.7 MSEK) and in kind contributions (15 MSEK).

Overall support from Chalmers is unclear, particularly when taken in the context of reported expenditures. For Stage One Chalmers is reported as providing 5.5 M SEK in cash and 7.3 M SEK in kind. However overhead of 5.0 M SEK is taken from the Centre. Also, only 2.4 M SEK are accounted for in in kind salaries with a substantial portion of in kind "material" contribution being claimed by Chalmers. It was explained that the "material" was for use of office space, lab space and facilities.

It is recommended that VINNOVA provide guidance to Centres in capturing and reporting in kind contributions from industry and from universities, in all forms: personnel time, use and valuation of facilities, materials, laboratory and office space. It is further recommended that VINNOVA review and approve financial reporting annually and prior to evaluations.

Recommendations to the Centre

Our recommendations are:

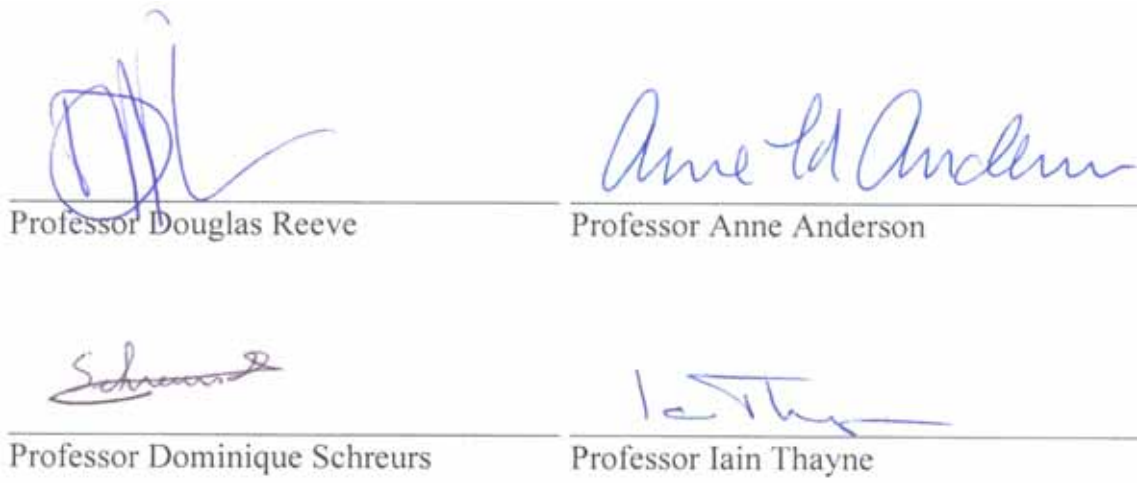
- 1. That the Centre undertake to facilitate collaborative links with the Chase Centre
- 2. That the Centre take steps to recruit outstanding students nationally and internationally for the PhD level and to recruit Masters theses project students from among Chalmers undergraduates.
- 3. That the Centre take steps to address the lack of women among students, staff, academics and the Board and make these plans a clear and detailed priority for Year 1 of Stage Two.
- 4. That the Centre academics undertake undergraduate teaching, as course leaders or guest lecturers, to raise the profile of the Centre with prospective graduate students.

Recommendations for VINNOVA

Our recommendations are:

- VINNOVA should provide guidance to Centres in capturing and reporting in kind contributions from industry and from universities, in all forms: personnel time, use and valuation of facilities, materials, laboratory and office space.
- It is recommended that VINNOVA review and approve financial reporting annually and prior to evaluations.
- That VINNOVA direct universities with more than one VINN Excellence Centre to have Centres at the same university share best practices in management, organization and university-industry interaction.
- That Annual Reports be submitted by Centres which have a common, systematic format prescribed by VINNOVA and then vetted by VINNOVA for completeness.
- That the summary of reports be written for a non-specialist audience.

Gothenburg August 29, 2008



Professor Douglas Reeve

Professor Anne Anderson

Professor Dominique Schreurs

Professor Iain Thayne

Evaluation of the MOBILE LIFE Centre at Stockholm University

Introduction

Mobile Life VINN Excellence Centre Director, Kristina Höök, and the Centre project leaders briefed the scientific experts of the evaluation team, Susanne Bødker and Yvonne Rogers, on the range of projects and scientific progress. The meeting in the afternoon was attended by the generalist evaluators, Doug Reeve and Anne Anderson, Centre project leaders, and staff, representatives of the administration of Stockholm University (SU), and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

Currently, the Centre is very much structured according to the main research interests of the four research leaders. For the time being this has led to an interesting research agenda. The current vision is phrased primarily in terms of being creative, having fun, and empowering users. While these keywords have been sufficient for getting the Centre started, they are neither sustainable, nor operational for a ten years perspective. Other human values, both positive and negative, need to be considered (e.g. privacy, the economic situation). Furthermore, a vision needs to make clear what distinguishes the research of this Centre from other research initiatives nationally and internationally. The four research leaders need to continue to work closely together developing vision, strategy, conceptual and methodological aspects.

Recommendation:

- 1. That the Management Team and the Board create together a ten-year strategic research vision and a three-year implementation plan and present these documents for comment to the SAB

Leading International Collaborative, University-Industry Research

The internships of PhD students at the partners are important instruments in the collaboration between university and industry. This mechanism should be supplemented with others such as adjunct professorships from industry and other ways of activating industry competency in projects. The Centre has explicit international collaboration, mainly through existing personal partnerships. The Centre is likely to benefit from a more active strategy of attracting international post docs and senior researchers, including, for example, visiting professors.

Centre Core Competency - People and Facilities

The core competencies of the Centre are predominantly based on the interests of the four research leaders. The further development of the vision and strategy requires that they now consider other areas of competency. Furthermore, the current staffing raises concern relating the critical mass in general. These two concerns may mean explicitly targeting senior competency internationally, as well as to make use of experts in human-computer interactions (HCI) and mobile technologies in the local academic community, e.g. The Royal Institute of Technology (KTH), other departments in SU. Furthermore, the Centre may need to address ethical and privacy issues more explicitly.

Recommendations:

- 2. That the Centre increase its core competence by creating strategic alliances and partnerships with experts in HCI and mobile technologies in the local academic community, e.g. KTH, other departments in SU
- 3. That the Centre consider creating a partnership with an academic ethicist to provide an explicit ethics component for their work

Research Program

Scientific Leadership - Project Generation, Development and Selection

The Centre is addressing a timely and exciting area of research, with an emphasis on mobile services that are fun, empowering and enable people to create content while mobile. The current set of projects is exciting and some have potential for industrial take-up. In the future, selection of new projects should be based on a range of criteria, besides the individual researcher's personal interests, that take into account ongoing research questions in mobile life and technology, and that, where possible, try to match with partner's needs. It would be good to see more coherence and integration across the existing four strands and possibly new themes emerge that straddle these. It is important that the Centre strives to maintain a healthy and productive balance between industry-led and intellectually challenging research.

Recommendation:

- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for selection and review of projects and that the first round of this process be completed before the March 2009 meeting of the SAB

Research Project Critiques - Science, Methodology and Technological Outcomes

The overall two themes of mobile eco-systems and interaction models are good starting points in which to ground the particular projects. The Centre needs to keep abreast of developments in these two areas that other research teams have been working on, especially interface developments that have already moved beyond adapting personal computer platforms (e.g., ROKR E8 phone, reality-based interactions). The methodology that the Centre has developed provides a good background for the various projects to be positioned in, particularly the dovetailing of theme and domain projects.

Lessons learned from the different strands for conducting user studies "in the wild" alongside the researcher's experiences of rapid prototyping and deployment of mobile services will be an important outcome. As the projects mature it will become increasingly important to develop a strategy for technology transfer in close collaboration with the industrial partners.

Relationship to International Groups

The Centre has been inspired by the former UK's Equator IRC in terms of how to conduct interdisciplinary and innovative research. Contact and further networking with researchers from this former IRC continues. Visits by the management team to other top research labs are also to be applauded at this early stage. In future, mechanisms need to be in place to encourage reciprocal visits to other sites, from PhD to senior management and for others to visit.

However, it is unclear where the centre currently sits in relation to other international groups who are working in the areas of mobile living and mobile technologies. The Centre needs to position itself more clearly as to what its current competitors are and also to foster more mechanisms for international collaborations that can strengthen its position as a leading player in this field.

Overall View - Productivity, Critical Size and Value-added of the Centre

The centre has been highly productive in its relatively short life-time in its activities, including publishing, speaking to the press, and organizing events to develop its ideas and promote itself (e.g., workshops). It is now at a period of growth where it will be important to introduce mentoring and support of its post-doc researchers to enable them to take on an increasingly central role in the development and management of the research and idea generation.

The Centre needs to clarify what the added value of having VINNOVA funding is in terms of its productivity and novel research outcomes, and whether they build upon existing or other funded projects or create new initiatives.

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: Ericsson AB; TeliaSonera AB; Sony Ericsson AB; Microsoft Research Ltd.; City of Stockholm Municipality; Kista Science City AB; STING.

In the report and at the meetings, the evaluation team learned about workshopswhich the academic researchers and industry participants had held which were clearly of value in exploring research issues with potential industry relevance. It was less clear how identified industry needs were fed into the process of project selection and funding decisions. As the Centre moves to the next stage it will be important to systematize the way industry needs shape the research activities in the Centre.

Recommendation:

- 5. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for identification and articulation of partner needs and introducing these findings into the project review process

Partner Participation in Innovation and Technology Translation

The evaluation team was pleased to learn about the program of industry internships, in which researchers from the Centre, from PhD students to the Director spend time in industry. This seems to be a very valuable aspect of the Centre's activities and should be continued. The extent to which industry partners spend time in the Centre and the extent of their active participation in projects was less apparent.

Recommendation:

- 6. That the partners take a more active role in ongoing research projects

Partner Complement

The partners listed above are all highly appropriate to the Centre's goals. At the meeting we learned that the leading researchers, who are only four in number, felt that they could only intensively engage with a limited number of partners. While it is clear that there will be a limit to the number of active partners that the Centre can accommodate, additional industry partners would provide additional expertise and resources to develop the Centre mission. There are a large number of innovative, small or medium-sized enterprises (SMEs) who could add value.

Recommendation:

- 7. That the Board undertake to identify and recruit appropriate additional partners including SMEs

Organization and Management of the Centre

The Board's Role

The Board is well constituted with industry representatives and representatives of SU. The Board was well represented at the afternoon evaluation session and responsive to questions from the evaluators. It is apparent that the Board is functioning and has been of assistance to the Centre Management Team in starting up the Centre programs. However, the evaluators were aware that the Board was not as proactive on behalf of the Centre as is desirable and would encourage Board members to take greater action for the benefit of the Centre, in particular with respect to recruiting additional partners, strategic visioning and planning, engaging of SMEs, and winning resources for the Centre. The evaluators thought it also important that the Board be much more vigorous in the process of identification of user needs, and their integration into the research program. In order to facilitate the successful development of such a university-industry centre within the context of SU, it is the unanimous view of the evaluators that the Board leadership should come from industry.

Recommendation:

- 8. That the Chair of the Board be from one of the industry partners and be expected to act proactively on behalf of the Centre

Management Team Structure, Processes and Performance

The Management Team is ably led by the Director, who has been extremely diligent in her efforts to get the Centre organization and programs up and running. We have been concerned about the ability of the Centre Director to execute an ever enlarging enterprise and so were pleased to learn that it is proposed that the recently hired administrative assistant, Maria Holm, will soon progress from 50 to 100% of full time (Planned for April 1 but sooner would be better.)

The evaluation report was well written and covered much of the desired subject matter. It was apparent during the evaluation interview that important elements were not included and that the report could benefit from input from a wider number of the Centre leaders and from Board oversight.

Recommendations:

- 9. That the Centre have a full-time executive assistant in place as soon as possible
- 10. That the Management Team be signatories of report of the Centre and that the report be approved by the Board

International Scientific Advisory Board's Role

The Centre has created a proposal for a Scientific Advisory Board (SAB) that has an impressive membership. It is noted that the SAB has not yet met and will not meet until March of 2009. The Centre should use the Board much more proactively in formulation of its programs not just in a review function.

Recommendation:

- 11. That SAB meet more frequently members of the SAB be consulted between meetings using remote conferencing

Relationship to the University and University Units

The space occupied by the Centre, provided by SU, is a congenial and productive environment for collaborative work and has the strategic advantage of being located in the heart of Kista Science City.

The evaluation team has concerns about the relationship of the Centre to SU, its home Faculty (Social Science), and its home Department (Computer and Systems Sciences). It seems as though the Centre has had some difficulties in having the culture of a university-industry centre accepted and proactively integrated into the traditional university framework; this is most troublesome in the nature of appointment processes that have resulted in the Centre, at almost two years on, having only one academic position among its scientific leaders. The evaluation team recognizes that there is need for effort on both sides; the Director needs to reach out to potential academic partners

within the Department and the Faculty, and Department and Faculty leadership need to become stronger advocates on behalf of the Centre. As a case in point, the Chair and the Dean should be advocates on behalf of the Centre to win approval of appointment of scientists associated with the Centre as adjunct professors.

Recommendations:

- 12. That the Department Chair undertake to meet regularly with the Centre Director to empower the Director with respect to growth and development of the Centre and new academic linkages
- 13. That the senior leadership of SU consider the needs for permanent academic staff necessary to sustain the Centre.
- 14. That SU reviews its policies with respect to adjunct professors to permit the appointment of industry specialists who would be of assistance to the Centre and to foster the career development of research staff in the Centre

Communication Strategy and Execution

The Centre has taken some steps to create a visual identity but needs to finalize its logo, signage, etc. There was no visible evidence of the identity of the Mobile Life Centre in the building, on business cards, etc. The website is helpful and a good resource although not well linked to SU.

Recommendation:

- 15. That the Centre establish a distinctive visual identity

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team was pleased to meet a lively and enthusiastic group of PhD students, from mixed academic and industry backgrounds, who were clearly benefitting from the intellectual atmosphere in the Centre, and from the opportunity to undertake industry internships. Nevertheless this was an overwhelmingly Swedish group who would benefit from wider international perspectives.

Recommendation:

- 16. That the Centre take steps to recruit outstanding students nationally and internationally for the PhD level and to recruit Masters theses project students from among SU undergraduates

Mobility of Personnel between University and Industry

The Centre is to be commended for the efforts it has made in developing the industry internship program where academic staff spend periods of time at the company partners' sites. We were also pleased to see that one industry PhD is in progress and that the student, an employee of TeliaSonera, was an enthusiastic advocate of this experience. The amount of time industry partners spend at the Centre was not clear. We would expect this to grow as the Centre develops. In other VINNOVA Centres, industry

sometimes demonstrates its commitment through key industry researchers undertaking the role of Adjunct Professor. We were disappointed to learn that current SU policy would make the appointment of industry personnel as Adjunct Professors difficult.

Gender Perspective

The Centre is to be commended on its gender balance at all levels.

Contributions to University Education

The leading researchers in the Centre are exploring how to contribute to a new masters program at SU in Mobile Technology. This would seem to be a valuable contribution to university education based on leading edge research.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage One. The Centre is well supported by SU (1.5 MSEK in cash and 3.5 MSEK in kind) and by SICS (2 MSEK in cash) for a total institutional contribution of 7 MSEK. Three companies provided cash support to the Centre; Eriksson, TeliaSonera and Microsoft Research (0.6 MSEK each for a total of 1.8 MSEK). These companies along with Sony Ericsson, the City of Stockholm, and Kista Science City provided substantial in kind support (total of 6.1 MSEK) for a total industry/public sector support of 7.9 MSEK.

At the evaluation meeting there was discussion about the constraints on spending by municipalities in Sweden, the City of Stockholm in particular. The evaluators were pursuing the prospect of the City providing cash funding as well as in kind; the City has great interest in the application of the work of the Centre. It seems that there are some regulatory impediments to this and more broadly to public sector IT/telecom innovation.

It should be noted that while in kind support from the companies (personnel, materials, etc.) is vital and a significant indicator of company engagement, cash support from the companies is essential for supporting students - the engine of academic research.

Recommendations to the Centre

Our recommendations are:

- 1. That the Management Team and the Board create together a ten-year strategic research vision and a three-year implementation plan and present these documents for comment to the SAB
- 2. That the Centre increase its core competence by creating strategic alliances and partnerships with experts in HCI and mobile technologies in the local academic community, e.g. KTH, other departments in SU
- 3. That the Centre consider creating a partnership with an academic ethicist to provide an explicit ethics component for their work
- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for selection and review of projects and that the first round of this process be completed before the March 2009 meeting of the SAB

- 5. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for identification and articulation of partner needs and introducing these findings into the project review process
- 6. That the partners take a more active role in ongoing research projects
- 7. That the Board undertake to identify and recruit appropriate additional partners including SMEs
- 8. That the Chair of the Board be from one of the industry partners and be expected to act proactively on behalf of the Centre
- 9. That the Centre have a full-time executive assistant in place as soon as possible
- 10. That the Management Team be signatories of report of the Centre and that the report be approved by the Board
- 11. That SAB meet more frequently members of the SAB be consulted between meetings using remote conferencing
- 12. That the Department Chair undertake to meet regularly with the Centre Director to empower the Director with respect to growth and development of the Centre and new academic linkages
- 13. That the senior leadership of SU consider the needs for permanent academic staff necessary to sustain the Centre.
- 14. That SU reviews its policies with respect to adjunct professors to permit the appointment of industry specialists who would be of assistance to the Centre and to foster the career development of research staff in the Centre
- 15. That the Centre establish a distinctive visual identity
- 16. That the Centre take steps to recruit outstanding students nationally and internationally for the PhD level and to recruit Masters theses project students from among SU undergraduates

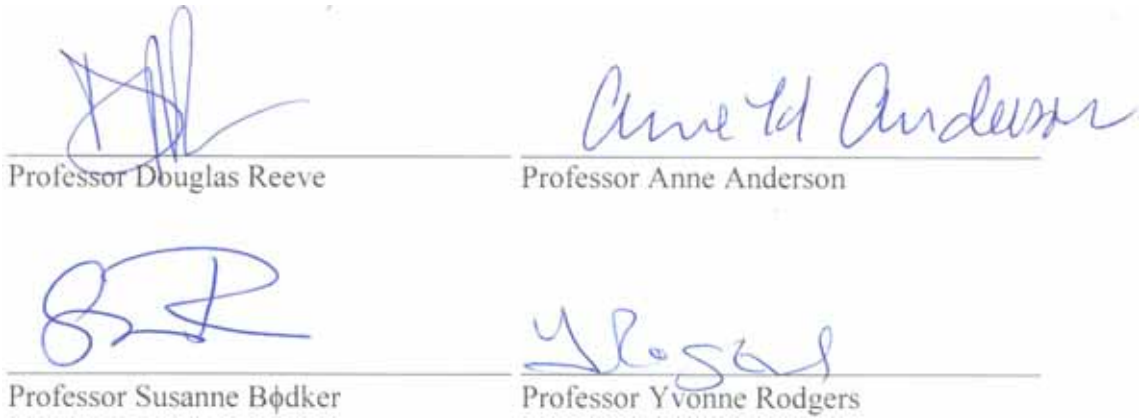
Recommendation to VINNOVA

Our recommendation is:

In conclusion

- The evaluation team is of the opinion that the Mobile Life Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Stockholm November 12, 2008



Professor Douglas Reeve

Professor Anne Anderson

Professor Susanne Bødker

Professor Yvonne Rodgers

Evaluation of the iPACK Centre at Royal Institute of Technology

Introduction

On Thursday November 13, in the morning, the iPack VINN Excellence Centre Director, Li-Rong Zheng, the Centre project leaders and staff, and representatives of the industrial partners, briefed the Scientific Experts of the evaluation team, Berit Sundby Avset and Anthony Turner, on the range of projects and scientific progress. The meeting in the afternoon was attended by the Generalist Evaluators, Doug Reeve and Anne Anderson, Centre project leaders, and staff, representatives of the administration of the university, the Royal Institute of Technology (KTH), and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

The evaluators' overall impression of meeting the group as whole was extremely positive. The scientific drive, enthusiasm and commitment of the team were clearly apparent and the evaluators perceived a strong sense of purpose and a determination to succeed. Despite the short time since establishment of the new centre, excellent progress has been made in recruitment and launching scientific activities. The scientific prominence and inspiration provided by the Director was obviously a major asset to the team. The industrial support of the program was evident and the evaluation meeting was attended by a large number of representatives.

Sustainable Growth of the Economy through New Products, Processes and Services

The project report targeted three types of industries, the forest industry, the electronics industry and the biomedical industry. There seemed to be some lack of clarity amongst the team as to whether biomedical products still form a core target other than the rather specific area of pharmaceutical packaging. It is critical to resolve the actual strategic direction since some partners clearly have aspirations in this direction, students have expectations in this area and opportunities for high value added products abound.

Recommendation:

- 1. That the Management Team and the Board together clarify their ten-year strategic research vision, particularly to decide about their ambitions regarding biomedical applications, make more specific a three-year implementation plan and present these documents for comment to the SAB

Leading International Collaborative, University-Industry Research

The partnership between academia and industry seems to be working very well within this new centre and there is a high level of satisfaction from the industrial partners with respect to addressing user needs. While subsections of the science may be found in other international research programs there appears to be a unique combination in iPack,

with its focus on the combination of electronics and forest products, particularly in respect to inexpensive fabrication technologies and devices. This unique focus, however, could achieve higher visibility with further international visits, collaboration and publicity via media such as the web.

Centre Core Competency - People and Facilities

The current core competence of the centre is focused around excellence in electronics on the academic side and forest products from the industry side; a weakness is that acquisition of both partners and expertise in the biomedical area only exists as planned activities in Stage 2. Similarly food packaging is clearly identified as a target, but is not fully supported by expertise in food technology.

Recommendation:

- 2. That the Centre increase its core competence, in line with their clarified vision, by creating strategic alliances and partnerships in the academic and business communities, for instance, if appropriate, with experts in biomedical and food technology

Research Program

Scientific Leadership - Project Generation, Development and Selection

We are impressed by the scientific leadership and by the enthusiasm and commitment of both the academic and industrial partners. We also praise the concept of co-funded "small projects" which gives the opportunity for new concepts to be explored and facilitates wider participation by the broader community. However, a relatively small range of full projects has so far been available and as a wider range of projects present themselves for funding, an objective and formalised procedure for project selection needs to be established. This procedure should encompass relevance to mission and scientific excellence, but also properly reflect a distilled industrial view.

Recommendation:

- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review of projects, in particular in relation to capturing industry needs; the first round of this process of project review and selection should be completed before the first-quarter 2009 meeting of the SAB

Research Project Critiques - Science, Methodology and Technological Outcomes

A number of research projects have been established and initial results were presented, it was noted that a number of conference proceedings have been published and generally good progress has been achieved given the early stage of the program. The methodologies were sound and research programs were sensibly planned. There was evidence of good interaction between researchers and reports of interdisciplinary innovations. In addition the projects are well connected, forming a coherent program

supporting the stated mission. It is important that the management structure continues to develop to support this high level of integration of scientists on the ground.

Relationship to International Groups

While there is strong evidence of excellent international recruitment, active international collaboration on specific projects is sparse. Wider activity on this front would also aid benchmarking with respect to state-of-the-art. Extended visits from internationally leading researchers within the centre's core competences should be encouraged. The centre has identified the opportunity of EU Framework programs to expand both funding and collaborations and we would encourage endeavours in this direction.

Overall View - Productivity, Critical Size and Value-added of the Centre

Given the short period since the establishment of the Centre the team has clearly been highly productive with research programs underway and the number of published conference proceedings. It is recognised that further expansion is necessary and this is planned in Stage 2. There is clear scientific critical mass in electronics and strong expertise available in forest products. However, if the biomedical field is to remain a focus, recruitment in this area will be necessary. Productivity would be enhanced by physical co-location of some of the core teams, technical and administrative support. The value proposition of iPack is strong, but objective measures to self-assess performance are rather informal and need to be strengthened. We understand that KTH has explored formal assessment methods based on a combination of metrics and peer review. Normally these measures value high-ranking journal publications and these should form part of the benchmarking exercise.

Recommendation:

- 4. That the Centre Director, in consultation with KTH senior management and the Management Team, undertake to review and formalise the criteria, quantitative and qualitative, by which the Centre measures its productivity in research and benchmarks itself nationally and internationally

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: Stora Enso AB; Billerud AB; Korsnas AB; Catena Wireless Electronics AB; NOTE AB; Radio Frequency Investment Group of Sweden; FrameAccess AB; Imsys Technologies AB; YKI and STFI. The evaluation team was pleased to see the good attendance of industry partners at the evaluation meetings and their clear enthusiasm for and commitment to the Centre and its director. The team learned of a variety of valuable interactions with industry from meetings, workshops, visits, joint supervision of PhD students. Nevertheless the process by which industry needs were articulated and influenced project development and selection was not entirely clear. This should become a more systematic and explicit aspect of the Centre's

procedures in Stage 2 as indicated in the recommendation concerning project generation and selection.

Partner Participation in Innovation and Technology Translation

There was evidence from industry presentations to the evaluation team, that current partners are active participants in projects within the Centre and see the potential economic benefits of the outcomes of such activities. There was enthusiasm for the potential technology transfer opportunities. The development of a joint lab with one of the partners (NOTE AB) is one impressive indication of the real industry engagement with the Centre. The evaluation team was less convinced that the Centre had a clear plan for the recruitment of additional commercial partners and the exploitation issues involved in such an expansion.

Recommendation:

- 5. That IPR policies be clarified in order to encourage recruitment of additional partners

Partner Complement

The Centre has an active and engaged set of commercial partners. As noted in the Core Competencies section, the Centre needs to consider expanding this group in line with a clarified ten-year strategy. The evaluation team was pleased to hear about plans to expand the involvement of SMEs through an associate partner scheme and hopes this scheme will be implemented.

Organization and Management of the Centre

The Board's Role

The Board was elected by all the partners and has representatives of the forest and electronics industries and representatives of KTH. YKI is also represented on the Board. The Board was very well represented at both the morning and the afternoon evaluation sessions and is evidently very much engaged with the Centre. It is apparent that the Board is functioning and has been of assistance to the Centre Management Team in starting up the Centre programs.

The evaluators thought it important that the Board be more vigorous in the process of identification of user needs, and their integration into the research program. In order to facilitate the successful development of such a university-industry centre, it is the unanimous view of the evaluators that the Board leadership should come from a company that is a strong financial contributor.

As two of the academic leaders in the Centre are principals in FrameAccess, the evaluators thought it inappropriate that a representative of FrameAccess have seat on the Board.

Recommendations:

- 6. That the Chair of the Board be from one of the major funding industry partners.
- 7. To avoid any appearance of conflict of interest it is recommended that FrameAccess not have a seat on the Board.

Management Team Structure, Processes and Performance

The Centre is very ably and energetically led by the Director, who has been extremely diligent in his efforts to get the Centre organisation and programs up and running. The employment of a Vice-Director and an administrator is seen as essential to execution of Centre programs; together with the Director they constitute the Management Team. However, the evaluators are concerned about the ability of the Centre Director to manage an ever-enlarging enterprise without an expansion of the Management Team.

There was some discussion about the structure and processes of scientific collaboration. Although there is an excellent spirit of cooperation and collegiality in the Centre and there are designated leaders of themes and projects, the evaluation team believes that more regular, formal mechanisms need to be established, particularly to prepare for the expected expansion of the Centre in Stage 2 and beyond.

The evaluation report was lacking some of the requested information and in many instances the grammar was flawed. In the evaluation meeting a number of academics and Board members reported having made contributions to the development of the report. However, a more systematic process of editing, review and oversight appears to be warranted.

Recommendations:

- 8. That the Dean of Information and Communication Technology (ICT), acting on behalf of the Board, review the work load of the Director and the composition of the Centre Management Team
- 9. That the Director, in consultation with the Management Team, undertake to create a plan for regular, productive, integrative interactions of theme and project leaders and the wider community
- 10. That the entire Management Team be signatories of annual and evaluation reports of the Centre and that such reports be approved by the Board

International Scientific Advisory Board's Role

The Centre has created a proposal for an International Scientific Advisory Board (SAB) that has an appropriate membership. However, it is noted that the SAB has not yet met and will not meet until early 2009. The Centre should use the SAB much more proactively in formulation of its programs, not just in a review function.

Recommendation:

- 11. That SAB meet as soon as possible, preferably no later than March, 2009. In future, the SAB should meet more frequently, once a year; members of the SAB should be consulted or briefed between meetings using remote conferencing.

Relationship to the University and University Units

The Centre is well supported by KTH central administration with generous financial contributions, by the Dean of ICT with efforts to create optimal office space, and by members of the home department of the Centre, Electronic System Design (ESD). The evaluation team was aware of the administrative complexities that the Centre faces within the KTH organisation and recognises efforts on behalf of all concerned to find workable solutions.

Recommendation:

- 12. That KTH urgently resolve the problem of location of the offices of the Centre

Communication Strategy and Execution

The Centre has a distinctive logo and used it effectively in posters and presentations. iPack appeared on the business card of the Director although the logo did not.

The web site was not very useful.

Recommendation:

- 13. That the website undergo renovation and renewal

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team had the chance to meet with a substantial number of the Centre's PhD students. We were impressed by the energy of the group and their positive attitudes to the Centre. The students clearly felt that they benefited from the stimulating environment and their opportunities to interact with industry. The students were a very international group, drawn from many countries including: China; Pakistan; Iran; Spain and Columbia. The Centre clearly benefits from the reputation of the Director in recruiting students. An additional commendable feature is the presence of a significant number of PhD (8) students funded by national schemes in China and Pakistan, which greatly adds to the research capability of the Centre.

The PhD students indicated that they found real value in the opportunities to interact with industry, and several expressed interests in working in industry or starting enterprises. It would be useful to build on these positive indications to develop the students' business skills.

Recommendation:

- 14. That the Centre take steps to increase opportunities for PhD students to acquire skills in innovation and entrepreneurship

Mobility of Personnel between University and Industry

There have been a range of activities demonstrating mobility between university and industry. One of the Centre's projects is led by an industry researcher; an adjunct professor from industry is being agreed, as is an industry PhD studentship, as well as

various internships. The Centre plans to extend these activities and this will be an important feature of Stage 2.

Gender Perspective

The Centre does not score well on gender perspective. The Director is male. All Board Members are male. All members of the SAB are male. All but one of the project leaders are male. The majority of PhD students are male. The Centre should take active steps to redress this balance in recruitment, and take advice from VINNOVA on how to make progress on this issue.

Contributions to University Education

The Centre plans to contribute a PhD course for university and industry students on Communicative and Intelligent Packaging in the Swedish Forest Product Industry Research School.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; note that Stage 1 started July 1, 2007 and ends June 30, 2009. As planned for Stage 1, the Centre is well supported by KTH (4.68 MSEK in cash and 2.32 MSEK in kind) for a total institutional contribution of 7 MSEK. As planned, six companies will provide cash support to the Centre (for a total of 3.2 MSEK). These companies along with four other partners plan to also provide substantial in kind support (total of 6.7 MSEK) for a total industry sector support of 10.9 MSEK. It should be noted that while in kind support from the companies (personnel, materials, etc.) is vital and a significant indicator of company engagement, cash support from the companies is essential for supporting students - the engine of academic research.

It is noted that Centre academic participants have won funding from other sources for research related to the Centre mission totalling 30 million SEK. In addition, added to the resources of the Centre is the value of scholarships of the significant number of foreign students associated with the Centre.

Expenditures are in line with the Centre mission.

As two of the academic leaders in the Centre are principals in FrameAccess it is prudent to create an oversight mechanism for all financial matters involving FrameAccess and the Centre.

Recommendation:

- 15. That the evaluation of in kind contributions from FrameAccess (personnel and software) be reviewed by the Dean of ICT

Recommendations to the Centre

Our recommendations are:

- 1. That the Management Team and the Board together clarify their ten-year strategic research vision, particularly to decide about their ambitions regarding biomedical applications, make more specific a three-year implementation plan and present these documents for comment to the SAB
- 2. That the Centre increase its core competence, in line with their clarified vision, by creating strategic alliances and partnerships in the academic and business communities, for instance, if appropriate, with experts in biomedical and food technology
- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review of projects, in particular in relation to capturing industry needs; the first round of this process of project review and selection should be completed before the first-quarter 2009 meeting of the SAB
- 4. That the Centre Director, in consultation with KTH senior management and the Management Team, undertake to review and formalise the criteria, quantitative and qualitative, by which the Centre measures its productivity in research and benchmarks itself nationally and internationally
- 5. That IPR policies be clarified in order to encourage recruitment of additional partners
- 6. That the Chair of the Board be from one of the major funding industry partners.
- 7. To avoid any appearance of conflict of interest it is recommended that FrameAccess not have a seat on the Board.
- 8. That the Dean of Information and Communication Technology (ICT), acting on behalf of the Board, review the work load of the Director and the composition of the Centre Management Team
- 9. That the Director, in consultation with the Management Team, undertake to create a plan for regular, productive, integrative interactions of theme and project leaders and the wider community
- 10. That the entire Management Team be signatories of annual and evaluation reports of the Centre and that such reports be approved by the Board
- 11. That SAB meet as soon as possible, preferably no later than March, 2009. In future, the SAB should meet more frequently, once a year; members of the SAB should be consulted or briefed between meetings using remote conferencing.
- 12. That KTH urgently resolve the problem of location of the offices of the Centre
- 13. That the website undergo renovation and renewal
- 14. That the Centre take steps to increase opportunities for PhD students to acquire skills in innovation and entrepreneurship
- 15. That the evaluation of in kind contributions from FrameAccess (personnel and software) be reviewed by the Dean of ICT

Recommendations to VINNOVA

Our recommendations are:

- That during the period of evaluation evaluators be permitted access to password protected parts of Centre web sites where project plans and reports would be available.

In conclusion

- The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Stockholm November 13, 2008

Professor Douglas Reeve | Professor Anne H Anderson

Professor Berit Sundby Avset | Professor Anthony Turner

Evaluation of the HERO-M Centre at Royal Institute of Technology

Introduction

On Friday November 14, in the morning, the HERO-M VINN Excellence Centre Director, John Ågren, the Centre project leaders and staff, and representatives of the industrial partners, briefed the scientific experts of the evaluation team, Masato Enomoto and Sybrand van der Zwaag, on the range of projects and scientific progress. The meeting in the afternoon was attended by the generalist evaluators, Doug Reeve and Anne Anderson, Centre project leaders, and staff, representatives of the administration of the The Royal Institute of Technology (KTH), and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank the all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

This center aims to construct a new scheme of multi-length-scale material design and simulation, which is applicable to the development of advanced materials and processes in industry. This mission can be achieved by developing a strong fundamental, rather than an empirical approach, which includes ab-initio calculations, atomistic simulations, meso-scale modeling and macroscopic calculation. This will save considerably time, energy and resources for designing materials, enhancing physical properties of materials, and solving engineering problems. It is expected that new products and processes will result from the software developed by HERO-M centre; Such developments should be properly documented as proof of the outcome of the Centre.

Recommendation:

- 1. That the Centre academics and industrial partners document the application of Centre tools in industrial improvements and report on such benefits each year in the annual report

Leading International Collaborative, University-Industry Research

The vision of the centre is based on the outstanding record and international reputation of KTH in computational thermodynamics and kinetics reaching back more than half a century. Compared with similar activities world-wide, the Center is characterized by a larger number of active collaborations with industrial partners, which includes world leaders in their particular markets. This is the net result of the achievements in research and education made by the department over many years. In order to increase international collaboration and educational aspects, sending PhD students to international centres overseas and organizing summer schools should be considered.

Recommendation:

- 2. That the Centre build on its high international reputation by sending PhD students to key international centres and by organising international summer programs.

Centre Core Competency - People and Facilities

As mentioned above, some members of the centre have a high international reputation in computational thermodynamics and simulation of diffusion-controlled processes. The software which was developed by the department is frequently used in industry. The Centre consists of members whose expertise is in ab-initio calculation and phase field modelling, making up a scheme of multi-scale modelling. In contrast to the situation for microstructure modelling, scientists who are competent in and responsible for the research in simulation and prediction of mechanical properties are underrepresented in the team.

The Centre contains most major equipment required for microstructure characterization. Any equipment not on hand can be provided by industrial partners and international collaboration.

Recommendation:

- 3. That the Centre extend its expertise in translating microstructure calculations into relevant mechanical and other physical properties

Research Program

Scientific Leadership - Project Generation, Development and Selection

The Centre is under the scientific leadership of Professor John Ågren with Dr Annika Borgenstam as its co-director. Both scientists are well known in the field and have a very strong reputation. The research is distributed over four domains and currently involves nine projects, each led by a project leader. The subdivision into domains and projects is defendable and in line with industrial demarcations. There is generally a good or excellent interaction between the various projects.

A very interesting new development has been to involve PhD students in at least two research projects, rather than the normal way of assigning them to a single research project. Although most projects deal with rather different subjects, they have indeed some commonality in their scientific approach, which is exploited well in the chosen structure. While the final judgement on the efficiency of this innovative approach can only be made in time, currently students and staff seem happy about this innovation. The approach leads to a noticeably stronger commitment of the students to the overall HERO-M research program.

With the exception of the Bulk Metallic Glass project, the projects are generally geared towards solving identified industrial problems and are hence based on user needs. Nevertheless, the research is of a very high scientific calibre and is very fundamental in nature. Given the issues to be addressed, the manpower devoted to each of the current

topics is certainly not very large and in some cases judged to be close to the minimum required level.

The process of selecting new projects does not seem to be well regulated but seems to rely heavily on consensus-oriented discussions among academic partners and in the Board.

Recommendations:

- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review of projects
- 5. That the director and the Board evaluate periodically, the current projects to insure critical size is achieved . Expansion into new project areas should only be considered if the critical manpower in the current projects has been safeguarded.

Research Project Critiques - Science, Methodology and Technological Outcomes

Over the past several decades the research group led by Professors Hillert and Ågren has achieved a world-class reputation for innovative, high-quality and industrially relevant science. The Centre will certainly help to consolidate this reputation.

Relationship to International Groups

Although the international visibility of the key players in the Centre is very high, the evaluation committee did not see many signs of initiatives to strengthen the international collaborations intentionally. The current focus is very much on the interaction with the Swedish metal industry. Suggestions to broaden the international collaborations are given elsewhere.

Overall View - Productivity, Critical Size and Value-added of the Centre

The Centre is still in its start-up phase and a proper judgement of its productivity cannot be made yet. Given the past performance of the research leaders the evaluation team is confident that the productivity will rise to a high level.

The Centre as a whole will certainly benefit from the foreseen increase in the annual budget, but has already an adequate size to function well.. Some of the individual projects are judged to be close to their critical size given the ambitious targets set.

The evaluation team has no doubt that the planned new models to predict microstructure and properties of complex steels can only be reached via the concerted effort within the Centre. The anticipated new models will have a large and lasting value to the Swedish (and international) metals industry.

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: Erasteel; Hoganas; Swerea KIMAB; Spintronix; Sandvik Tooling; Sandvik Materials Technology; Seco Tools; SSAB Oxelosund; SSAB Tunnplat; Thermo Calc Software; Uddeholm Tooling. The industry partners were well

represented at the evaluation meetings and expressed enthusiastic support for the Centre. The industry focus of the research programme was strongly articulated by the Director, the Board Chair and the industry partners present at the evaluation meeting. It was explained that industry had actively participated in the plans for the Centre even at the application stage. Although this general orientation to industry is very clear, the precise way that industry needs feed into the specification and selection of individual projects should be clarified in a more transparent manner, in line with our recommendation above under 'Project Generation, Development and Selection'.

Partner Participation in Innovation and Technology Translation

The industry partners seem to be very active in the Centre's activities. Several projects are led by industry researchers, and there are many other forms of active interaction between industry partners and the Centre. The partners have signed an agreement on IPR and commercialization which is supportive of future technology transfer and exploitation of the research outcomes.

Partner Complement

There is a large number of relevant industry partners from the Swedish steel industry engaged in the Centre. Their strong support in cash and in kind is probably sufficient for the Centre's goals. There may be other mechanisms for Centre academics to collaborate with additional commercial partners, perhaps from outside Sweden.

Organization and Management of the Centre

The Board's Role

The Board has good representation of industry partners. However, the only the Dean and one professor represent the academic side on the Board. The evaluation team is of the opinion that the academic representation needs strengthening. The Board was very well represented at both the morning and the afternoon evaluation sessions and is evidently very much engaged with the Centre. It is apparent that the Board is functioning well and has been of great assistance in starting up the Centre programs and in developing industry collaboration. The Board plays an important role in project selection and oversight; and as noted above, this will be critical in the planning for Stage 2 expansion. The Board Chair has provided much-needed leadership in contract negotiations.

As the Director of the Centre has a financial interest in Thermo-Calc Software, the evaluators thought it inappropriate that a representative of Thermo-Calc Software have seat on the Board.

Recommendations:

- 6. To avoid any appearance of conflict of interest it is recommended that Thermo-Calc Software not have a seat on the Board
- 7. That KTH re-evaluate the seniority of their representatives on the Board

Management Team Structure, Processes and Performance

The Centre Director is clearly a leader who brings a high level of scientific and managerial competence, commitment, and vigour to the job.

The day-to-day management of the Centre is handled by the Director and the Vice Director without a permanent administrative or financial assistant. This is too great a concentration of the responsibility for smooth execution of Centre programs and is not suitable for a Centre with such high ambitions and such a large community of academic and industry partners. It will be critical to successful expansion of the Centre in Stage 2 that the core management group gets administrative assistance.

The Management Team consists of the Director and Vice Director, four area managers, and two experts. The team typically meets once a month and appears to be effective.

Recommendation:

- 8. That the Centre employ a full time administrative/financial assistant as soon as possible.

International Scientific Advisory Board's Role

The International Scientific Advisory Board (SAB) participated in the two-day workshop of the Centre (first held in May 2008) and is expected to do so annually. The members of the SAB have high standing in the international community. However, the evaluation team is concerned that the members of the SAB may be too like-minded to give adequately critical comment to the Centre.

Recommendation:

- 9. That the composition of the SAB be reviewed and the membership expanded, with a view to increasing its capacity for critical comment, particularly with respect to the selection of projects in the Stage 2 expansion

Relationship to the University and University Units

The Centre is well supported by senior levels of KTH in particular through support of the MEMIKA project. The Centre seems to operate smoothly within the School of Industrial Engineering and Management and the Department of Materials Science and Engineering.

Communication Strategy and Execution

The evaluation report was not effective in communicating the vision and mission of the Centre to the evaluators. Some effort is necessary to express the plans and programs of the Centre with greater clarity and impact. The website was not very informative and is in great need of improvement.

Recommendations:

- 10. That the Centre seek out professional advice on visual identity and communication strategy
- 11. That the website undergo upgrading.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team valued the opportunity to meet with quite a number of Ph.D. students in the Centre. The students were a lively and enthusiastic group drawn from several countries including India, Pakistan, China, Russia and Sweden. Although the students were mostly early in their studies, they articulated clear advantages of being part of the Centre, both in terms of the opportunities to collaborate with researchers from different academic backgrounds and in terms of their interactions with industry. Being involved in more than one HERO-M project was perceived as being an advantage and stimulus and so far has not caused conflict of interest or undue pressure. The Centre has experienced some difficulties in recruiting enough suitable PhD candidates, and has had to delay starting some projects as a result. This is not uncommon in this research area. The evaluation team supports the Centre's position of only appointing strong candidates even if this delays the start of the actual research.

The research outputs of many projects will be in the form of complex software tools. At present where there is frequent interaction between industry and the researchers, the academics are confident that industry personnel will learn how to deploy these tools as part of their engagement in the research projects. This will be more challenging for industry personnel not directly involved in projects, particularly after projects have been completed or after the Centre ends.

Recommendation:

- 12. That the Centre develop training programs for use of their materials design software to enable industry to benefit during and after the HERO-M program

Mobility of Personnel between University and Industry

The evaluation team was very impressed by the mobility of personnel. The report outlines considerable movement between university and industry. In addition to the three industry project leaders, there are frequent meetings with industry and a "Roadshow" where PhD students have the chance to visit and present to partner companies. The evaluation report also notes that one person from the university has moved to industry and one person from industry has joined the Centre at KTH.

Gender Perspective

The Centre has a reasonable number of female researchers, including the Vice Director and two of the Area managers. Four of the partner company representatives are female though only one member of the Board. Among the PhD students there are few women. The evaluation team was pleased to note that the Centre is attempting to address gender

balance and has been awarded funding to explore how to make faster progress on this issue.

Contributions to University Education

The evaluation team learned that the Centre is already having an indirect impact on undergraduate education.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; note that Stage 1 started May 1, 2007 and ends April 30, 2009. As planned for Stage 1, the Centre is well supported by KTH (2 MSEK in cash and 4.55 MSEK in kind and 2 MSEK in kind through MEMIKA, a joint venture of KTH and Swerea KIMAB), for a total institutional contribution of 8.55 MSEK. As planned, 13 companies will provide to the Centre cash support (a total of 3 MSEK) and in kind support (a total of 4.949 MSEK) for a total industry sector support of 7.949 MSEK.

It is noted that Centre academic participants have won funding from other sources for research related to the Centre mission totalling 40 million SEK.

The expenditures table was updated on the day of the evaluation meeting. Expenditures are in line with the Centre mission. In spite of a slow start in Year 1, by the end of Year 2 it is predicted that expenditures will be close to budget.

As the Director of the Centre has a financial interest in Thermo-Calc Software, it is prudent to create an oversight mechanism for all financial matters involving Thermo-Calc Software and the Centre.

Recommendation:

- 13. That the evaluation of in kind contributions from Thermo-Calc Software (personnel and software) be reviewed by the Dean of the School of Industrial Engineering and Management

Recommendations to the Centre

Our recommendations are:

- 1. That the Centre academics and industrial partners document the application of Centre tools in industrial improvements and report on such benefits each year in the annual report
- 2. That the Centre build on its high international reputation by sending PhD students to key international centres and by organising international summer programs.
- 3. That the Centre extend its expertise in translating microstructure calculations into relevant mechanical and other physical properties
- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review of projects

- 5. That the director and the Board evaluate periodically, the current projects to insure critical size is achieved . Expansion into new project areas should only be considered if the critical manpower in the current projects has been safeguarded.
- 6. To avoid any appearance of conflict of interest it is recommended that Thermo-Calc Software not have a seat on the Board
- 7. That KTH re-evaluate the seniority of their representatives on the Board
- 8. That the Centre employ a full time administrative/financial assistant as soon as possible.
- 9. That the composition of the SAB be reviewed and the membership expanded, with a view to increasing its capacity for critical comment, particularly with respect to the selection of projects in the Stage 2 expansion
- 10. That the Centre seek out professional advice on visual identity and communication strategy
- 11. That the website undergo upgrading.
- 12. That the Centre develop training programs for use of their materials design software to enable industry to benefit during and after the HERO-M program
- 13. That the evaluation of in kind contributions from Thermo-Calc Software (personnel and software) be reviewed by the Dean of the School of Industrial Engineering and Management

Recommendations for VINNOVA

Our recommendations are:

- That evaluators of Stage 1 be given, with the evaluation report, the proposal evaluation, the Stage 1 work-plan and existing individual project plans, so as to be able to judge actual achievements versus planned developments
- That the Centres be given explicit guidelines for the morning and afternoon presentations, handouts of slides, name-cards on the table, etc.
- That the evaluation reports and annual reports of the Centre be co-authored by the Centre Manager and the Management Team, that all be signatories to the report, and that the report should be approved by the Board prior to release, so as to commit the senior members of the centre more strongly and more personally to those documents on which the centres will be judged

In conclusion

- The evaluation team is of the opinion that the HERO-M Centre meets all the requirements of a successful VINN Excellence Centre in Stage 1 and is worthy of continued support.

Stockholm November 14, 2008

Professor Douglas Reeve

Professor Anne H Anderson

Professor Sybrand van der Zwaag

Professor Masato Enomoto

Evaluation of the PRONOVA Centre at Royal Institute of Technology

Introduction

On Monday morning November 17th, the ProNova VINN Excellence Centre Director Amelie Eriksson Karlström, Vice Director Per-Åke Nygren, and Program Director Mathias Uhlén, the Centre project leaders and staff, and representatives of the industrial partners, briefed the scientific experts of the evaluation team, Kristiina Takkinen and Markku Kulomaa, on the range of projects and scientific progress including further objectives. The meeting in the afternoon was attended by the generalist evaluators, Doug Reeve and Anne Anderson, the scientific experts, Centre project leaders, and staff, representatives of administration of the university, the Royal Institute of Technology (KTH), and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Research Program

The long-term vision of the ProNova Centre is to become, world-wide, one of the leading academic research centres in the multidisciplinary research in protein technology. While the science of the Centre is excellent the vision of "protein technology" is a broad and quite unspecific statement and should be specified more precisely to give an innovative vision of the research. The research program includes challenging development of high throughput techniques aiming to annotate the human proteome, especially membrane and plasma proteomes, for drug target validation and biomarker diagnostics. In order to reach the vision, it would be beneficial if the Centre was structured in a more integrated way. This is in a good agreement with the plan of the Centre for the Stage 2 to integrate complementary competencies to program areas as was presented to the evaluation team. The more integrated research program, with clear, applicable goals, would also promote greater activity of the industrial partners, more interactive collaboration and increased funding. Furthermore, greater integration would strengthen the added value of being an excellence Centre.

Recommendation:

- 1. That the Management Team and the Board create together a ten-year strategic research vision and a three-year implementation plan, and that they present these documents for comment to the SAB

Leading International Collaborative, University-Industry Research

International collaborations are essential for the multidisciplinary and challenging research program of the Centre. It was therefore a surprise that international

collaborations were described only briefly in the report and in the presentations. It was, however, obvious that the investigators associated with the Centre have many on-going EU-projects and that there is a solid synergy of these projects with the ProNova research program. This should have been summarized during the evaluation. The ProNova research program has unique access to the largest validated antibody resource against human proteome as generated in Human Protein Research Institute (HPR) and presented in the public Human Protein Atlas (HPA) consortium. The main aim of ProNova research program is development of high-throughput bio-analytical techniques for annotation of membrane and plasma proteome for drug target validation and biomarker diagnostics. This should be of high interest to the appropriate Swedish and international academic community and companies in the life science sector for their next generation product development. The scientific progress achieved during the Stage 1 program is solid and is a good basis to create a more interactive collaboration and increased industrial funding. Such increased partner activity and support would demonstrate commitment to long-lasting participation in the ProNova program.

Recommendation:

- 2. That the Centre build on its high international reputation in science by execution of a deliberate strategy for international cooperation comprising steps such as: 1) collaboration with leading international groups; 2) recruiting PhD students and post-doctoral fellows also from outside Sweden; 3) recruiting faculty members (visiting and permanent) also from outside KTH and Sweden; and 4) sending PhD students to key international centres to learn the missing technical approaches and methods

Centre Core Competency - People and Facilities

Based on the presentations and publication records, the project leaders and senior scientists are scientifically highly competent and they have the know-how for successful completion of the scientific and experimental part of the program. The younger scientists presenting the projects B1 and B3 were also highly competent. The facilities of the Centre are excellent for the aims of the projects and are appropriate for achieving the goals of the program.

Recommendation:

- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the responsibilities of principal researchers and project leaders

Research Program

Scientific Leadership - Project Generation, Development and Selection

The scientific leadership, as the evaluation team sees it, is in the hands of the ProNova Management Team: Director Amelie Eriksson Karlström, Vice Director Per-Åke Nygren, and Program Director Mathias Uhlén. Professor Uhlén is also the director of the Human Proteome Atlas (HPA). He has therefore a central role in the management of the scientific compliance of the ProNova program, and also HPR and HPA. The

evaluation team had some concerns whether this is an optimal arrangement for the selection and development of the ProNova Centre, particularly selection and review of new projects or programs.

Recommendation:

- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review, as well as for possible termination, of projects. This would be important in particular, to evaluate the present projects and to insure that critical size is achieved, and that expansion into new project areas is properly considered

Research Project Critiques - Science, Methodology and Technological Outcomes

The ProNova projects have a unique access to the validated monospecific rabbit antibodies generated in the HPR/HPA project. The antibodies are produced against recombinant peptides (produced by recombinant DNA technology) resulting in generation of binders recognising mainly linear epitopes of the antigens. This means that protein samples which are analyzed have to be in a denatured form. The monospecific antibodies are produced by rabbit immunization and thus no recombinant counterparts are automatically available. The ProNova projects have highly challenging technical tasks including development of sophisticated high-throughput techniques for proteome-wide analysis. The scientific results achieved during the Stage 1 of the ProNova projects were mostly highly impressive. Specific comments of the evaluation team concerning the individual projects are:

(A1) ***Array-based tools for advanced protein studies***

Two different microarray platforms, planar and suspension, were under development. A more specified focus with regard to project resources and existing IPR would enhance the outcome. The A1 project has technical overlaps with the A3 project and better coordination between these two projects is recommended.

(A2) ***Antibody/sample labelling and detection techniques***

Novel alternative labelling methods that are based on high and specific affinity of labelled Ig-binding domains of protein A and G, that have previously been carefully studied in the Centre, are used in A2. Sophisticated peptide synthesis is employed for the production of the binding domains. Validation of the performance of the labelled binding domains in assays requiring high specificity and affinity is the main focus of A2. A highly interesting project aiming to provide tools for site-specific multi-labelling of antibodies.

(A3) ***Microfluidics***

Development of protein microarrays for point-of-care diagnostics in planar and lateral flow assay systems is the main focus of A3. Due to the close proximity to A1 the evaluation team suggests that synergy between A1 and A3 should be encouraged.

(B1) ***Analysis of the human membrane proteome***

The human membrane proteome is studied by using the antibodies from the HPR/HPA,

projects with computational approaches or bioinformatics. Analysis of specimens with confocal microscopy is an important new approach. The project has outstanding results considering the short project time.

(B2) ***Screening for antibodies suitable for analysis of the human plasma proteome and bioinformatics analysis of the human secretome***

The HPR/HPA antibodies used in this project are targeted towards the linear epitopes. The evaluation team is concerned about the possibility that specificity is maintained in plasma proteome only if the serum samples are denatured and the function of the protein simultaneously lost. Another concern is whether or not there is a universal method to denature all the target proteins? In spite of these concerns, this is an interesting and important project with great potential for clinical applications.

(B3) ***Epitope mapping of antibodies for research, diagnostics and therapy***

This is a highly interesting approach for epitope mapping of the HPR/HPA polyclonal antibodies and to achieve continuous supply of monoclonal binding specificities generated through the robust polyclonal approach. Implementation of recombinant antibody technology for the continuous supply of specific binders should be considered.

Recommendations:

- 5. That the Centre employs a wider range of biochemical and biophysical techniques for quantitative characterization, particularly interaction analyses, of antibodies
- 6. That the Centre plan for acquisition of expertise in recombinant antibody production

Relationship to International Groups

As already discussed above, the evaluation team thinks it is important to widen and deepen the international relationships of the Centre, and recruit more international staff and students to work in the participating groups and projects.

Overall View - Productivity, Critical Size and Value-added of the Centre

In spite of the some critical concerns above, the evaluation team is impressed with how much such a small research community with internal cohesion, ambition, and high standards can accomplish in such a short time. The scientific merits are exceptional and the objectives very challenging. The Centre has a good publication profile that positions its research groups at a highly significant international level. The close connection to the outstanding approach of HPR/HPA gives the Centre exceptional and unique possibilities that no other Centre has.

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: AstraZeneca; Atlas Antibodies; BioInvent International AB; Biovator AB; Biovitrum AB; Gambro Lundia AB; GE Healthcare Bio-Sciences AB; Gyros AB; Layerlab AB; Mabtech AB;Olink AB; Phadia AB; Amic AB. There were a number of partners present at the evaluation meeting but many were not represented.

From the report it was not very clear how partners' needs were systematically identified and fed into project selection. At the meeting we learned that the Centre intends to improve this process in Stage 2. This will be a very important part of the development plans for the Centre.

Recommendation:

- 7. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for identification and articulation of partner needs and introducing these findings into the project review process

Partner Participation in Innovation and Technology Translation

From the report it seems that partner participation has been rather patchy in Stage 1. A number of partner companies, even those represented on the Board, are not yet engaged in any projects. Some partners are only involved in single projects. At the evaluation meeting we were pleased to learn of plans to develop more integrative programs of research in the Centre which among other things, would facilitate wider engagement of partners. Progress on this issue will be a key to the Centre's future success. In the biomedical industry sector IPR concerns are particularly salient and although there is apparently an IPR agreement in place there were still concerns about sharing information.

Recommendation:

- 8. That the Board Chair undertake to establish arrangements for IPR that facilitate wide ranging interactions between companies and the Centre

Partner Complement

The Centre has a good complement of large and smaller biomed companies. We learned that two additional international companies are interested in joining the Centre. This will be considered by the Board.

Organization and Management of the Centre

The Board's Role

Large and small companies are well represented on the Board. The Chair has a wealth of high-level, biotech industry research and business experience. However, only a single professor represents the academic side on the Board. The evaluation team is of the opinion that the academic representation needs strengthening. Beyond this, it is noted that as a member of the Board, Professor Uhlén is placed in a position where there may be a conflict of interest as the Board is responsible for assigning funding to projects and he is a project leader; for this reason he should not be on the Board. Professor Uhlén also has a financial interest in Atlas Antibodies which raises similar concerns; apart from the scrutiny recommended below, to avoid any appearance of conflict of interest, Atlas should not have a seat on the Board (as is the case now).

It is apparent that the Board is operational and has been of assistance in starting up the Centre programs. The Board Chair has provided much-needed leadership in contract negotiations. However, the Board members will be called on to be greater advocates on behalf of development of the Centre in the months ahead, as discussed elsewhere.

The Board was represented at the morning evaluation session, apart from Professor Uhlén, by only one Board member and by one substitute member. In the afternoon there were two Board members absent out of seven. The evaluators voiced the opinion that the Board was not very much engaged with the Centre but those members present asserted that Board was indeed very much engaged. The Board plays a critical role in developing industry collaboration, empowering the academic leadership, in project selection and in financial oversight; and as noted above, will be a critical player in the planning to Stage 2 expansion.

Recommendations:

- 9. That a senior representative of KTH, who is arm's length from the Centre, have a seat on the Board
- 10. To avoid any appearance of conflict of interest, it is recommended that Professor Uhlén not have a seat on the Board

Management Team Structure, Processes and Performance

The Management Team of the Centre consists of: Centre Director Amelie Eriksson Karlström (Associate Professor); Vice Director Per-Åke Nygren (Professor); and Program Director Mathias Uhlén (Professor and Director of the Human Protein Atlas). Given the relative seniority of the individuals involved this would appear to be an allocation of duties that would lead to confusion and lack of clarity both internally and externally, in spite of best intentions by all team members. The evaluators were not fully convinced that this team can overcome the inherent imbalances in the team and operate in a clear, vigorous and empowered fashion. Changes or reorganization might be valuable, particularly given the imminent expansion of the Centre in Stage 2 and the several urgent needs, expressed elsewhere, for greater cohesion in vision, planning and execution of research, and for encouraging greater participation by industry partners both in kind and in cash.

Another observation of the evaluation team is that there is insufficient administrative capacity to assist the Management Team and that resources must be devoted to this to facilitate organization and execution of Centre activities.

The renewed Management Team will, in turn, need to undertake to develop further the team of project leaders, particularly with reference to the integrative activities of Stage 2.

Recommendations:

- 11. That the Chair of the Board undertake a review of the roles and responsibilities of the Centre Director, the Vice Director, and the Program Director in order to establish a cohesive, vigorous and empowered core leadership group

- 12. That the Centre employs a full time administrative/financial assistant as soon as possible
- 13. That the renewed leadership group undertake to review the roles and responsibilities to establish a cohesive, vigorous and empowered project leader team particularly with reference to the integrative activities of Stage 2

International Scientific Advisory Board's Role

The membership of the International Scientific Advisory Board (SAB) is appropriate to the Centre's mission. The SAB has only met once, in September 2008, but provided an insightful and constructive summary report. Meeting at least annually is recommended.

Recommendation:

- 14. That the strategic vision and implementation plans for Stage 2 be presented to the SAB before the start of Stage 2

Relationship to the University and University Units

The Centre appears to operate successfully within the academic units of KTH. However, the evaluators were concerned about the Centre operating in close proximity to the very much larger, Human Protein Research Institute (HPR) and its Human Protein Atlas Project (HPA). Although there are admittedly significant advantages for Centre science there are also numerous ways in which such a large project can overshadow the Centre and distract its leaders.

Communication Strategy and Execution

The Centre is to be complimented on its attractive logo and visual identity - well done.

The website is attractive but lacking substance and will not be an aid to attracting first-rate, international prospective students and post-docs.

Use of AlbaNova in the Centre name is not additive, particularly in an international context, and, given how similar it is to ProNova, it is confusing.

Recommendations:

- 15. That the website be modified to be more informative
- 16. That AlbaNova be dropped from the name of the Centre and the Centre be referred to as "ProNova - A VINN Excellence Centre for Protein Technology"

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team appreciated the opportunity to meet with the PhD students from the Centre. The PhD students are a pretty homogenous group, all have Swedish Degrees, most from KTH and all except one were born in Sweden. This is not the typical profile for a leading international science centre. We were pleased to learn that some international candidates (2 out of 5) have been recruited as post-doctoral fellows. The Centre should be more proactive in recruiting internationally and encouraging doctoral

students to spend time at leading international centres to broaden their horizons and ignite their ambitions for their research careers.

Mobility of Personnel between University and Industry

The report describes little mobility of personnel between university and industry. The majority of the nine PhD students that we met expressed an interest in working in industry in the future and hoped to benefit from the opportunities to engage with industry. To date their interactions with industry seem to have been fairly modest. We were pleased to learn at the evaluation meeting from industry partners such as GE and AstraZeneca, of plans to expand interactions and to have staff spend significant time in the Centre in Stage 2. It will be important for the Centre to develop plans to increase mobility, for example by organizing internships for doctoral students in industry, exploring the possibilities for Industry PhD studentships, Adjunct Professorships etc.

Gender Perspective

The Centre scores well from a gender balance perspective. The great majority (8 out of 9) Ph D students are female, most post-doctoral fellows are female (3 out of 5), half the Associate Professors are female, two of the Professors are female (2 out of 5).

Contributions to University Education

The senior staff in the Centre are all active in undergraduate teaching. The Centre has also hosted a number of student projects.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; note that Stage 1 started April 1, 2007 and ends April 30, 2009. As planned for Stage 1, the Centre is well supported by KTH (2 MSEK in cash and 8.5 MSEK in kind for a total institutional contribution of 10.5 MSEK. As planned, 13 partner companies will provide to the Centre total cash support of 0.5 MSEK and in kind support of 11.7 MSEK for a total industry sector support of 12.2 MSEK. Whereas the obligation has been met of the University and the industry partners, both, to match the VINNOVA funding, the cash support of the industry partners is not adequate. We expect that all partners will have significant opportunities to benefit financially from their participation in the Centre and their cash contribution should reflect that potential. Large companies should be expected to pay more than small companies. We suggest that 1 MSEK cash contribution per annum is appropriate for each large multi-national company. It must be recognized that although in kind contributions add to the research effort, cash is essential to hire staff and students dedicated to the mission of the Centre.

It is noted that Centre academic participants have won funding from other sources for research related to the Centre mission totalling 60 million SEK not including 480 MSEK for the HPA. We suggest that 1 MSEK cash contribution per annum is appropriate for large multi-national companies.

The overall expenditures table was not complete; in kind data was not provided. Year 2 data was only provided for the first three months. Given the lack of data, it is not possible to confirm that expenditures are in line with the Centre mission.

As the Program Director of the Centre has a financial interest in Atlas Antibodies, it is prudent to create an oversight mechanism for all financial matters involving Atlas Antibodies and the Centre.

Recommendations:

- 17. That the Chair of the Board work with Centre leadership and other members of the Board to win greater cash contributions from industry; larger companies paying more than smaller ones.
- 18. The target cash contribution levels for large and small companies should be set by the Board
- 19. That the valuation of in kind contributions from Atlas Antibodies (personnel and material) be reviewed by a qualified individual who is arm's length from the company and the Centre, such as a senior member of the KTH administration

Recommendations to the Centre

Our recommendations are:

- 1. That the Management Team and the Board create together a ten-year strategic research vision and a three-year implementation plan, and that they present these documents for comment to the SAB
- 2. That the Centre build on its high international reputation in science by execution of a deliberate strategy for international cooperation comprising steps such as: 1) collaboration with leading international groups; 2) recruiting PhD students and post-doctoral fellows also from outside Sweden; 3) recruiting faculty members (visiting and permanent) also from outside KTH and Sweden; and 4) sending PhD students to key international centres to learn the missing technical approaches and methods
- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the responsibilities of principal researchers and project leaders
- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to review and formalize the criteria and mechanisms for selection and review, as well as for possible termination, of projects. This would be important in particular, to evaluate the present projects and to insure that critical size is achieved, and that expansion into new project areas is properly considered
- 5. That the Centre employs a wider range of biochemical and biophysical techniques for quantitative characterization of antibodies, particularly interaction analyses
- 6. That the Centre plan for acquisition of expertise in recombinant antibody production
- 7. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for identification and articulation of partner needs and introducing these findings into the project review process

- 8. That the Board Chair undertake to establish arrangements for IPR that facilitate wide ranging interactions between companies and the Centre
- 9. That a senior representative of KTH, who is arm's length from the Centre, have a seat on the Board
- 10. To avoid any appearance of conflict of interest, it is recommended that Professor Uhlén not have a seat on the Board
- 11. That the Chair of the Board undertake a review of the roles and responsibilities of the Centre Director, the Vice Director, and the Program Director in order to establish a cohesive, vigorous and empowered core leadership group
- 12. That the Centre employs a full time administrative/financial assistant as soon as possible
- 13. That the renewed leadership group undertake to review the roles and responsibilities to establish a cohesive, vigorous and empowered project leader team particularly with reference to the integrative activities of Stage 2
- 14. That the strategic vision and implementation plans for Stage 2 be presented to the SAB before the start of Stage 2
- 15. That the website be modified to be more informative
- 16. That AlbaNova be dropped from the name of the Centre and the Centre be referred to as "ProNova - A VINN Excellence Centre for Protein Technology"
- 17. That the Chair of the Board work with Centre leadership and other members of the Board to win greater cash contributions from industry; larger companies paying more than smaller ones.
- 18. The target cash contribution levels for large and small companies should be set by the Board
- 19. That the valuation of in kind contributions from Atlas Antibodies (personnel and material) be reviewed by a qualified individual who is arm's length from the company and the Centre, such as a senior member of the KTH administration

Recommendations for VINNOVA

Our recommendation is:

In conclusion

- The evaluation team is of the opinion that the ProNova Centre is progressing towards becoming a successful VINN Excellence Centre and is without doubt worthy of continued support.

Stockholm November 17, 2008

Professor Douglas Reeve | Professor Anne Anderson

Professor Kristiina Takkinen | Professor Markku Kulomaa

Evaluation of the BIOMATCELL Centre at Göteborg University

Introduction

On Tuesday November 18, in the morning, the BIOMATCELL Excellence Centre Director, Peter Thomsen, the Centre project managers and staff, and representatives of the industrial partners, briefed the scientific experts of the evaluation team, Elizabeth Tanner and Josep Planell, on the range of projects and scientific progress. The meeting in the afternoon was attended by the generalist evaluators, Doug Reeve and Anne Anderson, Centre project managers, and staff, representatives of the administration of the University of Gothenburg (GU), and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

It is good to see the development of this Centre which is active in areas of biomedicine that are expected to increase in volume with the aging population. Both the musculo-skeletal and the cardiovascular systems are essential for improved well-being and quality of life and are under increased pressure as people age, particularly as worldwide we all expect a longer and more active old age. While the titles of the individual research programs do not look particularly novel, the work that is being performed and the research subjects most certainly are novel. It is good to see the development from metal alloy synthesis, through materials manufacturing techniques to produce scaffold materials, leading into surface modification and finally to the interaction of cells with these materials. It is good to see that there are ideas for a new future research program. However, it would be beneficial have these proposed developments firmly articulated and developed into a implementation plan for the later stages of the Centre.

Recommendation:

- 1. That the Management Team and the Board review and articulate the long-term integrative strategic vision and a three-year implementation plan and present these documents for comment to the SAB prior to the start of Stage 2

Leading International Collaborative, University-Industry Research

The research in this Centre is definitely industry led. There is a balance between the activity related to the research interests of the large companies and those of the SMEs involved in this Centre. The ideas and quality of the science presented at the review meeting is excellent, albeit that the information available in the progress report appeared to be more limited. The individual research projects are lead both by members of the universities and of the companies involved in the Centre. It is good to see that although only two of the major project areas have started the ideas are active for the third project.

The development of the sub-projects can be seen by the combination of two such sub-projects when there was a scientific rationale for such activity. It was disappointing that for personal reasons there was no one from Uppsala University at the meeting to present their recent work and to discusstheir activity, particularly with the recent recruitment of a post doctoral researcher and impending recruitment of a PhD student. The proposed interaction with CHASE to develop non-invasive monitoring of implants looks as if it will lead to substantial novel developments. However, it should be noted that virtually all the activity presented was from the University of Gothenburg with limited information available to the review panel from either Chalmers University of Technology or Uppsala University.

Centre Core Competency - People and Facilities

The Centre is led by world ranking scientists, both from the biological and engineering view points. The skills are present within the Centre to take materials from development to their clinical applications. The recent recruitment of Professor Penti Tengvall from Linköping University adds his skills and expertise which complement those of the other senior members of the research team. The equipment available and listed in the report is extensive and we note that equipment deficiencies that Centrehave been identified by the management of the Centre are currently the subject of a research grant application for submission to the Wallenberg Foundation. It is a good model that the initial work on laser micro-dissection is being performed on equipment available elsewhere; now that this has been shown to be a useful tool one will be purchased. However, there seems to be some concern over space for both PhD students and post doctoral researchers at the University of Gothenburg and we would encourage strongly the university to resolve this problem by the start of Stage 2.

Recommendation:

- 2. That the University and the Centre resolve the issues concerning allocation of appropriate space to the Centre as a matter of urgency to accommodate the developments of Stage 2

Research Program

Scientific Leadership - Project Generation, Development and Selection

The scientific leadership stems from experienced and internationally recognized scientists in the field of biomaterials. The solid knowledge of the scientific issues and the industrial needs within the field of biomaterials science and technology that the Directors and Project Managers provide is an important and relevant asset for the success of projects developed within the framework of the Centre.

The idea generation and further development into projects and their selection do not seem to be well defined and established yet. The process should be better systematized in order to make it clearer and more transparent. In fact the selection process requires a clearer view about the role played by the International Scientific Advisory Board, the Centre Directors and eventually the Board of Directors. Probably some involvement of

the Directors in the planning of the projects would be also welcome, given that they are going to be decisive in the appraisal of the progress of the project.

Recommendation:

- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for selection and review of projects and that the first round of this process be completed before the meeting of the SAB

Research Project Critiques - Science, Methodology and Technological Outcomes

The scientific grounds on which the project or research program of the Centre is based, are sound and show that the research groups involved are currently conducting research at the highest international level. The two projects presented are focussed a) into a "bionic" approach where the modification of the implant surface is meant to improve integration and regeneration of the surrounding tissue, and b) into a regenerative approach by means of the combination of biomaterials and cell therapy. The methodologies proposed are appropriate, including the most modern processing and characterization techniques, including the nanotechnologies. A wide variety of modern equipment is available at the different institutions that participate in the Centre, and this assures the possibility to obtain high quality results. Under these circumstances the expected technological outcomes should have great potential for the development of new implants and devices based on new bioactive, modified and controlled surfaces.

Relationship to International Groups

The Centre seems to have already established international relationships and collaborations within the fields where there were previous collaborations. This issue is not crucial at the moment. However, in the future, fruitful collaboration with these and other international groups should be extended, looking particularly for complementary competences.

Overall View - Productivity, Critical Size and Value-added of the Centre

After such a short period of time, the productivity of the Centre is understandably low in terms of publications. However, over a longer period of time, it is expected to increase substantially. In fact the critical size for successful research has already been reached, and projects can be undertaken with the existing human resources. Finally, the development of implants and devices represent products with a very high added value. This is an important asset of the Centre.

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: Arcam AB; Bactiguard AB; Cellartis AB; GU Holding AB; Integrum AB; Sandvik AB; Region Vastra Götaland (VGR); SP Technical Research Institute of Sweden (SP); St. Jude Medical AB; TATAA Biocenter AB. The partner companies represent a range of large and smaller organisations with different interests

and expertise in the biomedical domain. From the report it seems that project generation in Stage 1 was largely driven by the academic researchers. Of the commercial partners, the two large companies, Sandvik Tooling and St Jude Medical were present at the afternoon evaluation meeting. , Arcam AB was present in the morning and Region Vastra Götaland was represented all day. They expressed enthusiastic support for the Centre and its activities, and explained that in Stage 1 of the Centre they were on a learning curve and would not have been able to articulate their research needs as research questions. For this Centre, in addition to the industry perspective, clinical needs are also very important. Clinicians present at the evaluation meeting, also expressed strong support for the Centre and welcomed their opportunity to be involved. As Stage 2 approaches, it will be important to build on these positive collaborations as the Centre develops its future research portfolio.

Recommendation:

- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to systematize a set of criteria and mechanisms for identification and articulation of partner needs and introduction of these findings into the project review process.

Partner Participation in Innovation and Technology Translation

Two of the sub-projects are led by industry personnel. Several of the industry partners are small companies with limited abilities to participate but they are contributing expertise and materials to projects. At the evaluation meetings we learned that there was wider engagement of partner companies in projects than was apparent from the report. In addition to the role of companies in the exploitation of successful research outcomes, the Centre has established a Business Development Group to respond to potential commercial outcomes of projects and to facilitate the exploitation process. An IPR agreement has been signed by the Centre partners. It was useful to have the input of the legal advisors during the afternoon session.

Partner Complement

The Centre has a range of commercial and public sector partners. The evaluation team was pleased to learn that discussions are underway with three potential additional commercial partners who would add to the research environment and to the Centre’s finances.

Organization and Management of the Centre

The Board's Role

The Board has good representation of partners: industry, the university, the regional government (VGR) and the partner research institute (SP). The Board was very well represented at both the morning and the afternoon evaluation sessions and is evidently very much engaged with the Centre. It is apparent that the Board is functioning well and has been of great assistance in establishing the Centre structures and programs and in developing industry collaboration. The Board plays an important role in project

selection and oversight; and as noted above, this will be critical in the planning of the Stage 2 expansion. The Board has provided much-needed leadership in contract negotiations.

It is noted that the original Board Chair, Agneta Edberg, left Bactiguard to become CEO of LinkMed and so resigned as Chair, but was asked to remain on the Board so that she might share her considerable expertise and experience. Ian Milsom, of GU, was asked to serve as Interim Chair until the end of Stage 1.

Management Team Structure, Processes and Performance

There are two directors of the Centre, Peter Thomsen, and Deputy-Director, Jukka Lausmaa. It was evident that they work very well together; their effort, commitment, and talent were much appreciated by the Board during the meeting. It is also clear that they are very effective in providing leadership in the scientific work of the Centre.

In spite of reservations of the evaluators upon reading the report and before the evaluation meeting, (the report stated that the Management Team had never formally met) it was apparent that there is a functional organization in this complex, multi-disciplinary, multi-site, academic, industrial, clinical, research enterprise. It does not come across in the report but it was evident during the discussion that it works and works well. Nonetheless, there is need for a reflection on the organization and operation of the Centre, particularly in the light of the Board member comment that the Board had been meeting once a month and had done a lot of managerial work during the start up phase. This is important to ensure successful expansion in Stage 2.

It is noted (and applauded) that the Centre has hired an assistant to take care of finances and administration starting December 1.

Recommendation:

- 5. That the Management Team structure and processes be reviewed in order to clarify the responsibilities of the Team in the context of the Board and the Directors' responsibilities

International Scientific Advisory Board's Role

The SAB has two eminently qualified members and has met once, in March 2008.

Recommendation:

- 6. That a third person be invited to join the SAB and that the SAB meet to review plans of the Centre before the start of Stage 2.

Relationship to the University and University Units

The Centre appears to be well supported by the University and to function well as a unit within the University. Space is an issue but resolution is apparently close at hand.

Communication Strategy and Execution

The visual identity (branding) and website are not up to the standards of a world-class centre. The Director recognizes this and is committed to making this a priority after the administrative assistant begins work for the Centre.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team was pleased to have the opportunity to meet with five of the seven PhD students associated with the Centre. Two of the students were from outside Sweden (Italy and Libya). One post-doc from China, and one from Finland, have also joined the Centre. In Stage 2 it will be important to maintain efforts to recruit internationally.

Mobility of Personnel between University and Industry

The PhD students all indicated that they saw benefits in being in the Centre and having the opportunity to interact with industry partners. Most expressed an interest in working in industry in the future. These are positive indications in terms of university personnel moving to industry, which the activities of the BIOSUM Graduate School will also support. Nevertheless the Centre should develop plans to foster greater mobility into the Centre by its industry partners. There are a range of possible mechanisms which could be explored including Adjunct Industry Professorships, Industry Ph.D.s, as well as part-time secondments to the Centre.

Recommendation:

- 7. That the Centre undertake to stimulate mobility in both directions between university and industry

Gender Perspective

The Centre scores quite well from a gender perspective, 50%of PhD students and post docs are female, 43% of the Board is female, 20% of the Management Team is female.

Contributions to University Education

The participation of the Centre in the BIOSUM Graduate School will be a very significant contribution to University education. The evaluation team was pleased to learn of an innovative range of courses that this School will deliver. The involvement of Pentti Tengvall in the Centre and the Graduate School will be a great bonus for university education.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; we note that Stage 1 started April 1, 2007 and ends March 31, 2009. As planned for Stage 1, the Centre is well supported by GU (2.8 MSEK in cash and 4.2 MSEK in kind) for a total institutional contribution of 7 MSEK. The Region Västra Götaland, responsible for regional health care and development, provides 1.1 MSEK in cash and 1.6 MSEK in kind. As planned for Stage

1, three companies will provide cash support (a total of 3.6 MSEK) and together with the other five companies in kind support of 8.6 MSEK for a total industry sector support of 12.2 MSEK. It is noted that Sandvik provides a significant fraction of industry cash and in kind (a total of 5 M SEK). Total Centre support for Stage 1 is 28.9 M SEK.

It is noted that Centre academic participants have won funding from other sources for research related to the Centre mission totalling over 80 million SEK.

The Centre plans to increase cash support from companies to 4 M SEK per annum in Stage 2 and has a plan underway to do so. It recognizes the vulnerability it has to Sandvik being such a dominant contributor and aims to lessen this in Stage 2.

Recommendations to the Centre

Our recommendations are:

- 1. That the Management Team and the Board review and articulate the long-term integrative strategic vision and a three-year implementation plan and present these documents for comment to the SAB prior to the start of Stage 2
- 2. That the University and the Centre resolve the issues concerning allocation of appropriate space to the Centre as a matter of urgency to accommodate the developments of Stage 2
- 3. That the Centre Director, in consultation with the Board Chair and Management Team undertake to establish a set of criteria and mechanisms for selection and review of projects and that the first round of this process be completed before the meeting of the SAB
- 4. That the Centre Director, in consultation with the Board Chair and Management Team undertake to systematize a set of criteria and mechanisms for identification and articulation of partner needs and introduction of these findings into the project review process.
- 5. That the Management Team structure and processes be reviewed in order to clarify the responsibilities of the Team in the context of the Board and the Directors' responsibilities
- 6. That a third person be invited to join the SAB and that the SAB meet to review plans of the Centre before the start of Stage 2.
- 7. That the Centre undertake to stimulate mobility in both directions between university and industry

Recommendations to VINNOVA

Our recommendations are:

- That during the period of evaluation evaluators be permitted access to password-protected parts of Centre web sites where project plans and reports should be available.

In conclusion

- The evaluation team is of the opinion that the Centre is progressing strongly towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Gothenburg November 18, 2008

Professor Douglas Reeve

Professor Anne H Anderson

Professor Elizabeth Tanner

Professor Josep Planell

Evaluation of the WINGQUIST Centre at Chalmers

Introduction

On November 19, in the morning, the Centre Director, Rikard Soderberg, and colleagues of the Wingquist Laboratory VINN Excellence Centre, briefed the scientific experts of the evaluation team, Jack Hu and Alison McKay, on the Centre goals, research areas and projects, and scientific progress to date. The meeting in the afternoon was attended also by the generalist evaluators, Doug Reeve and Anne Anderson. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. There were organizational issues that warranted further development and necessitated supplementary reporting. As a result a further evaluation meeting took place on Friday, March 6, 2009. We thank all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The evaluators were confident that the revised vision is sound and the strategy provides a clear path from the research to efficient realisation of new products, processes and services. We encourage the Centre to use the vision as a guiding document in directing the operations of the Centre.

Leading International Collaborative, University-Industry Research

It was encouraging to see that a number of research centres from around the world had been identified as possible benchmarks. In the report, however, the rationale behind the identification of institutions was unclear, as was a plan for how the leadership and management team intend to use the results of benchmarking to develop into such a centre. The evaluators felt that it would be beneficial for the director/assistant director to visit at least some of the centres identified. After the evaluation meeting the scientific evaluators identified a number of centres that they considered to be good subjects for the benchmarking and these centres are listed below for consideration. Some of the names were already identified by the Centre and we re-affirm their selection.

- The Warwick Manufacturing Group in the UK.
- Centre for Innovation in Product Development (CIPD) at MIT
- Kimura Laboratory at the University of Tokyo.
- Institute for Product Development at the Technical University of Denmark.
- The Engineering Research Centre for Reconfigurable Manufacturing Systems (ERC/RMS), and the Design Science program, both at University of Michigan (UM)

Recommendation

- 1. That the Centre undertakes an effort to identify world-leading competitor institutions and groups around the world, benchmark themselves against those

groups and use this comparison to develop their own strategy for evolution to a world leading centre

Centre Core Competency - People and Facilities

The evaluators are confident that the Centre has access to the core competencies it requires in technical aspects of virtual product realisation processes. However, they remain concerned that challenges resulting from social science issues, such as human and organisational behaviour that are typically studied by organisational psychologists, are being underestimated. If this continues then there is a risk that adoption of the research results by industry will be limited.

Recommendation:

- 2. That the Centre undertakes to bolster its capability in organizational psychology by partnership with existing thought leaders or centres of excellence and/or by recruitment of personnel

Research Program

Scientific Leadership - Project Generation, Development and Selection

A number of mechanisms by which projects are generated were highlighted during the evaluation meeting. These included needs and opportunities being identified by academic and industrial partners (sometimes in formalised needs identification processes) and co-creation of new ideas that build on learning from collaborative research activity.

Research Project Critiques - Science, Methodology and Technological Outcomes

The evaluators were confident that individual projects are likely to deliver strong outcomes that contribute to the goals of the Centre. Serious thought should be given in Phase 2 to the demonstration of integration across projects; for example a test bed could be established to demonstrate integration across projects.

Relationship to International Groups

The International Scientific Advisory Board (ISAB) were present at the review and supportive of the Centre. Coupled with the benchmarking, the ISAB suggestions to focus more on publications in leading journals and for international exchanges of students and staff will allow the Centre to build stronger links with a wider range of international groups.

Overall View - Productivity, Critical Size and Value-added of the Centre

The evaluators were satisfied with the centre size and productivity as measured by the number of PhD students (including industrial PhDs), faculty, publication and industrial participation.

Centre Partners

Partners' Needs Identification and Articulation

At the evaluation meeting the partners expressed very strong support for the Centre. The academics have long standing relationships with the partners and an in-depth knowledge of the automotive industry. From this understanding the academics are able to propose long-term scientifically challenging projects with potential application to many companies. These suggestions are then refined in discussion with partners, and then company specific test cases are identified as part of the project planning process.

At the evaluation meeting we learned that in addition to this method of identifying partners' needs, the car companies in Sweden have their own very systematic process of identifying shared research needs in key areas, each of which has an academic liaison leader. The Centre Director, Professor Soderberg, holds one of these positions and is thus extremely well positioned to respond to additional industry research needs on behalf of the Centre.

In summary, research in the centre is driven by the common needs of centre partners to develop products and production systems faster, which led to the vision of a fully virtual product realization process where product and production systems are developed and verified together, without physical prototypes or testing.

Partner Participation in Innovation and Technology Translation

There are many meetings between the Centre researchers and the partner companies. There are also long traditions of interactions between the research leaders and the Centre partners. In addition, the evaluation report outlines a very interesting approach to technology translation with three distinct spheres of activity from the industrially relevant research idea, which is then worked up in the Centre as a demonstrator that is tested by the relevant partners. These two stages are the remit of the Centre but the next stage (Product and Use) involves the partner companies developing the demonstrator and implementing this as a commercial tool, although this work may be conducted by the industrial PhD students.

The commitment shown by the industrial partners was impressive, in particular, the industry PhDs are a powerful mechanism for both identifying needs and facilitating the translation of research results into practice.

Partner Complement

The following organizations are partners in the Centre: Fraunhofer-Chalmers Research Centre for Industrial Mathematics (FCC); Volvo Car Corporation; Volvo Trucks; Volvo Aero; Saab Automobile; ABB Corporate Research; Kongsberg Automotive; RD&T Technology. The partners were very well represented at the evaluation meeting and enthusiastic about the value of the Centre. They constitute a very good group of partners with the great majority of relevant, major manufacturing companies in Sweden being engaged with the Centre.

Organization and Management of the Centre

The Board's Role

The Board was very well represented at the evaluation meetings and is very much engaged with the Centre program. All industry partners except RD&T have representatives on the Board. The evaluation team expressed its concern that with all companies present on the Board, rather than a selected representative subset, there is a tendency for the members of the Board each to act predominantly on behalf of their own company rather than on behalf of the Centre. For instance this Board has not acted and does not appear to be prepared to act on behalf of the Centre to increase industry cash support to the Centre.

The Board is clearly effective in mobilizing the participation of the companies, in particular there appears to be good scientific/engineering exchange between researchers at the University and personnel at the companies. It is particularly noteworthy that even in these perilous financial times, the Board's support for the Centre through their companies' support promises to be firm in Stage 2.

Management Team Structure, Processes and Performance

The evaluation report outlined the management team structures and processes and how these will evolve in Stage 2. We were pleased to learn of the efforts that had been made to strengthen the management processes, notably by engaging three senior academics in the Management Group to work intensively with the Director to develop the Centre’s vision and the strategy to achieve its goals. The evaluation team was pleased to learn of further planned developments to strengthen management procedures as the Centre moves to Stage 2; these include the appointment of an assistant Director, appointment of new, younger project leaders to free up the senior leaders, hiring of a communication consultant and the provision greater administrative support. The evaluation team believes that one or more senior research members of the management team should be named Deputy Director, perhaps on one-year rotation. That being said as far as we could tell from the financial data the two administrative assistants provided only an estimated15-20% of full time in year 1 and year 2 to the Centre whereas 50 to 100% is the level found appropriate in other Centres and that the evaluation team thinks appropriate. Further, the Assistant Director's time in support of management is not yet fixed and was said to be in the range 20 to 40%; we think it should be at least 50%.

There is more to do and so recommendations to support enactment of the above plans follow.

Recommendations:

- 3. That the Centre Director and Management Team formalize and articulate roles, duties and responsibilities of the Centre leadership including the Director, Assistant Director, other members of the Management Team and any administrative/financial assistants.
- 4. That one of the senior members of the Management Team be appointed as the Deputy Director of the Centre

- 5. That the Centre employs administrative/financial assistant(s) that is between 0.5 and 1 full time equivalent person.
- 6. That the Assistant Director devotes approximately 50% of full time to assisting with management of the Centre

International Scientific Advisory Board's Role

The evaluation team was delighted to have all the ISAB members participate in the meeting. We learned that a very productive meeting with the Centre and the ISAB members had taken place the day before. At the meeting the ISAB members offered strong support for the Centre's vision, goals and expertise. They also offered advice on, among other things, future publication strategies. The notion of exchanging PhD students for visits with the Centre seemed a very positive development. The use of the ISAB to critique plans for Stage 2 is very welcome, and future positive interactions via an annual face-to-face meeting perhaps supplemented with six monthly conference calls, will be of great benefit to the Centre.

Relationship to the University and University Units

The Centre appears to function well in the University context.

Communication Strategy and Execution

The Director explained to the evaluation team how the Centre was developing its communication plan and visual identity. Professional expertise has been recruited to assist in this process, although the Director and the research leaders are also involved. The Centre has resolved a distinction between the VINNOVA Centre with its focus on Virtual Product Realization, and the larger and longer established Wingquist Laboratory. This approach is both appropriate and beneficial to the Centre as it benefits from the reputation that the Wingquist Laboratory has developed over several years.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

In Stage 1 the Centre supported eight PhD students. In addition the companies supported five industrial PhD students. The majority of the PhD students were recruited from Chalmers with only two having first degrees from other Swedish universities, and only one with a first degree from outside Sweden. As the Centre moves to Stage 2, a program of international recruitment is required, not just from international students who are already studying in Chalmers. A world-leading Centre is typified by a diverse and international community of staff and students with experience of other laboratories. We were pleased to learn of plans to facilitate exchanges of PhD students with other international labs.

Recommendations:

- 7. That the Centre be more systematic in its efforts to recruit top-level students and junior researchers nationally and internationally.
- 8. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with international universities, laboratories and companies in particular encouraging bi-directional exchanges.

Mobility of Personnel between University and Industry

The Centre encourages mobility between the Centre and the partner organisations. The Centre already has five industrial PhD students and in Stage 2 the plan is to have an industry PhD student from each of the partner companies. This is an impressive indicator of genuine mobility between the university and industry. Two of the Centre PhD students already have strong connections with partner companies, one from prior employment another from a current part-time position. All PhD students are encouraged to spend time at the companies and to consider future employment with the partners on completing their PhDs.

Gender Perspective

At present the Centre does not score well from a gender perspective. The Director and the Management team are male and the main Board members are all male. Only one of the PhD students based in the Centre was female, although two women from the companies were enrolled as Industry PhDs. The Centre is becoming aware of the challenges it faces in this area and has plans to try to increase female participation in the Board, and to increase women's roles in the Centre for example via the new project leaders roles where 40% of these roles will be taken by women. The evaluation team are encouraged by these plans and the way the Centre has begun to consider gender perspectives on the research work of the Centre. Action will be needed and an active PhD recruitment campaign may assist in improving the gender balance among researchers. It is also important to avoid sexist language in Centre documentation such as referring to staffing as manning.

Contributions to University Education

The evaluation team assumes that the academics in the Centre contribute to university education through their home departments, as no Centre specific activities are highlighted in the report.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; we note that Stage 1 started April 1, 2007 and ends March 31, 2009. It is also noted that the financial data provided was only for the first 18 months of the Centre with no projections for budgeting purposes for the full 24 months of Stage 1. It is planned for Stage 1, that the Centre is will receive support from the University totalling 7 MSEK but only 1.5 MSEK in cash. There was discussion about the balance cash and in kind support from the University and the evaluation team expressed the view that greater cash input from the University would be appropriate.

Five of the large industry partners provided only 0.1 MSEK cash per annum each for a total of 1 MSEK in cash. However, the companies, together with FCC, RD&T and Kongsberg, provided in kind support of 7.9 MSEK in 18 months and are projected to provide (assuming the same level of support in the final six months of Stage 1) more than 11 MSEK in kind in Stage 1. While the evaluation team recognizes that the companies provide five industrial PhDs to the project which is a substantial contribution of in kind, we also believe that the companies ought to provide greater input of cash to strengthen the Centre and its programs.

Total Centre support from these sources for Stage 1 is estimated to be more than 26 MSEK.

It is noted that Centre academic participants have won funding from other sources (16 grants) for research related to the Centre mission totalling approximately 79 MSEK.

Recommendation:

- 9. That, for Stage Two, industry partners make every effort to provide significantly greater cash contributions with large companies contributing a greater share than small ones.
- 10. That the University review its cash and in kind support to the Centre with a view to increasing the cash contribution

Recommendations to the Centre

In summary, our recommendations are:

- 1. That the Centre undertakes an effort to identify world-leading competitor institutions and groups around the world, benchmark themselves against those groups and use this comparison to develop their own strategy for evolution to a world leading centre
- 2. That the Centre undertakes to bolster its capability in organizational psychology by partnership with existing thought leaders or centres of excellence and/or by recruitment of personnel
- 3. That the Centre Director and Management Team formalize and articulate roles, duties and responsibilities of the Centre leadership including the Director, Assistant Director, other members of the Management Team and any administrative/financial assistants.
- 4. That one of the senior members of the Management Team be appointed as the Deputy Director of the Centre
- 5. That the Centre employs administrative/financial assistant(s) that is between 0.5 and 1 full time equivalent person.
- 6. That the Assistant Director devotes approximately 50% of full time to assisting with management of the Centre
- 7. That the Centre be more systematic in its efforts to recruit top-level students and junior researchers nationally and internationally.

- 8. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with international universities, laboratories and companies in particular encouraging bi-directional exchanges.
- 9. That, for Stage Two, industry partners make every effort to provide significantly greater cash contributions with large companies contributing a greater share than small ones.
- 10. That the University review its cash and in kind support to the Centre with a view to increasing the cash contribution

Recommendations for VINNOVA

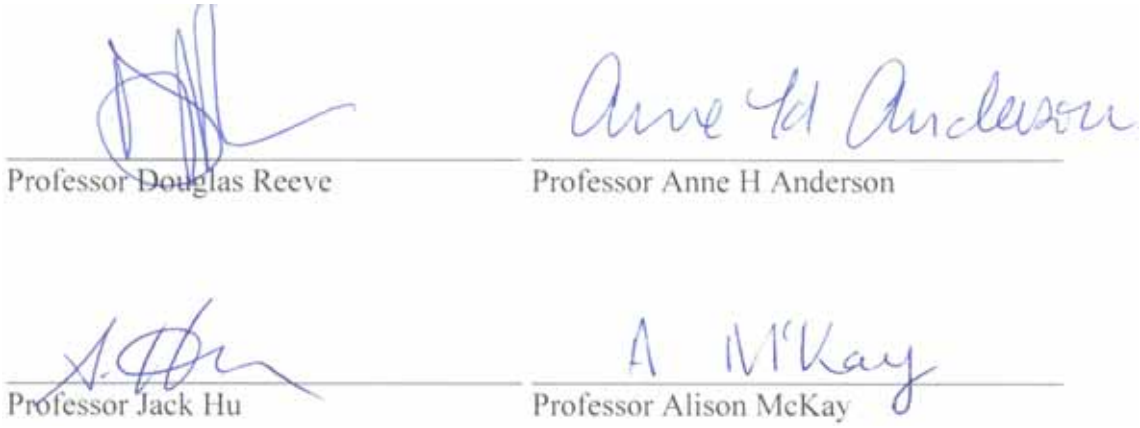
Our recommendations are:

- That VINNOVA review the financial reporting guidelines and format with a view to simplifying and clarifying financial reports and providing guidelines for reporting highlights and key data.

In conclusion

- The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Gothenburg March 6, 2009



Professor Douglas Reeve | Professor Anne H Anderson

Professor Jack Hu | Professor Alison McKay

Evaluation of the SUMO Centre at Chalmers

Introduction

On Thursday November 20, in the morning, the SuMo Biomaterials Excellence Centre Director, Anne-Marie Hermansson, the Centre project leaders and staff, and representatives of the industrial partners, briefed the scientific experts of the evaluation team, Joseph Seymour and Helmuth Moehwald, on the range of projects and scientific progress. The meeting in the afternoon was attended by the generalist evaluators, Doug Reeve and Anne Anderson, Centre project leaders, and staff, representatives of university administration, and representatives of the industrial partners. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, gender policy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The Centre focus is on controlling transport in heterogeneous soft materials that are relevant to an array of health care, consumer and food products. The research is motivated by a long term industrial vision for materials which will enable new applications but require intensive basic research for realization. The potential for new products is significant based on the projects related to wound care and drug delivery as well as personal products such as diapers. The research is driven by industry needs and as such is responsive to current economic forces that are driving those requirements. Despite the strong focus on industry-driven vision the Centre successfully maintains a delicate balance between basic and applied research.

Leading International Collaborative, University-Industry Research

The complex heterogeneous nature of the polymeric materials of interest to this research requires analysis of both structure and dynamics over a hierarchy of length and time scales. The Centre has managed to develop a combination of techniques and projects which make it unique based on the fact that much research on systems of this type is spread across disciplines and application areas. A difficulty in studying these systems is in identification of model systems; hence the ability to do so would solidify SuMo as a world leader in this area. The Centre has established a strong array of experimental methods to study the multi-scale dynamics and structure which position them to generate new data and they are encouraged to complement these with other methods such as FTIR, calorimetry and dynamic light scattering.

Centre Core Competency - People and Facilities

SuMo has assembled an impressive collection of researchers with state of the art expertise in materials characterization. The experimental facilities are established and the research is focused not only on generating data but also on advanced interpretation

and analysis including new mathematical data modelling methodology. The researchers appear to enjoy the collaborative potential of integrating these different methods, creating the strong synergy required for success. The only limitation identified was in the long term goal of developing multi-scale mathematical mass transport models for the heterogeneous systems of interest. The Centre has identified groups that can assist in this aspect of the research and they are encouraged to develop those collaborations.

Recommendation:

- 1. The Centre needs to extend its expertise in mass transport modelling

Research Program

Scientific Leadership - Project Generation, Development and Selection

The selection and definition of specific projects reflects the focused leadership of the Centre, both academic and industrial. The projects are well defined individually and integrated within the broader goals of the Centre. They reflect the need to link the basic and applied aspects of the research, both in content and in different research group's expertise. Probably because of the detailed formulation of the projects they are at a less advanced stage but offer excellent potential for advancement. The competence of the Centre Leader is evidenced by the well-thought-out research program.

Research Project Critiques - Science, Methodology and Technological Outcomes

The research to date demonstrates the quality and motivation of the young scientists in the Centre. They demonstrate a desire to cross boundaries between disciplines as well as basic and applied science. The projects provide the researchers with promising new professional perspectives. The scientific approach, which applies multiple experimental methods, would benefit from development of well characterized model physical gel systems for analysis across modalities. A technological advance along these lines would have broad impact on research into heterogeneous soft matter.

Recommendation:

- 2. The Centre should undertake to create a set of model systems for integrative analysis across projects

Relationship to International Groups

The Centre has identified several international groups for collaboration and understands that these interactions need to be intensified. In collaboration with BIOSUM they are working toward expanding international exchanges for students and young researchers.

Overall View - Productivity, Critical Size and Value-added of the Centre

At this early stage the Centre has fulfilled the expectations of the reviewers. They have achieved the critical size to establish communication and collaboration across research groups. The Centre is already adding value to existing research at Chalmers and the Swedish Institute for Food and Biotechnology (SIK) through interdisciplinary integration.

Centre Partners

Partners' Needs Identification and Articulation

The Centre partners are: AstraZeneca; Bohus Biotech; Molnlycke; Lantmannes; SCA Personal Care; Sodra Cell; Unilever. The partners were very well represented at the evaluation meetings. It was very evident from the report and the presentations that the needs of the industry partners had been thoughtfully identified, right from the start, in terms of project relevance to the long-term vision of the partners. The Centre Director and the Board Chair are to be commended on the considerable effort that they have made in this process. Research plans for Stage 2, which were outlined at the evaluation meetings, seem similarly rigorous in terms of ensuring continued industry relevance and innovation potential.

Partner Participation in Innovation and Technology Translation

At the evaluation meetings it was clear that the partners place considerable value on their participation in the Centre. The partner companies are active in the Centre in a variety of ways. We learned that as the partners came from different sectors and did not previously know one another, significant amounts of time and energy had been expended on meetings and activities, with the academics, to understand shared problems. Companies had organized and hosted workshops at their own premises. An innovative and commendable feature is the project on Innovation and New Business Models, where social science researchers are involved to study the way the open innovation process happens in the Centre.

Partner Complement

The Centre partners are an impressively diverse group of companies, from many different sectors including pharmaceuticals, personal care and food. The partners are mainly large international companies who are active supporters of the Centre. The evaluation team was pleased to learn that an additional international company has applied to join the Centre. There is only one smaller company involved in the Centre to date. The Board might consider in Stage 2 whether additional companies would add value to the Centre.

Organization and Management of the Centre

The Board's Role

The Board has good representation of industry partners; four of six Board members are from industry representing seven industry partners. Chalmers senior administration is well represented on the Board. The Board was very well represented at both the morning and the afternoon evaluation sessions and is evidently very much engaged with the Centre. It is apparent that the Board is functioning well and has been of great assistance in starting up the Centre programs and in developing industry collaboration. The Board plays an important role in research vision, project selection and oversight. The Board Chair is from industry and has provided outstanding leadership in winning company support and establishing Centre-company contracts.

Management Team Structure, Processes and Performance

The Centre is very ably and energetically led by the Director, who has been extremely diligent in her efforts to get the Centre organisation and programs up and running. She is also one of the Scientific Coordinators. The other Scientific Coordinator and the Project Managers provide effective guidance and management of Centre science. However, it is apparent that the Centre Director carries rather too much of the management burden. The employment of an administrator is seen as essential to successful execution of Centre programs particularly in the future with the expansion in Stage 2. In addition it is suggested that the Management Team structure and processes should be reviewed, and a Vice Director named, with a view to sharing management burden and ensuring robustness of the Management Team.

Recommendations:

- 3. That the Centre employ a full-time administrative assistant as soon as possible
- 4. That a Vice Director be appointed
- 5. That the Management Team meet regularly to discuss matters of organization, administration and execution of Centre programs with a view to sharing responsibility with the Centre Director

International Scientific Advisory Board's Role

It is evident that the Centre has used its Scientific Advisory Board well in the course of creating a cohesive scientific vision and in developing projects. We understand that they will continue to do so leading up to and into Stage 2.

Relationship to the University and University Units

The Centre appears to operate well within the University and has effective, operational links with the University of Gothenburg and the Swedish Institute for Food and Biotechnology.

Communication Strategy and Execution

The Centre team is to be congratulated on its evaluation report; it is thorough, concise, well detailed, and well executed.

The Centre needs to undertake to develop a visual identity and a communication strategy that will support its vision and mission, particularly in an international context. Development of the website is another important part of communications strategy.

Recommendations:

- 6. That the Centre seek out professional advice on visual identity and communication strategy
- 7. That the website undergo renovation and renewal.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team was pleased to have the opportunity to meet five of the PhD students in the Centre. The students were a lively and enthusiastic group who valued the opportunity, that the Centre offers, to engage with industry. The students were a rather homogenous group, and this is reflected in the PhD and post doc cohort as a whole, all but one are Swedish and all but one had taken their masters degree at Chalmers, one at KTH.

In Stage 2 it would be advisable to use the resources available from the Centre, the BIOSUM Graduate School, and the Global Links project, to recruit more broadly.

As the international reputation and research collaborations of the Centre grow, international recruitment will become easier and will come to reflect the characteristics of a leading international centre.

Recommendation:

- 8. That the Centre develop a program for recruitment of top international student candidates and post docs

Mobility of Personnel between University and Industry

The Centre is performing well in encouraging mobility between university and industry. There are a good number of industry PhD students as well as company personnel spending significant amounts of time in the Centre. Opportunities also exist for Centre PhD students to spend time at the partner sites and to access research facilities.

Gender Perspective

The Centre scores well from the perspective of gender balance. The Director is female; 40% of the scientists are female; 40% of the PhD students are female.

Contributions to University Education

The Centre is making a range of contributions to university education. Most notable is the joint BIOSUM Graduate School, which will offer a range of innovative courses for graduate students.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1. According to the plan for Stage 1, the Centre is supported by Chalmers/SIK with1.5 MSEK in cash and 7.05 MSEK in kind for a total institutional contribution of 8.55 MSEK (Specifics on the contributions of each were not provided). Cash provides a Centre with vital ability and flexibility in its work; greater cash contribution from the University would appropriate and a welcome sign of the University's high level of commitment to the Centre.

As planned for Stage 1, the seven companies will provide substantial cash support (a total of 4.4 MSEK) and in kind support of 8.8 MSEK for a total industry sector support of 13.2 MSEK.

It is noted that Centre academic participants have won funding from other sources for research related to the Centre mission totalling over 38 million SEK.

There was some discussion about the amount of work that was required to complete the financial tables, the correctness of some data, and whether or not some data was actually required. It is important for VINNOVA to ensure that the financial tables are as simple and straightforward as possible and that the guidelines for completing them are clear and unambiguous; and that VINNOVA check to ensure that the data provided are complete, and in the form requested. It is important for a Centre to itemize participation of individual personnel both from the university and from the industry, whether representing cash cost or in kind contribution.

Recommendations to the Centre

Our recommendations are:

- 1. The Centre needs to extend its expertise in mass transport modelling
- 2. The Centre should undertake to create a set of model systems for integrative analysis across projects
- 3. That the Centre employ a full-time administrative assistant as soon as possible
- 4. That a Vice Director be appointed
- 5. That the Management Team meet regularly to discuss matters of organization, administration and execution of Centre programs with a view to sharing responsibility with the Centre Director
- 6. That the Centre seek out professional advice on visual identity and communication strategy
- 7. That the website undergo renovation and renewal.
- 8. That the Centre develop a program for recruitment of top international student candidates and post docs

Recommendations for VINNOVA

Our recommendations are:

- That VINNOVA require of Centres in all evaluation and annual reports that a short summary be provided making the scientific goals of the centre and the economic potential of the results accessible to the intelligent layperson
- That VINNOVA review the financial tables to ensure that they are as simple and straightforward as possible and that the guidelines for completing them are clear and unambiguous.

In conclusion

- The evaluation team is of the opinion that the Centre meets all the requirements of a successful VINN Excellence Centre in Stage 1 and is worthy of continued support.

Gothenburg November 20, 2008

Professor Douglas Reeve | Professor Anne Anderson

Professor Helmuth Möhwald | Professor Joseph Seymour

Evaluation of the BiMaC Inno Centre at Royal Institute of Technology

Introduction

On Tuesday, March 3, 2009 in the morning, the Centre Director, Tom Lindström, and colleagues of the BiMaC Innovation VINN Excellence Centre, briefed the scientific experts of the evaluation team, Art Ragauskas and Maija Tenkanen, on the scientific progress and range of projects. The meeting in the afternoon was attended also by the generalist evaluators, Doug Reeve and Anne Anderson. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. There were organizational and scientific issues that warranted further development and necessitated supplementary reporting. As a result, a further evaluation meeting took place on Monday, October 19, 2009. We thank the all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

The overall research program is recognized as having a high-value research objective that could have a significant impact on the success of the forest products industry in the future. The research is timely and has good support from industry. The Centre focuses on developing novel, geometrically complex, 3-D structures from ligno-cellulosic materials, starting from molecular surfaces and developing highly engineering network structures that aim at advanced products. At present such products can only feasibly be manufactured from petroleum-based materials and so the proposed research provides an alternative for a sustainable future. Over time, it is anticipated that the Centre will deliver novel research solutions to the forest products industry. The challenge is to utilize the results of the past two years to deliver innovative technologies that leverage the natural woody biomass of Sweden.

Centre Core Competency - People and Facilities

The Centre has three Competence Areas: Biofibre Packaging Materials; Functional Wood and Fibre Surfaces; and Biocomposites. Within the Centre there is multidisciplinary expertise in material physics, chemistry and mechanics needed to achieve the aim of creating a new fiber-based products platforms. The Centre is supported by a set of complementary senior scientists each well recognized in their field. Overall the Centre has succeeded in involving a balanced mixture of scientists at various points in their careers, from master students to senior research professionals. The Centre operates in two premises at KTH: the Department of Solid Mechanics and the Department of Fiber and Polymer Technology. The Centre has access to a range of equipment for material processing and analysis supported by KTH, Innventia and partner companies. Of special significance, the Centre has developed a first prototype of equipment for manufacturing of double-curved paperboard surfaces.

Research Program

The research program is currently divided into four leveraged projects (Demonstration Line Projects (DLPs)). Projects DLP1 - Complex Paper and Board Structure, DLP2 - Out-of-Plane Analysis for Innovative Material Design, and DLP4 - Biocomposites are fully active, and DLP3 - Engineered Wood Surfaces and Adhesive Joints, was recently initiated. Each DLP is further divided into three to five Work Packages (WP). The Centre has demonstrated the integration of individual DLPs and WPs. DLP1 is approaching the demonstration phase. DLP4, which is the most heterogeneous, was described to be more like a collection of seedling ideas (each WP) than a clear demonstration line, and thus might rather be called something other than a DLP.

Scientific Leadership - Project Generation, Development and Selection

In the start-up phase of the Centre, the experienced senior scientists have led the planning and start-up of the DLPs. Later on, the responsibility of the project leadership has been transferred to younger scientists, a positive initiative that will contribute to the development of the next generation of independent scientists. Research ideas for new DLPs and WPs are generated by individual scientists from the Centre, partner companies, and the industrial advisory committee. The ideas are first assessed by the Management Team before review by the Centre´s Board, which approves new research activities.

Research Project Critiques - Science, Methodology and Technological Outcomes

The recruitment of the research personnel in the Centre has taken quite a long time and has resulted in a lag-period of almost a year in the Centre´s research activities. Nonetheless, the evaluation team was hoping to see and hear more research highlights of already obtained results in the Centre as well as concrete examples of research synergy and collaboration between DLPs.

The Centre has begun to publish results in the scientific literature including in the top journals in the field and it is anticipated that the results of the last year will result in greater productivity in the months ahead. Novel results and findings are evaluated together with KTH, assessing ideas for patentability before publishing. The Centre has renewed its website which includes the public open site and a restricted internal site for the Centre members. The Centre has contributed actively in the development of KTH Campus Innovation Forum "ForestBeyond".

Relationship to International Groups

The Centre has established an international scientific advisory board. The partner companies are active internationally. The Centre has been active in winning a VINNOVA Global Links - project. However, international mobility of PhD students and researchers both in and out of the Centre has been modest to date. Developing stronger international links and encouraging visits to and from leading groups should be part of the Centre’s plans for Stage 2.

Overall View - Productivity, Critical Size and Value-added of the Centre

The Centre has a very good team of scientists and research competencies that are focused on a range of important research challenges for the forest industries in Sweden. The opportunities to bring researchers from different scientific disciplines together to address these challenges, is a key advantage for the Centre. As the work in the DLPs matures, a greater number of high quality publications and patent applications should emerge. The integration of the activities within and notably across DLPs resulting novel, multidisciplinary research will continue to be very important as the Centre moves to the next stage of its development.

Recommendations:

- 1. That the Centre enhances its efforts to integrate the scientific vision and synergy across the DLP's and creates a dynamic, forward-looking research enterprise.
- 2. That the Centre undertakes to develop a stronger portfolio of international presentations, high impact publications and patent applications in keeping with their aspirations to be a world leader in forest biomaterials science.

Centre Partners

Partners' Needs Identification and Articulation

The partner companies were well represented at the evaluation meetings and clearly feel that the potential outputs from the Centre can add value to their organizations. The evaluation team was impressed by the work that the partners had undertaken with the researchers to clarify the Centre's vision and mission.

To date it seems that partner companies have been involved in project development via the Industrial Advisory Committees. The report contained a description and diagram describing the process of idea generation and project selection. This emphasized the variety of routes through which different stakeholders can feed ideas into the Centre. Although the report was not explicit about the selection criteria used by the Board, in discussions it seemed apparent that the alignment of proposed ideas with the Centre's vision and mission for science and industry relevance, played key roles in the process.

As the Centre moves to Stage 2 it will be important that the enthusiasm of the partners is translated into active collaborations in the ongoing research. The amount of time that company personnel are reported as spending in the Centre seems very low. From discussions at the meetings it seems that the evaluation report did not always capture the full extent of the engagement of companies with the Centre.

The evaluators were disappointed to read in the report that the Centre had taken little action to encourage mobility between university and industry in Stage 1. At the meeting a few plans to increase this important activity were mentioned.

Added Value of the Centre

The evaluation team welcomes the statement in the report that the strategy is 'to create a clear Centre identity'. This will be an important addition to the activities being

undertaken in the various WPs and DLPs. The first Centre-wide event was held in September 2009 and appeared to have been of value to research staff, PhD students and partners. The Management Team must build on these initial efforts to develop a clear vision of the culture of the Centre and how this permeates the Centre's activities.

Recommendation:

- 3. That the Centre undertake to engage the industry partners more actively in the ongoing research of the Centre

Partner Complement

The evaluation team was pleased to note the good range of complementary companies from the forest products sector and beyond who are engaged with the Centre. The current industry partners are: Holmen; Korsnas; Polykemi; SCA; Stora Enso; Sodra; and Tetra Pak.

Organization and Management of the Centre

The Board's Role

The Board has eight members, five from industry and three from KTH/KTH Holding. It is to be commended for their very active involvement in the organizational development that has taken place over the last six months. It is evidently very committed to the success of the Centre and making a significant contribution to the leadership and growth of the Centre.

The Board has two "Deputy Members" whose role was not explained in the report. During the interview it was stated that they have observer status at Board meetings and act as substitutes to replace a Board Member who is missing at a meeting. This seems a reasonable practice except for the fact that each Deputy can only substitute for a specific Board member and not all Board members have Deputies. Further, there is no Vice Chair and the Chair himself does not have a Deputy.

There are also "Additional Members", who, as we learned at the interview, are non-voting observers; this practice is appropriate.

Eva Malmström is an active researcher engaged in projects and is also on the Board. As the Board decides allocation of funds to projects, the evaluators see an apparent conflict of interest. The Board is aware of this and has noted in the report that any person with a conflict is made to step out of a Board meeting for any vote that concerns their interest. It was also noted in the interview that Professor Malmström is serving during the current interim period and that the Board will be renewed at the beginning in of Stage 2, January 1, 2010.

Management Team Structure, Processes and Performance

The Management Team has undergone significant reorganization in the past few months and now has appropriate structures and processes to serve the vision and mission of the Centre. The Centre is to be complimented on the new structure and the management

processes. The Recruitment Advisory Team is a welcome addition. The processes for idea development were explained in the report and the criteria for decision-making discussed at the interview and are satisfactory.

Recommendation:

- 4. That the Centre continue the organizational development work to extend the valuable learning of recent months

International Scientific Advisory Board's Role

The International Scientific Advisory Board (ISAB) is well constituted. It should meet annually.

Relationship to the University and University Units

There has been considerable impetus added to Forest Biomaterials Research in Sweden with the recent establishment of the Wallenberg Wood Science Centre (WWSC) at KTH/Chalmers. The evaluators liked the ideas for integrated efforts between BiMac and WWSC but were also concerned that BiMac not lose sight of its distinctive vision and mission.

Training Personnel of High Competence

Mobility of Personnel between University and Industry

The academic staff at KTH have close connections with the industry partners but to date the Centre has not organized systematic activities to encourage PhD students and post doctoral researchers to spend time in partner companies and hence to develop their own industry links. This will be an important activity for Stage 2 and will build on the Industry Advisory Committee interactions within DPLs. In a similar vein, it will also be important to encourage staff from partners to interact more intensively with research projects.

Recommendations:

- 5. That the Centre undertakes to develop a vigorous and deliberate program for increasing exposure of PhD students and Post-Docs to industrial practice
- 6. That the Centre facilitates the establishment of industrial PhD places and secondment of company personnel to University research projects practice.

Gender Perspective

The evaluation team welcomed the thoughtful consideration of gender issues in the evaluation report we received before our second meeting. Of particular note is the use of a Recruitment Advisory Team. We would advise that this committee second members with specific expertise in areas such as equality and diversity.

Financial Report for Stage 1

The Centre seems to be on track with respect to cash income and expenditures, however, the in kind contribution data were not reported in the level of detail requested

and indeed, during the interview it appeared as though in kind was under-reported by industry partners.

There were discrepancies in the reporting of PhD student data between the text and the financial tables. During the interview the actual picture became clear.

Recommendations to the Centre

Our recommendations are:

- 1. That the Centre enhances its efforts to integrate the scientific vision and synergy across the DLP's and creates a dynamic, forward-looking research enterprise.
- 2. That the Centre undertakes to develop a stronger portfolio of international presentations, high impact publications and patent applications in keeping with their aspirations to be a world leader in forest biomaterials science.
- 3. That the Centre undertake to engage the industry partners more actively in the ongoing research of the Centre
- 4. That the Centre continue the organizational development work to extend the valuable learning of recent months
- 5. That the Centre undertakes to develop a vigorous and deliberate program for increasing exposure of PhD students and Post-Docs to industrial practice
- 6. That the Centre facilitates the establishment of industrial PhD places and secondment of company personnel to University research projects practice.

Recommendation for VINNOVA

Our recommendation is:

In conclusion:

The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Stockholm October 19, 2009

Professor Douglas Reeve

Professor Anne H Anderson

Professor Art Ragauskas

Professor Maija Tenkanen

Evaluation of the WISENET Centre at Uppsala University

Introduction

On Wednesday, March 4, 2009 in the morning, the Centre Director, Per Gunningberg, and colleagues of the WISENET VINN Excellence Centre at Uppsala University (UU), briefed the scientific experts of the evaluation team, Torsten Braun and Gregory O'Hare, on the scientific progress and range of projects. The meeting in the afternoon was attended, also, by the generalist evaluators, Doug Reeve and Anne Anderson. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all the members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

The vision articulated by the centre is lucid, concise and compelling. It is without doubt challenging and it will remain to be seen if, and how, it can be achieved within the lifetime of the centre. Ambitious visions are to be encouraged when grounded in an understanding as to how they may be achieved. This vision is not unique to the centre and similar challenges have been identified by other centres, namely CENS, CSIRO and CLARITY. The centre's strategy for delivering this vision needs to be crystallised somewhat, specifically drawing out the uniqueness of the approach and differentiating this approach from that of competing centres. It would appear, that in the main, the centre has the necessary competencies to deliver at least, in part, on this vision. This in and of itself would be a significant achievement.

Leading International Collaborative, University-Industry Research

The WISENET Centre has a clear understanding of the international research landscape and where their centre is situated. The Centre draws together an interesting mix of industry and academia with a predominance of industrial partners of the SME category. In this regard the WISENET Centre is unusual. This composition however has resulted in an IPR regime which is more attractive to SMEs and less so to larger firms.

Centre Core Competency - People and Facilities

The Centre draws together a multi-disciplinary group of academics and industrialists. It is true to say that not all facets of this rich Centre exhibit the same level of expertise and are held in the same international regard. Notable, truly internationally excellent work is being undertaken in areas such as novel energy management; WSN operating system development; WSN power profiling and Through Silicon Via (TSV).

There are however areas where the centre could usefully consolidate its expertise, in particular, competence in the general areas of software for WSNs, middleware and intelligent autonomic capabilities. Furthermore, software processes for effective sensor fusion ought to be considered. To this ends the evaluation team welcome the recently established Chair in Wireless Sensor Networks together with the recent and substantive

grant successes in the area of sensor programming. Collectively these instruments should provide adequate vehicles through which this deficiency can be addressed.

Recommendations:

- 1. That UU provide suitable co-located space for the Centre to gather together WISENET researchers and to thereby facilitate synergistic research.
- 2. That the Centre consolidate their expertise in the area of software for wireless sensor networks, e.g. sensor fusion, middleware, and autonomic self-management.

Research Program

Scientific Leadership - Project Generation, Development and Selection

The scientific leadership of the centre is appropriate offering direction and stability. The centre director has valuable experience upon which to draw and has a comprehensive understanding of the diverse science involved in the Centre. The evaluation team recognise that inter-disciplinary research in such centres is always a challenge particularly in the early stages of operation. However it is of paramount importance that researchers resist the temptation of conducting their research in '*silos*'.

To this end we would recommend that the granularity of projects be increased in size and that the centre reflect on mechanisms of coalescing existing projects and/or evolving or enlarging existing projects. Projects which are truly integrative and cross-cutting in nature are imperative as the Centre grows and evolves. Indeed it is the outputs from such projects that demonstrate the need for a centre rather than funding individual researchers. One would expect that this would produce tangible and discernable outputs that are cross-group/institution. This ought to manifest itself in the form of an increased and growing number of joint publications.

Recommendations:

- 3. That the leadership team undertake to formalize the project generation and selection/de-selection process to make it more transparent and accountable and make more explicit the decision criteria.
- 4. As the Centre moves towards Stage 2 the leadership team should review the project portfolio with a view to arriving at a better balance between small short-term projects and large integrative projects.

Research Project Critiques - Science, Methodology and Technological Outcomes

The ongoing and future research includes activities with both long-term and short-term impact. The research is very experimentation driven. The methods used such as simulation and/or real-world experiments in test-beds are highly appreciated. The Centre has already implemented an impressive set of different sensor network test-beds even one which specifically targets harsh environments. This has created high-level expertise available in several research groups.

Recommendation:

- 5. That the leadership team make a detailed evaluation platform plan that includes a description of the nature and form of the platform and a plan for distribution and dissemination throughout the Centre

Relationship to International Groups

The Centre has strong relations to other centres active in sensor network research in Europe, Australia, and the US. Members have been/are involved in several European FP6/FP7 projects (STREPs, NoEs), which further strengthens international relationships. Personnel at senior levels have been exchanged with such international groups. This is also of particular importance for young researchers such as post-doctoral researchers and Ph.D. students. We would encourage measures be put in place to achieve this.

Overall View - Productivity, Critical Size and Value-added of the Centre

The results produced during the relatively short period since the creation of the Centre have been impressive. There are several groups and members performing world-class research in wireless sensor network research, in particular, energy scavenging, hardware design, and system software. Collaboration among researchers in different disciplines is encouraged by integrating several smaller projects into clusters and by the fact that some researchers contribute to multiple projects. Workshops have been organized to bring researchers from different disciplines together and to encourage the exchange of ideas. We would recommend continuing this practice.

It is the view of the evaluation team that the existing funding, when complimented with company cash contributions and research grant successes, will produce a centre with sufficient critical mass to be competitive on the international scale. The evaluation team noted the desire to create a new cluster in the area of Body Area Networks and would encourage this.

Recommendation:

- 6. Future workshops should focus more on technologies and best practices that have the potential to become important for a larger set of application areas.

Centre Partners

Partners' Needs Identification and Articulation

At the evaluation meeting the partners expressed strong support for the Centre and the way it had added value to their organizations. We learned that partner needs were identified through interactions between researchers and organisations interactions in the five research clusters and that a good deal of common understanding had been developed. The report and the presentation from the director outlined how these needs were articulated and fed into the project selection process following these interactions. This informal process appears to be working effectively in Stage 1 with a fairly small set of partners. As the Centre moves towards Stage 2 and expands its range of partners the leadership might reflect on how to make this process more systematic to ensure that

the research needs of a larger set of partner organizations are fully articulated and captured during the process of project generation and selection.

Partner Participation in Innovation and Technology Translation

The narrative of the evaluation report describes a variety of ways in which the partners participate in the activities of the Centre. These include collaboration in the planning and execution of research projects, provision of materials and facilities. Some of these facilities such as the provision of a railroad car as a test bed for wireless sensor networks would seem to have considerable value to the Centre. The extent of the partners' engagement was not always well captured in either the text or indeed the data provided in the Tables required by VINNOVA.

Partner Complement

The following companies and organizations are partners in the Centre: SICS; Hectronic, SenseAir AB; Silex Microsystems AB; Swedish Defense Research Agency (FOI); Banverket; TNT-Elektronik AB; Triona AB. The partners were well represented at the evaluation meetings. Although the collaborations with the partners seem to have been progressing well in Stage 1, the financial contributions are not large and for some partners the in-kind contributions also seem modest. For the Centre to move forward to Stage 2, additional resources are required to meet the VINNOVA financial guidelines. More significantly for a Centre of the scientific standing and ambition of WISENET, this range of partners does not seem appropriate as the Centre becomes established. There are clearly a wide range of organizations and companies who would benefit from interactions with leading researchers in such a timely topic as wireless sensors.

Recommendation:

- 7. That the Board and the Centre leadership team undertake, as a matter of great urgency, to review the number and range of partners, with a view to expanding the number and range of industry partners to reflect the Centre's vision and ambition

Organization and Management of the Centre

The Board's Role

The evaluation team was concerned about several aspects of Board membership. It is expected that a member of the senior management team of the University will represent the University on a VINN Excellence Centre Board, e.g. Vice Rector or Dean, so as to provide high-level support to the Centre and to assist the Centre in developing its full potential.

The evaluators saw no justification for Ericsson and ABB to be represented on the Board; neither company is a partner and neither contributes any cash or in kind support to the Centre. Certainly the Centre should cultivate both companies with a view to winning their support as full partners. The Centre should not however be entrusting these companies, through their participation in the Board, either with inside information of the Centre or with decision making on expenditure of Centre funds. As these companies have not committed resources to the Centre and so have no stake in the

Centre, they have not earned a place on the Board. One of the functions of Board members is to make the case for Centre support with the University and with would-be funders; how could these companies do this when they themselves have not made the investment.

The evaluators expressed their concern about the potential conflict of interest in the CEO of SICS (Staffan Truve) being Chair of the Board. It is recognized that SICS is an important research partner and that the CEO has much experience of value to the Centre; however, SICS is funded by many of the companies that might be Centre partners (such as Ericsson). If a choice must be made in a conflict situation the CEO of SICS must side with SICS. That being said, the evaluators were impressed by Dr. Truve and his willingness to serve the interests of the Centre.

Recommendations:

- 8. That Uppsala University have on the Board a representative of the senior levels of university management
- 9. That representatives of companies that are not members of the Centre not be members of the Board
- 10. That when the current campaign for renewal and expansion of the Centre partner complement is complete that the Chairmanship of the Board be reviewed, in particular to remove any appearance of conflict of interest between SICS and the Centre

Management Team Structure, Processes and Performance

The Director and senior leadership of the Centre appear to operate very well as a team and are performing well in many respects. The research of the Centre is well conceived, well managed, and productive. The evaluation report was, for the most part, well prepared. Centre culture and identity have been addressed and a communication plan is in place. As will be addressed below, the financial and administrative reporting was woefully incomplete.

International Scientific Advisory Board's Role

Members of the International Scientific Advisory Board have been appointed, one has visited already and there is a plan for (the first annual) meeting in April and for semi-annual telephone meetings.

Relationship to the University and University Units

The Centre appears to function well in the University context.

Communication Strategy and Execution

The Centre has a communication plan that includes internal and external communications (to industry, students, press, public and children). Business cards of the Centre leaders indicated their association with WISENET. A WISENET banner was on show on the building when we arrived.

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team was pleased to have the opportunity to meet with five of the current PhD students, as well as two prospective doctoral students and one recently completed PhD. Three of the current PhDs had studied for their first degrees outside Sweden. The Centre has clear ambitions to be a world-class centre, such a centre would typically have a very active programme of international recruitment of prospective doctoral students.

Recommendation:

- 11. That the Centre be more systematic in its efforts to recruit top-level students and junior researchers nationally and internationally.

Mobility of Personnel between University and Industry

The evaluation team was pleased to learn of the examples of personnel from partner organisations spending time at the Centre, for example Thiemo Voigt from SICS holding an Associate Professorship at Upsalla University, as well as three staff who are enrolled as PhD students in the Centre. In addition one employee of a partner company SenseAir also holds a position at the university. Industry partners are also involved in PhD supervision.

The Centre PhD students in meeting with the evaluators, expressed their interest in applying their research in real world settings and in possible future research careers in industry. To maximise the benefits to young researchers of their time in the Centre further interactions with partner organisations should be encouraged.

Recommendations:

- 12. That the Centre undertake to facilitate mobility of students and early stage researchers visiting and working with the partners
- 13. That the Centre undertake to facilitate mobility of students and early stage researchers visiting and working with international universities, laboratories and companies in particular encouraging bi-directional exchanges.

Gender Perspective

The Centre recognizes that it is far from a gender-balanced organization. The Management Team is all male, the International Scientific Advisory Board is all male, the Board of Directors includes only one female. Three of the PhD students are female.

The Centre is attempting to improve this, both by considering the gender perspective of the research domains and attempting to expand into areas such as healthcare which may have more appeal to female researchers. In addition a new female assistant professor has been recruited.

Recommendation:

- 14. That the Centre vigorously pursue its plans for recruitment of more women to all levels of the Centre research, management and leadership functions

Contributions to University Education

The academic staff within the Centre contribute to a wide variety of undergraduate courses related to the research in WISENET. Masters students are also given the opportunity to conduct research projects within the Centre. In addition the Centre is providing a range of seminars for the university.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; we note that Stage 1 started July 1, 2007 and ends June 30, 2009. As planned for Stage 1, the Centre is well supported by UU (2.4 MSEK in cash and an estimated more than 7 MSEK in kind) for a total institutional contribution of more than 8.1 MSEK. Two industry partners provided a total of 0.6 MSEK and SICS provided 0.6 MSEK in cash. Although the data on in kind contribution was incomplete it is planned that industry in kind will more than make up the 5.8 MSEK required to match VINNOVA. Total Centre support from these sources for Stage 1 is more than 21 MSEK but the reporting, in addition to being for only the first 18 months is in other respects incomplete (particularly in kind contributions).

The cash contributions from all the companies, (except Banverket and SenseAir), was zero. Many are small to medium sized companies so modest cash availability is understandable. However, there is great prospective value for partners. Clearly the existing partners need to come up with cash to support the efforts of the Centre and a major effort must be undertaken to win funds from new, perhaps larger, companies.

It is noted that Centre academic participants have won funding from other sources (19 grants) for research related to the Centre mission totalling 178 MSEK.

Recommendations:

- 15. That the Board and the Centre leadership undertake to capture greater cash contributions from industry partners in order to fulfill the expectation by VINNOVA of cash being between 10 and 40% of partner contributions
- 16. That the provision of facilities by industry partners (such as the railway wagon test bed by Banverket) be costed appropriately and accounted for as an in kind contribution to the Centre
- 17. That the Centre undertake to capture the financial data required by the VINNOVA evaluation process (such as the partner individual employee in kind contribution) in an on-going, timely, systematic and thorough manner.

Recommendations to the Centre

In summary, our recommendations are:

- 1. That UU provide suitable co-located space for the Centre to gather together WISENET researchers and to thereby facilitate synergistic research.

- 2. That the Centre consolidate their expertise in the area of software for wireless sensor networks, e.g. sensor fusion, middleware, and autonomic self-management.
- 3. That the leadership team undertake to formalize the project generation and selection/de-selection process to make it more transparent and accountable and make more explicit the decision criteria.
- 4. As the Centre moves towards Stage 2 the leadership team should review the project portfolio with a view to arriving at a better balance between small short-term projects and large integrative projects.
- 5. That the leadership team make a detailed evaluation platform plan that includes a description of the nature and form of the platform and a plan for distribution and dissemination throughout the Centre
- 6. Future workshops should focus more on technologies and best practices that have the potential to become important for a larger set of application areas.
- 7. That the Board and the Centre leadership team undertake, as a matter of great urgency, to review the number and range of partners, with a view to expanding the number and range of industry partners to reflect the Centre's vision and ambition
- 8. That Uppsala University have on the Board a representative of the senior levels of university management
- 9. That representatives of companies that are not members of the Centre not be members of the Board
- 10. That when the current campaign for renewal and expansion of the Centre partner complement is complete that the Chairmanship of the Board be reviewed, in particular to remove any appearance of conflict of interest between SICS and the Centre
- 11. That the Centre be more systematic in its efforts to recruit top-level students and junior researchers nationally and internationally.
- 12. That the Centre undertake to facilitate mobility of students and early stage researchers visiting and working with the partners
- 13. That the Centre undertake to facilitate mobility of students and early stage researchers visiting and working with international universities, laboratories and companies in particular encouraging bi-directional exchanges.
- 14. That the Centre vigorously pursue its plans for recruitment of more women to all levels of the Centre research, management and leadership functions
- 15. That the Board and the Centre leadership undertake to capture greater cash contributions from industry partners in order to fulfill the expectation by VINNOVA of cash being between 10 and 40% of partner contributions
- 16. That the provision of facilities by industry partners (such as the railway wagon test bed by Banverket) be costed appropriately and accounted for as an in kind contribution to the Centre
- 17. That the Centre undertake to capture the financial data required by the VINNOVA evaluation process (such as the partner individual employee in kind contribution) in an on-going, timely, systematic and thorough manner.

Recommendations for VINNOVA

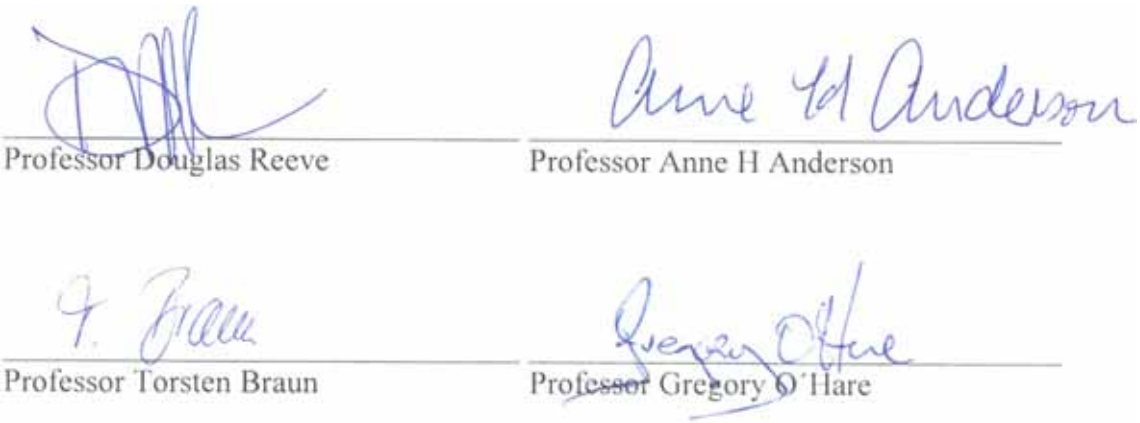
Our recommendations are:

- That VINNOVA provide significant and urgent input to the process of resolving the Centre's IPR issues

In conclusion:

- The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Uppsala March 4, 2009



Professor Douglas Reeve | Professor Anne H Anderson

Professor Torsten Braun | Professor Gregory O'Hare

Evaluation of the AFC Centre at Lund University

Introduction

On Thursday, March 5, 2009 in the morning, the Centre Director, Inger Björck, and colleagues of the Antidiabetic Food Centre (AFC), a VINN Excellence Centre, briefed the scientific experts of the evaluation team, Rob Welch and Knud Erik Bach Knudsen, on the scientific progress and range of projects. The meeting in the afternoon was attended, also, by the generalist evaluators, Doug Reeve and Anne Anderson. The afternoon discussion covered organization and management, finance, interaction between industry and university, intellectual property, vision and strategy, student recruitment and educational activities. We thank all members of the Centre and the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation.

Research Vision, Strategy and Competence Profile

Sustainable Growth of the Economy through New Products, Processes and Services

We feel that AFC offers a unique opportunity for providing sustainable growth in a number of areas in the economy. These include the development of new processes and products for the food industry thus targeting a market that is predicted to grow very substantially nationally and internationally. Furthermore, the strong links with the regional health care sector offer opportunities to impact on long-term health costs and population productivity.

Leading International Collaborative, University-Industry Research

We acknowledge that AFC is doing internationally recognised research to generate knowledge for the development of innovative food concepts contributing to reduced risk of chronic diseases related to the metabolic syndrome. However, the Centre needs to appraise its position with respect to other international centres in this or comparable fields. Furthermore, in Stage 2 the Centre should seek to further enhance its international research profile by recruitment at the professorial level. We have identified the following areas for strengthening the status of the Centre.

Recommendations:

- 1. That the Centre undertakes to identify world-leading competitor institutions and groups around the world, benchmark themselves against those groups and use this comparison to develop their own strategy for evolution to a world leading centre
- 2. That the University follow its strategic vision for strongly supporting excellent research areas and seek to hire a leading international researcher and innovator in a new professorial position relevant to the Centre

Centre Core Competency - People and Facilities

The Centre combines competencies in a wide range of disciplines, including analytical technologies, food science and technology, nutrition, physiology, microbiology, and medicine. The Centre is well supported by facilities and has highly experienced senior

staff members as well as enthusiastic and motivated Ph.D. students. However it is essential that the Centre remains abreast of state-of the-art methodologies, such as metabolomics, and fully exploits the potential of the data generated in its studies.

Recommendations:

- 3. That the Centre undertakes to bolster its capability in metabalomics by partnership with existing centres of excellence and/or by recruitment of personnel
- 4. That the Centre undertakes to develop a database that will allow them to archive data in an accessible and usable manner from across analytical, in vitro, and animal studies, and from short and long term interventions with humans.

Research Program

Scientific Leadership - Project Generation, Development and Selection

The research program has developed from the vision of the Centre Director encompassing very diverse and complementary expertise that has resulted in a wide range of generally small-scale projects in Stage 1. However, in Stage 2, it is important that the Centre identifies the most promising lines of research that can be transferred into commercially exploitable projects that can enhance the health of the population.

Recommendation:

- 5. That as the Centre moves into Stage 2 the range of projects be expanded to include more large-scale projects, including human intervention studies

Research Project Critiques - Science, Methodology and Technological Outcomes

A number of studies have already been undertaken or are in progress that are yielding substantial new data from animal and human studies. These studies have generated valuable samples of plasma and other materials that could be further exploited using current or developing methodologies, and should be conserved. Furthermore, the legislative framework underlying health claims is currently evolving, and will need to be continually monitored.

Recommendations:

- 6. That the Centre undertakes to establish facilities and methodologies for storing biological samples for subsequent analysis
- 7. That the Centre carefully monitors the evolution of health claim substantiation with a view to following best practice

Relationship to International Groups

The Centre has substantial international collaborations though a number of its members. These include collaborations with groups in Europe, North, Central and South America, South Africa, Australasia, Japan and China. A number of these collaborations involve joint work that has been funded from sources outside the Centre. Centre members have also contributed regularly to conferences, seminars and visits to Universities outside Sweden.

Overall View - Productivity, Critical Size and Value-added of the Centre

At this early stage it is difficult to assess the productivity of the Centre in terms of publications in peer-reviewed journals. However, based on the previous record of Centre members, we anticipate that work currently completed or in the final stages, will lead to a substantial number of publications. We are pleased to observe that the Centre has already identified four instances where potentially patentable findings have arisen in current projects.

Currently the 42 researchers from LTH and from the faculties of Science and Medicine are committed to the activities of the Centre. There are also 10 non-academic partners involved including SME's and larger enterprises. This critical mass gives a unique combination of research expertise in nutrition, food technology, food engineering, microbiology, organic and analytical chemistry, endocrinology, experimental and clinical diabetology and gastroenterology. The Centre has acknowledged that further academic expertise may need to be identified in some specific areas, and that commercial competencies are lacking in some areas, such as dairy, enzyme and baking technologies.

The complexity of the research area calls for an interdisciplinary long-term approach. This is provided by the Centre, which also facilitates strategies for accelerated innovation. A novel aspect is the possibility of facilitating not only the introduction of primary and secondary prevention based on AFC findings, but also the commercial introduction of clinically documented preventive food concepts

Centre Partners

Partners' Needs Identification and Articulation

At the evaluation meeting the partners expressed strong support for the Centre. We learned that the Centre has two types of projects, core centre projects and P-40 projects. The latter are projects in which industry partners can identify topics of relevance to their business. The management team organizes workshops to stimulate project generation and also after initial projects ideas have been proposed, to refine the project proposals.

During Stage 1 we learned that efforts have been made to identify common partner interests, and in particular the common focus on improving inflammatory tonus, has been an integrative concept used as a way of selecting relevant projects.

This relatively informal process appears to be working effectively in Stage 1. As the Centre moves towards Stage 2 and expands its range of partners the leadership might reflect on how to make this process more systematic to ensure that the research needs of a larger set of partner organizations are fully articulated and captured during the process of project generation and selection.

Partner Participation in Innovation and Technology Translation

Partner organizations are invited to participate in regular project meetings, workshops and seminars with university researchers. In industry-led P40 projects there is more intensive interaction with partner organizations. For example, companies are providing

materials, facilities and expertise, in addition to sponsorship of PhD students. The Centre has also developed ways of collaborating with its partners which attempt to strengthen the innovation process, by considering a variety of mechanisms to deal with IP issues and related technology transfer processes.

Partner Complement

In Stage 1 the following organizations were Centre partners: Aventure AB; Dr PersFood AB; Innovationsbron AB; Lund University Holding Company/Lund University Innovation; Lyckeby Culinar; Orkla ASA; Probi AB; Region Skane; Semper AB; Umetrics AB. Four of the partners were present at the evaluation meeting. The partners represent a range of Swedish private and public sector organizations with interests in developing or deploying foods to improve health outcomes. It was encouraging to see the very active support provided by Region Skane as the regional health provider. Most of the commercial partners in Stage 1 are fairly small companies. Given the huge potential importance of the research of the Centre, the number of organizations who could benefit from the research outcomes is large.

Recommendation:

- 8. That the partner complement be reviewed and expanded both in number, and in range of industrial and public partners

Organization and Management of the Centre

The Board's Role

On reading the report the evaluators were concerned about the unusual composition of the Board. During the interview the principles of the Board formulation were explained; the Board should provide expertise from industry, but not give a priority position to any one company, or small group of companies. Also on the Board to provide their expertise are two professors who were former competence centre leaders. While this strategy may be suitable during the formation stages, the evaluation team is of the opinion that it is not suitable for the growth and maturation phase that will begin with Stage 2. The Board should have greater representation from stakeholders and should be proactive in winning new partners, allies and resources for the Centre. We recognize that a fundamental shift in Board philosophy and personnel is a challenge and so suggest that senior leadership from the University provide assistance in the reformulation of the Board.

Recommendations:

- 9. That the duties and responsibilities of the Board be reviewed and the membership of the Board be revised to provide the Centre with a more proactive and industrially oriented Board that will serve the Centre well as it expands and evolves in Stage 2
- 10. That the Vice Chancellor lend his support to the Centre in the revision of the Board

Management Team Structure, Processes and Performance

The Management Team consists of the Centre Director, Inger Björck, and the Assistant Director, Maria Johansson. They clearly form a highly productive and organized team and are to be complimented on the thoroughness and laudable attention to detail of the evaluation report and the evaluation interview presentations. However, particularly as the Centre grows, it will be important to create a larger group that has ownership of the Centre as a whole and shares the burden of leadership. All organizations should look to build in robustness in their leadership teams and to ensure that there are people to step in if needed, hence our recommendation below to engage the Research Coordinators and establish a Deputy Director. We will recommend to VINNOVA that future evaluation reports be co-authored by a wider management team.

Recommendations:

- 11. That the Management Team be expanded so as to include the AFC Research Coordinators (so that they will contribute to overall leadership as well as scientific leadership) and a deputy director
- 12. That the expanded Management Team structure and processes be formalized

International Scientific Advisory Board's Role

The International Scientific Advisory Board has an appropriate composition but has not yet met. There is a plan for this Board to meet in the summer of 2009; note that this is two years after the start up of the Centre. The Board should be engaged on a more frequent basis, with a site visit annually and potentially with other contacts between meetings.

Recommendation:

- 13. That terms of reference of the International Scientific Advisory Board be defined and that it meet annually for substantive review of the progress and plans of the Centre

Relationship to the University and University Units

The evaluation team had concerns about the challenges of distinguishing the AFC Centre from the older units, The Function Food Science Centre and FUNCFOOD. In the interview it was explained that the Function Food Science Centre is a network that is intended to foster growth and development of activities such as the AFC Centre, and indeed it was said that the AFC Centre was the "main event" for the Function Food Science Centre. FUNCFOOD is an activity with a different mission, even though there are many overlaps of personnel and science.

Communication Strategy and Execution

The evaluation team was concerned that some of the language in the evaluation report was perhaps overly enthusiastic concerning some health benefits and even though the report is private, not public, we believe that great caution should be used in making health claims in casual, unrefereed, documents such as reports, and perhaps even more importantly documents such as press releases.

The report had a symbol, a sort-of logo, on the front page. A version of that shape was used in presentation. Another version of that shape was used in a Centre brochure. Attention should be given to the visual identity of the Centre as part of the objective of creating a unique Centre culture and identity.

Recommendations:

- 14. That the Centre is particularly careful in the way that unpublished results in documents such as internal and evaluation reports are presented so that exaggerated or premature health claims are avoided
- 15. That the Centre continues its work to establish a distinctive visual identity

Training Personnel of High Competence

Recruiting and Developing People of International Competence and Experience

The evaluation team was pleased to have the opportunity to meet with ten PhD students from the Centre and from the related FUNCFOOD initiative. Five students were associated with AFC, three from Sweden (only one with a first degree from Lund), and two from outside Sweden. Taken as a whole, the group of ten students was dominated by Swedish students and those who had earned their first degrees at Lund University.

As the students are in different locations it will be important to instigate a series of activities to stimulate a distinctive research culture and Centre identity.

A VINNOVA Centre has the goal of becoming a world class Centre, which would typically have a very active programme of international recruitment of prospective doctoral students as well as exchanges with students from other leading labs.

Recommendations:

- 16. That the Centre develops and executes a strategy to recruit top-level students and junior researchers nationally and internationally.
- 17. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with international universities and laboratories in particular encouraging bi-directional exchanges.

Mobility of Personnel between University and Industry

In Stage 1 the extent of mobility between university and industry has been rather modest. The evaluation report notes that one university researcher has moved to industry. In discussions with the PhD students it was apparent that they all aspired to careers in industry but as yet had had relatively little exposure to the partner companies. This should be encouraged in Stage 2.

Recommendation:

- 18. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with the industry partners and other local and international companies of relevance to the Centre mission

Gender Perspective

The Director is female as is the assistant director, 100% of the current PhD students are female. In terms of redressing the overall gender balance in science this is to be warmly welcomed. The Centre might consider how it would encourage more male PhD students in Stage 2 as there are dangers in terms of status of disciplines that are overwhelmingly female.

Contributions to University Education

The academics in the Centre contribute to university education in a number of ways, including contributions to a number of masters programs related to the Centre's research agenda. Academics also supervise Masters projects within the Centre. Academics are also active in related doctoral programmes from FUNCFOOD, to national programmes for PhD education in food research to EU Erasmus programmes.

Financial Report for Stage 1

VINNOVA has provided 7 MSEK in Stage 1; we note that Stage 1 started July 1, 2007 and ends June 30, 2009. As planned for Stage 1, the Centre is extremely well supported by the University (8 MSEK in cash and an estimated more than 3 MSEK in kind) for a total institutional contribution of more than 11 MSEK. Region Skane will provide 4 MSEK in cash and an estimated 1 MSEK in kind. Industry partners will provide an estimated 7 MSEK in cash and significant in kind. Total Centre support from industry and public sector partners is more than 15 MSEK. Total Stage 1 funding is more than 32 MSEK well beyond the minimum 1:1:1 match of VINNOVAs 7 MSEK for a total of 21 MSEK. The University and the partners are to be commended for their support for the Centre.

It is noted that Centre academic participants have won substantial funding from other sources. Forty-four grants for research related to the Centre mission totalling approximately 150 MSEK are listed in Table 12 of the evaluation report. The research leaders have been very successful in winning funding. However, it is noted that most of these grants are from Swedish sources and we would expect a leading, international research Centre would also be competing well for European funding.

Recommendations to the Centre

In summary, our recommendations are:

- 1. That the Centre undertakes to identify world-leading competitor institutions and groups around the world, benchmark themselves against those groups and use this comparison to develop their own strategy for evolution to a world leading centre
- 2. That the University follow its strategic vision for strongly supporting excellent research areas and seek to hire a leading international researcher and innovator in a new professorial position relevant to the Centre
- 3. That the Centre undertakes to bolster its capability in metabalomics by partnership with existing centres of excellence and/or by recruitment of personnel

- 4. That the Centre undertakes to develop a database that will allow them to archive data in an accessible and usable manner from across analytical, in vitro, and animal studies, and from short and long term interventions with humans.
- 5. That as the Centre moves into Stage 2 the range of projects be expanded to include more large-scale projects, including human intervention studies
- 6. That the Centre undertakes to establish facilities and methodologies for storing biological samples for subsequent analysis
- 7. That the Centre carefully monitors the evolution of health claim substantiation with a view to following best practice
- 8. That the partner complement be reviewed and expanded both in number, and in range of industrial and public partners
- 9. That the duties and responsibilities of the Board be reviewed and the membership of the Board be revised to provide the Centre with a more proactive and industrially oriented Board that will serve the Centre well as it expands and evolves in Stage 2
- 10. That the Vice Chancellor lend his support to the Centre in the revision of the Board
- 11. That the Management Team be expanded so as to include the AFC Research Coordinators (so that they will contribute to overall leadership as well as scientific leadership) and a deputy director
- 12. That the expanded Management Team structure and processes be formalized
- 13. That terms of reference of the International Scientific Advisory Board be defined and that it meet annually for substantive review of the progress and plans of the Centre
- 14. That the Centre is particularly careful in the way that unpublished results in documents such as internal and evaluation reports are presented so that exaggerated or premature health claims are avoided
- 15. That the Centre continues its work to establish a distinctive visual identity
- 16. That the Centre develops and executes a strategy to recruit top-level students and junior researchers nationally and internationally.
- 17. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with international universities and laboratories in particular encouraging bi-directional exchanges.
- 18. That the Centre undertakes to facilitate mobility of students and early stage researchers visiting and working with the industry partners and other local and international companies of relevance to the Centre mission

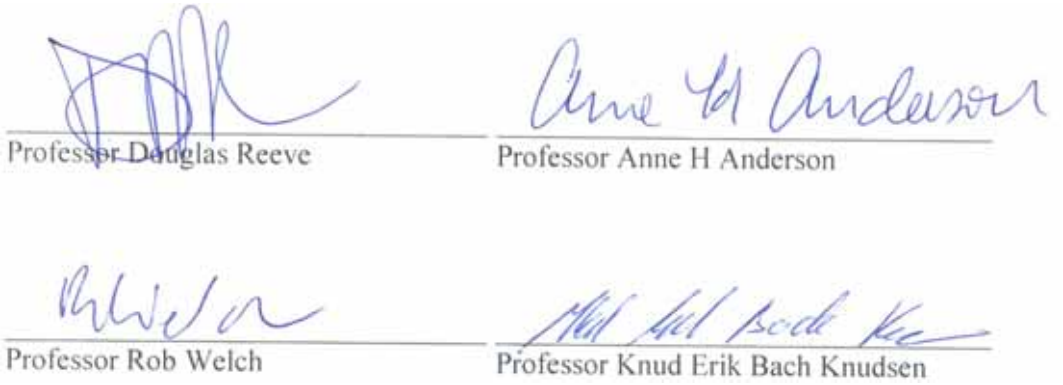
Recommendations for VINNOVA

Our recommendation is:

In conclusion

- The evaluation team is of the opinion that the Centre is progressing towards becoming a successful VINN Excellence Centre and is worthy of continued support.

Lund March 5, 2009



Professor Douglas Reeve

Professor Anne H Anderson

Professor Rob Welch

Professor Knud Erik Bach Knudsen

Appendices

Appendix A: Guidelines for the Evaluation of VINN Excellence Centres and Berzelii Centres

February 2008

1. Background

1.1. The Programme background

This document constitutes the guidelines for the evaluation of nineteen Centres with financing through the VINN Excellence Centre (fifteen Centres) and Berzelii Centre (four Centres) programmes. Both programmes aim to create and develop vigorous academic research milieus in which industrial and/or public partners actively participate in order to derive long-term benefits for the society. The programmes are also a link in the governmental effort to develop university-industry interaction.

The overall objective with both programmes is to promote sustainable growth in Sweden. This means that the programmes should create new internationally competitive concentrations of highly qualified experts with the task of conducting problem-oriented and, as a rule, multidisciplinary research and ensuring that the knowledge and technology generated will lead to new products, processes and services. The research activities involve intense collaboration between the participating actors. Hence each of these Centres is a strong research milieu positioned in a strong innovative environment. Ideas outside the core activities of the participating actors can also be utilised and further developed, e.g. by the set-up and development of new high-tech and research-based companies.

Although the overall aim of the programmes is the same they differ from both a scientific maturity and financial perspective. The Berzelii Centre programme deals with early stage industrial research closely related to basic research while the VINN Excellence Centre programme requires a substantial engagement from the industrial and/or public partners. Regarding the financial conditions a Berzelii Centre typically shows a turnover of 170 MSEK where 100 MSEK is cash contribution from the Swedish Research Council, VR, (50%) and the Swedish Governmental Agency for Innovation Systems, VINNOVA, (50%). For a typical VINN Excellence Centre the turnover is 210 MSEK with a governmental cash contribution of 63 MSEK. The remaining contribution in both programmes is normally equally shared by the University (50%) and the industrial and/or public partners (50%).

VR as well as VINNOVA are both running other research programmes. For more information please visit the homepage for both organisations i.e. www.vr.se and www.VINNOVA.se, respectively.

1.2. Evaluation background

Both the VINN Excellence Centre and the Berzelii Centre programmes are intended to run for up to 10 years. The building-up and development of the Centres is based on stepwise funding and a follow-up process. A number of industrial companies and/or public services together with a university or a research institute constitute the parties of a Centre. The parties contribute jointly to the Centre's research programme, financially or in the form of active work. Their collaboration and the financing are manifested in a Model Contract for VINN Excellence Centres before the actual excecution of the research programme. The actors in the Berzelii Centres are recommended to sign the Model Contract not later than at the end of Stage 2, see table below.

In a Berzelii Centre, the industrial and public partners contribute jointly to the formulation of the research programme. The partners are recommended to gradually increase their contribution, financially and with active work, during Stage 1 and Stage 2 following recommended levels, in order the reach the fully financial level in Stage 3 and 4. The reason for this relatively long start up phase is that the Berzelii Centre Programme is aimed towards areas where the industry hesitates to enter into active collaboration due to e.g. need of well verified new knowledge or that the present industry consists only of small companies with limited resources.

The typical financial support to each Berzelii Centre is as the following table:

Stage	Year	Research Council	VINNOVA	University	Industrial and Public Partners
1	1 2	5 MSEK 5 MSEK	2 MSEK 4 MSEK	> 8 MSEK	Ca ½-1 MSEK (recommendation)
2	3 4 5	15 MSEK	15 MSEK	> 15 MSEK	2-4 MSEK 2-4 MSEK 2-4 MSEK (recommendation)
3	6-8	15 MSEK	15 MSEK	> 15 MSEK	> 15 MSEK
4	9-10	10 MSEK	10 MSEK	>10 MSEK	>10 MSEK
To be used for commercialisation:			4 MSEK		

The start up phase for a VINN Excellence Centre is entirely during Stage 1, which comprises the initial two years. VINNOVA covers up to SEK 7 million of the expenses during stage 1 (as a rule SEK 2,5 million for the first year and SEK 4,5 million for the second year), provided that the industrial and public partners contribute with at least the same amount. After the first stage the VINNOVA annual contribution to a Centre is expected to increase to max. about SEK 7 million per year (SEK 1 million ≈ approx. € 106.000/$ 143 000).

In the model contract for stage 1 (Section 10. Evaluation) is stated: "With a view to giving the Parties a basis for possible continued activities at the Competence Centre, VINNOVA intends to conduct its first evaluation during the second year. The other Parties undertake to contribute to the evaluation by placing, when so requested, all

necessary documents needed for the evaluation at VINNOVAs disposal." This is also valid for the Berzelii Centres.

In order to fulfil the main purpose of the evaluation (to give an input to the negotiations, decisions about stage 2, the development of the Centres, or other specific actions), the evaluation has to be completed in good time (preferably 3 months) before the expiration of stage 1. The nineteen Centres will be evaluated in three groups during the period August 2008- March 2009, see Appendix 1 and 2.

2. The evaluation team

Each Centre will be evaluated by a team of international experts. Two of the experts in the team will have the competence and the task to evaluate the Centre from a scientific point of view. 2-3 persons in the team will have experience from similar programmes for university – industry research collaboration. These "generalist" experts will look at the Centre from a general point of view. This means that the scientific experts will participate in the evaluation of one specific Centre while the "generalist" experts will participate in the evaluation of two or more Centres. Each Centre has suggested up to 5 suitable scientific experts. From that list VINNOVA, together with VR on the Berzelii Centre, has decided on whom to invite.

3. The task of the evaluators

This first evaluation of the Centres will be carried out at an early stage. Its primary purpose is to evaluate the new established organisation of the Centre and the initial activities to establish the research programme in a Centre format. Thus, the evaluation will review progress of scientific and industrial efforts, recognising it is early to expect conclusive results. The evaluators will form an opinion concerning the approach and measures taken so far by individual Centres to judge the potential for their long-term development towards successful VINN Excellence Centres and Berzelii Centres. Evaluators may offer suggestions for remedial action to enhance the prospects for Centre success.

As a basis for the evaluations of the VINN Excellence and Berzelii Centres, VINNOVA has formulated a number of success criteria (see Appendix 3). Centres are asked to prepare reports according to the guidelines in Appendix 4.

The evaluation team will make the evaluation in the context of the success criteria.

The scientific experts on the evaluation team will review the Centre report sections:

2 Research Area, Competence Profile and Critical Size
3 Centre Partners (from the point of view of research contribution)
4 Research Program

They will offer their perspective on the research in the context of the Vision, Mission and Strategy and financial aspects with respect to support of research agenda.

The "generalist" experts on the evaluation team will review the Centre report sections:

5 Financial Report for Stage 1
6 Organisation and Management of the Centre.
7 Personnel of High Competence

and

8 Centre Partners (from the point of view of organisational effectiveness)

They will offer their perspective on the Centre organisation in the context of the Vision, Mission and Strategy. They will also comment on the organisation of the report and the site visit.

Although the individual Centres will be the main focus, the evaluators also comment on the concept and organisation of VINN Excellence Centre programme and the Berzelii Centre programme.

During the evaluation, the following important differences for the Berzelii Centres compared with the VINN Excellence Centres must be considered:

- One of the challenges for these Centres is the need for increasing the contribution from industrial and public partners during Stage 1 and Stage 2 of the Berzelii Centres. This includes active involvement (in-kind) and cash contribution as well as number of partners.

There is no obligation for a Berzelii Centre to formulate a Model Contract before starting the activities. The demand is that the Model Contract must be implemented during Stage 2 at the latest in order to enter Stage 3.

4. Organisation of the evaluation

The composition of the evaluation team is decided by VINNOVA, together with VR on the Berzelii Centres. The evaluation team itself decides on the distribution of work among its members.

The basic documentation, in principle the Centre report to the evaluation team, from the Centres to VINNOVA, will be distributed by VINNOVA to all members of the evaluation team not later than one month prior to the evaluation. Each evaluation starts with the evaluation team introductory meeting in the evening the day before the evaluation and ends when the evaluation report is completed. The goal is that the first draft of the evaluation report should be finished the same evening as the interview is performed. Normally this means that the evaluation team has to write the first draft of the evaluation report while travelling to the next introductory meeting. This also means that the composition of the evaluation team will differ from day to day since the scientific experts are to evaluate a specific Centre.

The evaluation of the nineteen Centres will be carried out during August 2008- March 2009. During this period interviews will be held during five weeks divided into three groups of interview. Each Centre belongs to one of the three groups, see Appendix 1. Interviews with the Centres in the:

- group 1 will take place August 25 to September 4, 2008
- group 2 will take place November 12 to November 20, 2008
- group 3 will take place March 3 to March 5, 2009.

The evaluation report is due approximately 5 weeks after the interview sessions.

During the site visit the evaluation team is interested in meeting:

- the Centre Director
- the Chairman of the Centre Board of Directors and
- representatives from the industrial and/or public partners
- university staff incl. representatives from the Vice-Chancellor´s office
- research leaders and/or program directors active within the Centre
- doctoral students.

VINNOVA staff will, together with VR staff at the Berzelii Centre, be present at the site visits. The staff will act as administrators and should not take active part in the evaluation, but can add information during work sessions.

Each evaluation session will be divided into two sessions, one where the scientific experts meet parties from the Centres and one session where the "generalist" experts together with the scientific experts meet parties from the Centres. During lunch, i.e. between these to sessions, the evaluation team will also meet with up to 10 PhD students in the Centre. See detailed schedule in Appendix 2.

5. Centre arrangements in connection to the evaluation

The Centres are asked to propose five scientific experts for the evaluation and send the suggestions to VINNOVA not later than February 29, 12:00, 2008. It is important that the Centres can guarantee no conflict of interest with the proposed evaluators.

The basic documentation, in principle the Centre report to the evaluation team, from each of the Centres will be distributed by VINNOVA to the members of the evaluation team not later than 4 weeks prior to the evaluation. The template that should be used is presented in Appendix 4.

The report should be submitted electronically (pdf-files) to VINNOVA and be available at VINNOVA not later than:

- for Centres in group 1, Wednesday June 18, 12:00 a.m. 2008.
- for Centres in group 2, Friday October 12, 12:00 a.m. 2008.
- for Centres in group 3, Friday January 30, 12:00 a.m. 2009.

Furthermore the Centres should:

- book location for the interview sessions
- invite Centre representatives to the interview sessions
- inform VINNOVA on the address to the location

- arrange lunch for the evaluation team and the administrative staff (chamber separee)
- arrange so that the evaluation team can meet with up to 10 PhD students during lunch coffee, preferably in the lunch location.

Finally the Centre leader should confidentially review, with respect to facts, the first draft of the evaluation report and deliver the revision to VINNOVA not later than:

- for Centres in group 1, Friday September 26, 12:00 a.m. 2008.
- for Centres in group 2, Friday December 12, 12:00 a.m. 2008.
- for Centres in group 3, Friday March 20, 12:00 a.m. 2009.

The first draft report will be sent to the Centre leader one week prior to these dead lines.

6. Report of the evaluation team

The work of the evaluation team shall result in one report on the Berzelii Centre programme and one on the VINN Excellence Centre programme. Each report should be written in consensus by the evaluation team and sent to VINNOVA. The evaluation team shall be unanimous in its conclusions.

Preferably, each report should comprise a section (approx. one fifth) with comments on the concept of the Berzelii Centre and VINN Excellence Centre programmes, respectively, including discussions of structural and organisational problems. Another section (approx. four fifth) should deal with each Centre individually as outlined above.

Both VR and VINNOVA appreciate a discussion on priorities of actions to be taken by VR and VINNOVA as well as by each individual Centre, both in terms of financial support and of more structural matters.

6.1. Handling and distribution of the evaluation report

The two reports from the evaluation team will be presented to VINNOVA and the Berzelii Centre report also to VR. Both reports will also be openly circulated to all Centres and, on request, to any other agency or person who have expressed an interest in this type of information. The Swedish scientific community is used to outspoken international evaluation reports.

6.2. Remuneration to the evaluators

VINNOVA will pay for all costs for evaluation team members including travels, accommodations etc. According to VINNOVA´s standards for international evaluations, a remuneration of 1200 € is associated to each member in the evaluation team for the evaluation of a specific Centre.

Appendix 1: Grouping of interviews

Year	Month	Date	Centre	Centre leader	University
GROUP 1					
2008	Aug	25	Faste[1]	Lennart Karlsson	Luleå University of Technology
		26	SUS[1]	Helene Wintzell	KTH
		27	FunMat[1]	Lars Hultman	Linköping University
		28	Chase[1]	Ingmar Karlsson	Chalmers
		29	GigaHertz[1]	Jan Grahn	Chalmers
	Sept	1	EXSELENT[2]	Xiaodong Zou	Stockholm University
		2	UCFB[2]	Ove Nilsson	SLU
		3	Uppsala Berzelii[2]	Fredrik Nikolajeff	Uppsala University
		4	SBI Berzelii[2]	Hans Forsberg	Karoliska Institute
GROUP 2					
2008	Nov	12	Mobile Life[1]	Kristina Höök	Stockholm University
		13	iPack[1]	Li-Rong Zheng	KTH
		14	HERO-M[1]	John Ågren	KTH
		17	ProNova[1]	Per-Åke Nygren	KTH
		18	BIOMATCELL[1]	Peter Thomsen	Göteborg University
		19	Wingquist[1]	Rikard Söderberg	Chalmers
		20	SUMO[1]	Anne-Marie Hermansson	Chalmers
GROUP 3					
2009	Mar	3	BiMaC Inno[1]	Tom Lindström	KTH
		4	WISENET[1]	Per Gunningberg	Uppsala University
		5	AFC[1]	Inger Björck	Lund University

[1] VINN Excellence Centre

[2] Berzelii Centre

Appendix 2: Time Schedule

Evaluation group 1

Sunday August 24, 2008
20:00- 22:00 Introductory meeting for the Faste Evaluation Team in Luleå

Monday August 25, 2008
09:00- 11:00 Faste Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including flight transportation to Stockholm
20:00- 22:00 Introductory meeting for the SUS Evaluation Team in Stockholm

Tuesday August 26, 2008
09:00- 11:00 SUS Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including train transportation to Linköping
20:00- 22:00 Introductory meeting for the FunMat Evaluation Team in Linköping

Wednesday August 27, 2008
09:00- 11:00 FunMat Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
15:00- 20:00 Work session for the evaluation team including train transportation to Gothenburg
20:00- 22:00 Introductory meeting for the Chase Evaluation Team in Gothenburg

Thursday August 28, 2008
09:00- 11:00 Chase Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team
20:00- 22:00 Introductory meeting for the GigaHertz Evaluation Team in Gothenburg

Friday August 29, 2008
09:00- 11:00 GigaHertz Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team incl train transportation to Stockholm

Sunday August 31, 2008
20:00- 22:00 Introductory meeting for the EXSELENT Evaluation Team in Stockholm

Monday September 1, 2008
09:00- 11:00 EXSELENT Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team incl. flight transportation to Umeå
20:00- 22:00 Introductory meeting for the UCFB Evaluation Team in Umeå

Tuesday September 2, 2008
09:00- 11:00 UCFB Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team incl flight transportation to Uppsala
20:00- 22:00 Introductory meeting for the Uppsala Berzelii Evaluation Team in Uppsala

Wednesday September 3, 2008
09:00- 11:00 Uppsala Berzelii Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team incl train transportation to Stockholm
20:00- 22:00 Introductory meeting for the SBI Berzelii Evaluation Team in Stockholm

Thursday September 4, 2008
09:00- 11:00 SBI Berzelii Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team

Friday September 5, 2008
09:00- 17:00 "Generalist" experts finalising of the evaluation report

Evaluation group 2

Tuesday November 11, 2008
20:00- 22:00 Introductory meeting for the Mobile Life Evaluation Team in Stockholm

Wednesday November 12, 2008
09:00- 11:00 Mobile Life Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team
20:00- 22:00 Introductory meeting for the iPack Evaluation Team in Stockholm

Thursday November 13, 2008
09:00- 11:00 iPack Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team
20:00- 22:00 Introductory meeting for the HERO-M Evaluation Team in Stockholm

Friday November 14, 2008
09:00- 11:00 HERO-M Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
15:00- 20:00 Work session for the evaluation team

Sunday November 16, 2008
20:00- 22:00 Introductory meeting for the ProNova Evaluation Team in Stockholm

Monday November 17, 2008
09:00- 11:00 ProNova Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including train transportation to Gothenburg
20:00- 22:00 Introductory meeting for the BIOMATCELL Evaluation Team in Gothenburg

Tuesday November 18, 2008
09:00- 11:00 BIOMATCELL Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team
20:00- 22:00 Introductory meeting for the Wingquist Evaluation Team in Gothenburg

Wednesday November 19, 2008
09:00- 11:00 Wingquist Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team
20:00- 22:00 Introductory meeting for the SUMO Evaluation Team in Gothenburg

Thursday November 20, 2008
09:00- 11:00 SUMO Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including train transportation to Stockholm

Friday November 21, 2008
09:00- 17:00 "Generalist" experts finalising of the evaluation report

Evaluation group 3

Monday March 2, 2009
20:00- 22:00 Introductory meeting for the BiMaC Inno Evaluation Team in Stockholm

Tuesday March 3, 2009
09:00- 11:00 BiMaC Inno Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including train transportation to Uppsala
20:00- 22:00 Introductory meeting for the WISENET Evaluation Team in Uppsala

Wednesday March 4, 2009
09:00- 11:00 WISENET Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team incl flight transportation to Lund
20:00- 22:00 Introductory meeting for the AFC Evaluation Team in Lund

Thursday March 5, 2009
09:00- 11:00 AFC Scientific Expert Evaluation Session
11:00- 12:15 Lunch meeting between Scientific and "Generalist" Experts
12:15- 12:45 Lunch meeting with up to 10 PhD students
12:45- 13:00 Preparation for the next session
13:00- 15:00 "Generalist" Expert Evaluation Session
15:00- 20:00 Work session for the evaluation team including train transportation to Stockholm

Friday November 21, 2008
09:00- 17:00 "Generalist" experts finalising of the evaluation report

Appendix 3: Success Criteria for VINN Excellence and Berzelii Centres

In brief, successful VINN Excellence and Berzelii Centres are characterised by the following:

- Promoting sustainable growth by ensuring that new knowledge and new technological developments generated lead to new products, processes and services.
- Leading international research in different fields in collaboration between the private and public sectors, universities and colleges, research institutes and other organisations which conduct research.
- Research programmes are set up and carried out in collaboration between the various participants in order to solve key issues.
- Geographical programmes where the majority of work is conducted at a university or a college to achieve a critical size and interaction between research, post-graduate education and graduate education.
- Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence.
- Long-term collaborative finance from private and public sectors, the university/college and financing governmental agencies, to be able to recruit, develop and keep people with leading international competence.
- The activities are led by a manager and a board where the participants from the public and private sectors hold the majority in order to secure the direction of the Centres towards the requirements of the private and public sectors, i.e. needs-driven research.
- Set up in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).

When completing the evaluation it will also be considered:

- The gender perspective in the research programme; and
- Equality aspects and active promotion of an equal balance.

Appendix 4: Instructions for Centre Reports to the Evaluation Team

Each of the Centres to be evaluated will submit a report to VINNOVA, electronically (pdf-files). The reports will be forwarded to the evaluation team by VINNOVA. Guidelines for report contents and length follow. Facts about the Centre are to be compiled in section 10. It is recommended that this data be referred in the text in other relevant sections so as to give context and appropriate emphasis to the data.

0. Summary (1 page)

- Progress and prospects of the Centre, highlights, breakthroughs, etc.

1. Long-term Vision, Mission and Strategy (1 page)

- Provide a ten-year perspective on the Vision, Mission and Strategy of the Centre in the context of the Success Criteria's, see Appendix 3.

2. Research Area, Competence Profile and Critical Size (3 pages)

- Briefly describe the core competency of the Centre's research team both in terms of research competency (e.g. we have strength in molecular biology, metabolomics and large scale computation) and personnel.
- Describe the facilities that the Centre has developed or plans to develop to support the program.
- Describe the personnel and facilities available to the Centre (through collaboration within or beyond the university) that contribute to establishing competence profile for the research of the Centre.
- State the position of the Centre in relation to internationally leading groups.
- Comment on new types of collaborations since establishing the Centre.
- Describe the value added being a Centre compared to other ways of research collaboration.
- Comment on the Centre with respect to "critical size".

3. Centre Partners - Companies and public service partners (3 pages)

- For each of the partners describe:
  - their corporate profile (number of employees, main products, location of operations etc.).
  - how their business interests are aligned with the Centre research efforts
  - how they interact with the Centre (including planning, personnel and facilities).
- Concerning the overall strategy and considering the Centre as a whole:
  - describe the way in which key issues are identified by partners to stimulate needs-driven research.
  - describe the mechanisms for innovation and translation of technology into new products, processes, and services.
  - what measures have been taken to achieve strong links and integration between academia and companies/public services, and among companies/public services.

4. Research Program (5 pages)

- Provide an overview of the research program.
- Provide brief descriptions of the research projects (50-75 words each). In addition to basic science and methodology, describe the need the research addresses, the question to be answered and the technological objectives.
- Provide a summary statement concerning research productivity. (Particulars of research output are to be listed in the Appendices under Publications and Presentations Activity and International Activity.).

5. Financial Report for Stage 1 (2 pages)

- Discuss any concerns regarding financing matters.
- Describe existing sources of non-Centre funds supporting related research.

6. Organisation and Management of the Centre (3 pages)

- Describe the role and activities of the:
  - Board of Directors.
  - Centre Director.
  - Management Team
  - International Scientific Advisory Board.
- Comment on the scientific leadership of the Centre.
- Describe the process of:
  - idea generation.
  - idea development.
  - project selection.
  - project planning.
  - project review.
- What steps are taken to stimulate innovation processes from ideas/results to products and services?
- Describe the status and role of the Centre vis-à-vis the:
  - university organisational units.
  - central administration.
  - the Faculty.
  - other Centres.
- Comment on things that work well and things that don't.
- What steps are taken to communicate to Centre participants and partners?
- Describe measures taken to stimulate mutual personal mobility between the industrial/public services partners and academic milieus.
- Describe measures taken to provide equality of opportunity, particularly but not only, from a gender perspective.

7. Personnel of High Competence (1 page)

- Describe the contribution of the Centre to university education (graduate and undergraduate): e.g. courses taught, seminars given, students supervised other than those already listed under research projects, etc.
- What measures have been taken to recruit, develop and keep people with leading international competence?
- What is the percentage of students associated with the Centre who's first degree is from:
  - another University?
  - outside Sweden?

What measures have been taken to provide opportunities for students to travel or study abroad?

8. Plans for Development (1 page)

- Describe the plan for development of the Centre over the next three years (stage 2) in relation to the long-term objectives.

9. Further information (1 page)

- Please provide information of particular interest to the evaluation team that has not been covered in any other section of the guidelines.

10. Facts about the Centre

a *CV* in summary of the Centre Director

b *Centre Partners*
TABLE 1: List Centre Partners (Companies/public sector units), the name and position of the key contact)

c *Board of Directors*
TABLE 2: List the name, position, company, location of the members of the Board of Directors

d *Management Team*
TABLE 3: List the name, position in the University, role on the team for the persons in the Management Team

e *International Scientific Advisory Board*
TABLE 4: List the name, position, university/company, location for the members of the International Scientific Advisory Board

f *Research Program*
TABLE 5: Research Projects and Staff (for each project: project title, project leader, staff and student names, and person-years by year (include company and public sector personnel also)).

g *Publication and Presentation Activity*
TABLE 6: List publications, patents, theses, posters, presentations, invited lectures, etc. Include work funded by VINNOVA. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

h *International Activity*
TABLE 7: List collaborations with international researchers, visits outside Sweden (conferences, seminars, university visits, etc.), and foreign visitors to the Centre. Include work funded by VINNOVA and VR. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

i *Financial Reports* (please use the templates in Appendix 5 or in the attached Excel file "Financial Report for Stage 1")
TABLE 8: Overall resources available
TABLE 9: Overall expenditures
TABLE 10: Research personnel
TABLE 11: Project expenditures
TABLE 12: Related research grants

j *Websites*
Provide relevant websites for the Centre, the University, research partners, research collaborators, etc.

Appendix 5: Templates for the Financial Statements

VINN Excellence Centre:	
Berzelii Centre:	
Dnr:	
Year 1:	200x-xx-xx - - 200x-xx-xx
Year 2:	200x-xx-xx - - 200x-xx-xx

Table T8: Overall resources available (cash and in kind)

This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source.

Affiliation	**Year 1**						**Year 2**						**Summary Stage 1**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
VINNOVA																		
University																		
Industrial & Public Partners																		
Partner A																		
Partner B																		
Part…..																		
Sum																		

VINN Excellence Centre:	
Berzelii Centre:	
Dnr:	
Year 1:	200x-xx-xx - - 200x-xx-xx
Year 2:	200x-xx-xx - - 200x-xx-xx

Table 9: Overall Expenditures

List all expenses for the centre at an aggregated level.

	Year 1						Year 2					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

	Summary Stage 1					
	Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")						
External services						
Equipment						
Material, running costs etc.						
Travel						
Other						
Overhead costs						
Sum						

VINN Excellence Center:	
Berzelii Center:	
Dnr:	
Year 1:	200x-xx-xx - - 200x-xx-xx
Year 2:	200x-xx-xx - - 200x-xx-xx

Table 10: Research Personnel

List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report

				Year 1						**Year 2**					
				Budget			**Outcome**			**Budget**			**Outcome**		
Name	**Affiliation (financing source)** Center / Univ / Partner	**University degrees** (year of degree, university)	**Category title, status / position** Prof / Res / PhD / Manager	**Degree of activity in the center** % of full time	**Cash contr.** kSEK	**In kind contr.** kSEK	**Degree of activity in the centre** % of full time	**Cash contr.** kSEK	**In kind contr.** kSEK	**Degree of activity in the center** % of full time	**Cash contr.** kSEK	**In kind contr.** kSEK	**Degree of activity in the center** % of full time	**Cash contr.** kSEK	**In kind contr.** kSEK

VINN Excellence Center:	
Berzelii Center:	
Dnr:	
Year 1:	200x-xx-xx - - 200x-xx-xx
Year 2:	200x-xx-xx - - 200x-xx-xx

Table 11: Project expenditures

Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size

	Year 1						Year 2						Summary Stage 1					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Management of center																		
Communication																		
Learning activities																		
Reserved for NEW PROJECTS																		
Projects (subprojects included)																		
Sum																		

VINN Excellence Center:	
Berzelii Center:	
Dnr:	
Year 1:	200x-xx-xx - - 200x-xx-xx
Year 2:	200x-xx-xx - - 200x-xx-xx

Table 12: Related Research Grants

List grants granted, applied for and under preparation - project title, total amount applied for, duration of project, funding source, date of applicatin and any comment you might have

Project Title	Status	Total amount applied for	Duration of project	Funding source	Date of application	Comments
	Granted / Applied / Under preparation/ Rejected	kSEK				

Appendix B – The Evaluation Team

Generalists or Competence Centre Experts

Professor and Chair Douglas Reeve
University of Toronto
CANADA

Professor and Dean Anne H Anderson
University of Dundee
SCOTLAND

Specialist Evaluators (Scientific experts)

FASTE

Professor Luciënne Blessing
Université du Luxembourg
LUXEMBOURG

Professor David Barton
University of Leeds
ENGLAND

SUS

Professor Roland Clift
University of Surrey
ENGLAND

Advisor Kim Davis
Research Council of Norway
NORWAY

FUNMAT

Professor M-P D Ogletree
Université Libre de Bruxelles
BELGIUM

Professor Martin Stutzmann
Technical University of Munich
GERMANY

CHASE

Professor Visa Koivunen
Helsinki University of Technology
FINLAND

Professor Anja Skrivervik
École Polytech. Fédérale de Lausanne
SWITZERLAND

GIGAHERTZ

Professor Dominique Schreurs
Katholieke Universiteit Leuven
BELGIUM

Professor Iain Thayne
University of Glasgow
SCOTLAND

MOBILE LIFE

Professor Sussanne Bødker
Århus University
DENMARK

Professor Yvonne Rodgers
Open University
ENGLAND

iPACK

Professor Anthony Turner
Cranfield University
ENGLAND

Professor Berit Sundby Avset
SINTEF
NORWAY

HERO-M

Professor Sybrand van der Zwaag
Delft University of Technology
THE NETHERLANDS

Professor Masato Enomoto
Ibaraki University
JAPAN

PRONOVA

Professor Kristiina Takkinen
VTT Technical Research
FINLAND

Professor Markku Kulomaa
UFA/ETHZ
SWITZERLAND

BIOMATCELL

Professor Josep Planell
Universitat Politècnica de Catalunya
SPAIN

Professor Elisabeth Tanner
University of Glasgow
SCOTLAND

WINGQUIST

Professor Jack Hu
University of Michigan
USA

Professor Alison McKay
University of Leeds
ENGLAND

SUMO

Professor Joseph Seymour
Montana State University
USA

Professor Helmuth Möhwald
Max-Planck Institute of Colloids
and Interfaces
GERMANY

BIMAC INNO

Professor Art Ragauskas
Georgia Institute of Technology
USA

Professor Maija Tenkanen
University of Helsinki
FINLAND

WISENET

Professor Gregory O´Hare
University College Dublin
IRELAND

Professor Torsten Braun
Universität Bern
SWITZERLAND

AFC

Professor Rob Welch
University of Ulster
NORTHERN IRELAND

Professor Knud Erik Bach Knudsen
Aarhus University
DENMARK

Appendix C – List of participants at the interviews

In the beginning of each interview session a list was sent around for the participants to write their name and affiliation. Below is presented the names and affiliations given on these lists. For different reasons all participants did not always wrote there name on the list, which means that some people participating at the interviews, are not found below.

FASTE: Participants during the morning session 2008-08-25

Centre Representatives

Vahid Kalhari	Research engineer	AB Sandvik
Eric Tjernström	R&D Manager	AB Sandvik
Daniel Palo	R&D Engineer	Gestamp HardTech AB
Martin Jonsson	R&D	Gestamp HardTech AB
Mats Gjertz	R&D	VCC
K-G Forsberg	IT Strategy Manager	BAE
Jan Laredius	R&D	Metso Panelboard AB
Björn Leidelöf	R&D	Hägglunds Drivers AB
Mats Nytorp	Managing Director	Hägglunds Drivers AB
Karl-David Pettersson	Vice president	Volvo Aero
Ola Isaksson	Company Specialist (adj prof)	Volvo Aero
Jörgen Hansson	Product Area Mgr	Volvo Tech/Volvo Trucks
Daniel Marjavaara	Research Engineer (PHD)	LKAB
Kent Tano	Manager ProcessTech.	LKAB
Henrik H.	PhD Student	LTU
Tobias Larsson	Professor	LTU
Petter Andersson	PhD student	LTU
Mattias Bergström	PhD student	LTU
Christian Johansson	PhD student	LTU
Stefan Sandberg	PhD student	LTU
Mats Näsström	Ass. Prof.	LTU
Peter Jeppsson	Ass. Prof.	LTU
Magnus Löfstrand	Reseacher, PhD	LTU
Ove Isaksson	Ass.prof.	LTU
Andreas Larsson	Research Associate	LTU
Mats Westerberg	Assistant Prof.	LTU
Mats Oldenborg	Prof. Solid Mechanics	LTU
Lars- Erik Lindgren	Prof. Mac Met	LTU
Lennart Karlsson	-	-
Staffan Lindholm	-	-

Evaluation Team

Luciënne Blessing	Evaluator	Univ Luxenbourg
David Barton	Evaluator	University of Leeds

VINNOVA Staff

Mattias Lundberg	Programme Manager	VINNOVA
Margareta Groth	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

FASTE: Participants during the afternoon session 2008-08-25

Centre Representatives

Vahid Kalhari	Research engineer	AB Sandvik
Eric Tjernström	R&D Manager	AB Sandvik
Daniel Palo	R&D Engineer	Gestamp HardTech AB
Mats Gjertz	R&D	VCC
K-G Forsberg	IT Strategy Manager	BAE
Jan Laredius	R&D	Metso Panelboard AB
Björn Leidelöf	R&D	Hägglunds Drivers AB
Mats Nytorp	Managing Director	Hägglunds Drivers AB
Karl-David Pettersson	Vice president	Volvo Aero
Ola Isaksson	Company Specialist (adj prof)	Volvo Aero
Jörgen Hansson	Product Area Mgr	Volvo Tech/Volvo Trucks
Daniel Marjavaara	Research Engineer (PHD)	LKAB
Kent Tano	Manager ProcessTech.	LKAB
Tobias Larsson	Professor	LTU
Petter Andersson	PhD student	LTU
Mattias Bergström	PhD student	LTU
Christian Johansson	PhD student	LTU
Stefan Sandberg	PhD student	LTU
Mats Näsström	Ass. Prof.	LTU
Peter Jeppsson	Ass. Prof.	LTU
Magnus Löfstrand	Reseacher, PhD	LTU
Ove Isaksson	Ass.prof.	LTU
Andreas Larsson	Research Associate	LTU
Mats Westerberg	Assistant Prof.	LTU
Mats Oldenborg	Prof. Solid Mechanics	LTU
Lars- Erik Lindgren	Prof. Mac Met	LTU
Åsa Ericson	Reseacher	LTU
Peter Törlmo	Reseacher	LTU
Sofia Larsson	PhD student	LTU
Lina Turesson	Adm Coordinator	LTU
Magnus Karlberg	Reseacher	LTU
Pia S-W	Rektor	-

Evaluation Team

Douglas Reeve	Evaluator	U of Toronto
Anne Anderson	Evaluator	Univ of Dundee
Luciënne Blessing	Evaluator	Univ of Luxembourg
David Barton	Evaluator	Univ of Leeds

VINNOVA representatives

Mattias Lundberg	Programme Manager	VINNOVA
Margareta Groth	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

SUS: Participants during the morning session 2008-08-26

Centre Representatives

Helene Wintzell	Director	KTH
Per Andersson	Sustainability director	Ericsson
Annika von Scheele	Styrelseled. SUS, prof	National Board of Housing, Building and Planning
Malin Picha (Tidningsutgivarna)	Project Manager	Swedish Newspaper Publ Ass
Göran Finnveden	Professor	KTH
Marko Turpeinen	Professor	KTH
Anders Rockström	Project Manager	KTH
Kristina Gillin	Communication Officer	KTH
Åsa Moberg	Researcher	KTH
Alex Jonsson	Researcher	KTH/Media
Agneta Ekman	MD. Leg läk	KI

Evaluators

Roland Clift	Professor	Univ of Surrey
Kim Davis	Senior Advisor	Research Council of Norway

VINNOVA Representatives

Mattias Lundberg	Program Manager	VINNOVA
Thomas Eriksson	Program Manager	VINNOVA

SUS: Participants during the afternoon session 2008-08-26

Centre Representatives

Helene Wintzell	*Director*	*KTH*
Per Andersson	*Sustainability director*	*Ericsson*
Göran Finnveden	*Professor*	*KTH*
Kristina Gillin	*Communication Officer*	*KTH*
Gunnar Landgren		*KTH*
Ingrid Melinder		*KTH*
Marko Turpeinen		*KTH*

Evaluators

Douglas Reeve	Professor	Univ of Toronto
Anne Anderson	Professor	Univ of Dundee
Roland Clift	Professor	Univ of Surrey
Kim Davis	Senior Advisor	Research Council of Norway

VINNOVA Representatives

Mattias Lundberg	Program Manager	VINNOVA
Thomas Eriksson	Program Manager	VINNOVA

SUS: Participants during the morning session 2009-03-02

Centre Representatives

Nils Enlund	Project Leader	KTH
Örjan Svane	Project leader	KTH
Greger Henriksson	Project leader	KTH
Åsa Moberg	PhD student, assisting PL	KTH
Marko Turpeinen	Professor, mgmt team PL	KTH
Katja Grillner	Vice Dean ABE, board, mgmt team	KTH
Göran Finnveden	Mgmt team, PL	KTH
Mattias Höjer	Director	KTH
Helene Wintzell	former director	KTH
Kristina Gillin	Communication Officer	KTH
Leo Persson	Member of the board	Community Hub
Per Andersson	Member of the board, chairman	Ericsson
Anders Rockström	CSC, SUS PL	
Minna Räsänen	Researcher	KTH
Agneta Ekman	M.D. research	Sahlgrenska (KI)
Dag Lundén	Environmental manager	Telia Sonera
Clara Borggren	PhD student	KTH
Malin Picha	Project manager	Swedish Newspaper Publishers Association
Lennart Wiklund	Sen VP	Bonnier/partner
Christer Törnevik	Director R&D	Ericsson/partner
Mats Erixon	Media Systems	KTH
Ingrid Melinder	DeanKTH CSC	
Jorge L Zapico	PhD student	KTH
Hannes Ebner	PhD student	KTH/ Media
Raoul Stubbe	Adj boardmember	KTH Holding/STING

Evaluation Team

Roland Clift	Evaluator	Univ of Surrey
Kim Davis	Evaluator	Research Council of Norway

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Alexander Nilsson	Programme Manager	VINNOVA
Ranya Said	Programme Manager	VINNOVA
Thomas Eriksson	Evaluation Process Leader	AB Realisator

SUS: Participants during the afternoon session 2009-03-02

Centre Representatives

Helene Wintzell	former director	KTH
Mattias Höjer	director	KTH
Göran Finnveden	Mgmt team, project leader	KTH
Katja Grillner	Vice Dean ABE School, Mgmt team, Board	KTH
Marko Turpeinen	Professor, mgmt team, PL	KTH
Ingrid Melinder	dean	KTH
Per Andersson	Chair of board	Ericsson
Raoul Stubbe	Adj boardmember	KTH Holding/STING
Nils Enlund	Project leader	KTH
Åsa Moberg	PhD student, assistant PL	KTH
Minna Räsänen	Researcher	KTH
Anders Rockström	Project leader	KTH
Örjan Svane	Associate Professor	KTH
Leo Persson	Board member	SFH+IPC
Kristina Gillin	Communication Officer	KTH
Hannes Ebner	PhD student	KTH
Erik Stenberg	Head of Dept, Architecture	KTH
Christer Törnevik	Director, R&D	Ericsson
Lennart Viklund	Bonnier/Sen VP	Partner
Malin Picha	Project Manager	Sw. Newspaper Publ. Ass.
Greger Henriksson	Project Leader	KTH
Alex Jonsson	Researcher	KTH
Björn Hårsman	Professor	KTH

Evaluation Team

Doug Reeve	Evaluator	Unviversity of Toronto
Anne H Anderson	Evaluator	University of Dundee
Roland Clift	Evaluator	University of Surrey
Kim Davis	Evaluator	Research Council of Norway

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Alexander Nilsson	Programme Manager	VINNOVA
Ranya Said	Programme Manager	VINNOVA
Thomas Eriksson	Evaluation Process Leader	AB Realisator

FUNMAT: Participants during the morning session 2008-08-27

Centre Representatives

Mats Johansson	Proj.	Seco Tools
Trine Vikinge	Boardmember	Accelerator Nordic AB
Magnus Odén	Prof.	Linköping Univ.
Anita Lloyd Spetz	Prof. Vice-Director for FUNMAT	Linköping Univ.
Lars Hultman	Prof.	Linköping Univ.
Therese Dannetun	Coordinator	Linköping Univ.
Rositza Yakimova	Prof.	Linköping Univ.
Thomas Liljenberg	Chair of the board	ABB

Evaluation Team

M-P Delplancke-Ogletree	Expert	Université-libre deBruxelles
Martin Stutzmann	Expert	TU MÜNCHEN

VINNOVA Representatives

Thomas Eriksson	Programme Manager	VINNOVA
Anders Marén	Senior Programme Manager, Materials Tech.	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA

FUNMAT: Participants during the afternoon session 2008-08-27

Centre Representatives

Mats Johansson	Proj	Seco Tools
Trine Vikinge	Boardmember	Accelerator Nordic AB
Magnus Odén	Prof.	Linköping Univ.
Anita Lloyd Spetz	Prof. Vice-Director for FUNMAT	Linköping Univ.
Lars Hultman	Prof.	Linköping Univ.
Therese Dannetun	Coordinator	Linköping Univ.
Rositza Yakimova	Prof.	Linköping Univ.
Thomas Liljenberg	Chair of the board	ABB

Evaluation Team

Douglas Reeve	Evaluator	Univ of Toronto
Anne Anderson	Evaluator	Univ of Dundee
M-P Delplancke-Ogletree	Expert	Université-libre de Bruxelles
Martin Stutzmann	Expert	TU MÜNCHEN

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Anders Marén	Senior Programme Manager, Materials Tech.	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

CHASE: Participants during morning session 2008-08-28

Centre Representatives

Patrik Persson	Reseacher	Ericsson
Thomas Bolin	Technical Manager Antenna	Sony Ericsson Lund
Patrik Dahlqvist	CEO	Medfield Diagnostics
Mats Andersson	CEO	Bluetest
Charlie Orlenius	Projekt Leader	Bluetest
Ulrike Firniss	Chairman of the board	Business Region Göteborg
Ingmar Carlsson	Centre Manager	Chalmers
Arne Svensson	Head of dep. S2	Chalmers
Jan Carlsson	Prof. Project leader	Chalmers/SP
Andreas Wolfgang	Project leader	Chalmers
Per-Simon	Project leader	Chalmers
Mikael Persson	Project leader	Chalmers
Johan Carlsten	Vice president	Chalmers
Thomas Harju	Manager	Ascom
Per Ingvarson	Advisary Board	Saab Space
Tomas Gustafsson	CEO	Microps Medical AB
Henrik Holter	Antenna dev.	SWE-DISH

Evaluation Team

Anja Skrivervik	Prof. Evaluator	EPFL
Visa Koivunen	Prof. Evaluator	Helsinki univ. Of Tech.

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ulf Öhlander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

CHASE: Participants during afternoon session 2008-08-28

Centre Representatives

Patrik Persson	Reseacher	Ericsson
Roland Karlsson	Site manager	Ericsson AB
Mats Andersson	CEO	Bluetest
Ulrike Firniss	Chairman of the board	Business Region Göteborg
Arne Svensson	Head of dep S2	Chalmers
Mats Viberg	Professor	Chalmers
Ingmar Carlsson	Centre Manager	Chalmers
Jan Carlsson	Prof. Project leader	Chalmers/SP
Andreas Wolfgang	Project leader	Chalmers
Per-Simon	Project leader	Chalmers
Mikael Persson	Project leader	Chalmers
Stefan Bengtsson	Prorektor	Chalmers
Ann-Christine Lindbom	Adm.	Chalmers
B. Gustafsson	-	Chalmers
Per Ingvarson	Advisary Board	Saab Space
Henrik Holter	Antenna dev.	SWE-DISH

Evaluation Team

Douglas Reeve	Prof. Evaluator	Univ. Of Toronto
Anne H Andersson	Prof. Evaluator	Univ. of Dundee
Anja Skrivervik	Prof. Evaluator	EPFL
Visa Koivunen	Prof. Evaluator	Helsinki univ. Of Tech.

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ulf Öhlander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

GHz: Participants during the morning session 2008-08-29

Centre Representatives

Jan Hudner	*Centre Director*	*Chalmers*
Ulrika Hjortbäck	Design Engineer	Ericsson AB
Bo Berglund	Expert	Ericsson, Kista
Ulf Gustavsson	Ind. PhD student	Ericsson AB
Mingquan Bao	Design Engineer	Ericsson AB
Andrew Teller	Development	CIP PS
Tony Pellikka	Proj. manager Partner	Omnisys nstruments
Hans-Olof Vickes	Adj. Professor	Saab Microwave Systems
Franz D.	Chief Technologist RFP	Infineon, Austria
Klas- Håkan Eklund	CEO	Comheat Microwave
Morteza Abbasi	PhD student	Chalmers
Sten Gunnarsson	Proj. leader	Chalmers
Thomas Eriksson	Associate Prof. (in SMPA proj.)	Chalmers
Haiyong Cao	PhD student	Chalmers
Christian Fager	Assistant Prof. (Proj. leader SMPA)	Chalmers
Dan Kuylenstierna	PhD (Proj.leader FREQ)	Chalmers
Mattias Thorsell	PhD student	Chalmers
Kristoffer Andersson	PhD (Proj.leader WIDEBAND)	Chalmers
Hussein Mashad Nemati	PhD student (SMPA)	Chalmers
Ali Soltani Tehrani	PhD student (SMPA)	Chalmers

Evaluation Team

Domenique Schreurs	Evaluator
Iain Thyne	Evaluator

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ulf Öhlander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

GHz: Participants during the afternoon session 2008-08-29

Centre representatives

Jan Hudner	*Centre Director*	*Chalmers*
Franz D.	Chief Technologist RFP	Infineon, Austria
Martin Kores	President	Omnisys Instruments

Evaluation Team

Douglas Reeve	Evaluator	Univ of Toronto
Anne Anderson	Evaluator	Univ of Dundee
Domenique Schreurs	Evaluator	
Iain Thyne	Evaluator	

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ulf Öhlander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

MOBILE LIFE: Participants during the morning session 2008-11-12

Centre representatives

Maria Holm	Coordinator	Mobile Life
Annika Waern	Research Leader	Mobile Life
Lars-Erik Holmqvist	Research Leader	Mobile Life
Kristina Höök	Centre Director	Mobile Life

Evaluation Team

Susanne Bødker	Reviewer	Århus University
Yvonne Rodgers	Reviewer	Open University

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Pernilla Rydmark	Contact person, Domain expert	VINNOVA

MOBILE LIFE: Participants during the afternoon session 2008-11-12

Centre representatives

Maria Holm	Coordinator	Mobile Life
Annika Waern	Research Leader	Mobile Life
Lars-Erik Holmqvist	Research Leader	Mobile Life
Mattias Esbjörnsson	Reseacher	Mobile Life
Jarmo Laaksolahti	Reseacher	Mobile Life
Staffan Jonsson	-	Mobile Life
Tove Jaensson	PhD student	Mobile Life
Arvid Engström	PhD student	Mobile Life
Mattias Jacobsson	PhD student	Mobile Life
Elsa Kosmack Vaara	-	Mobile Life
Thomas A.	MD	SU Holding AB
Gudrun Dahl	Dean, Social Science	SU
Love Ekenberg	Head, Dept. comp syst science	SU
Leif Lindfors	University director (ret)	SU
Karin Öhlander	Projekt Manager	Stockholm City
Staffan Ingvarsson	Chief of Staff	Stockholm City
Anders Cajander	Public Funding Manager	Telia Sonera
Martin Könling	Director service Layer	Ericsson

Skype

Oskar Juhlin	Assistant Director	Mobile Life
Alex Taylor	Senior Researcher	Microsoft Research

Evaluation Team

Douglas Reeve	Reviewer	Univ. of Toronto
Anne H Anderson	Reviewer	Univ. of Dundee
Susanne Bødker	Reviewer	Århus University
Yvonne Rodgers	Reviewer	Open University

VINNOVA Staff

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Pernilla Rydmark	Contact person, Domain expert	VINNOVA

iPACK: Participants during the morning session 2008-11-13

Centre representatives

Ann Cornell	Projekt leader	KTH/ICT
Yi Feng	PhD student	KTH/ICT
Huimin She	PhD student	KTH/ICT
Ana Lopez	PhD student	KTH/ICT
David Sarmiento	PhD student	KTH/ICT
Yasar Amin	PhD student	KTH/ICT
Majid Nejad	PhD student	KTH/ICT
Simon Leijonmarck	PhD student	KTH/ICT
Shili Zhang	Prof./ group leader	KTH/ICT
Zhibin Zang	Senior researcher	KTH/ICT
Julius Hållstedt	Assistant director	KTH/ICT
Hannu Tenhunen	Prof.	KTH/ICT
Qiang Chen	PhD, Senior researcher	KTH/ICT
Fredrik Jonsson	Project leader	KTH
Arindam Adhikari	Post Doctoral Fellow	YKI
Agne Swerin	Section Manager/Assoc. Prof.	YKI
Bruce Lyne	Member of board	YKI
Satu Prokkola	Exchange researcher	VTT
Lars Wågberg	Professor	KTH/CHE
Göran Lindberg	Professor	KTH/CHE
Lars Sandberg	Chairman of the board	Stora Enso
Carl- Ola Davidsson	Industrial Representative	Stora Enso
Mats Fredlund	Industrial Representative	Stora Enso
Johan Larsson	Project leader	Korsnäs
Olle Steffner	R&D Dir./ Board	Korsnäs
Anders Söderbärg	R&D Dir. / Board	Note
Pia Wågberg	Senior advisor buisness innovation	STFI
Lucas Åhlström	Technical Chief	RFIG

Evaluation Team

Anthony Turner	Evaluator	Cranfield Univ.
Berit Sundby Avset	Evaluator	SINTEF

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Herbert Sander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

iPACK: Participants during the afternoon session 2008-11-13

Centre representatives

Ann Cornell	Projekt leader	KTH/ICT
Yi Feng	PhD student	KTH/ICT
Huimin She	PhD student	KTH/ICT
Ana Lopez	PhD student	KTH/ICT
David Sarmiento	PhD student	KTH/ICT
Yasar Amin	PhD student	KTH/ICT
Zhou Zho	PhD student	KTH/ICT
Majid Nejad	PhD student	KTH/ICT
Simon Leijonmarck	PhD student	KTH/ICT
Shili Zhang	Prof./ group leader	KTH/ICT
Zhibin Zang	Senior researcher	KTH/ICT
Julius Hållstedt	Assistant director	KTH/ICT
Hannu Tenhunen	Prof.	KTH/ICT
Qiang Chen	PhD, Senior researcher	KTH/ICT
Li-Rong Zheng	Prof. Director	KTH/ICT
Mikael Östling	Prof. Dean	KTH/ICT
Gunnar Landgren	Vice rector	KTH
Fredrik Jonsson	Project leader	KTH
Arindam Adhikari	Post Doctoral Fellow	YKI
Agne Swerin	Section Manager/Assoc. Prof.	YKI
Bruce Lyne	Member of board	YKI
Satu Prokkola	Exchange researcher	VTT
Göran Lindberg	Professor	KTH/CHE
Lars Sandberg	Chairman of the board	Stora Enso
Carl- Ola Davidsson	Industrial Representative	Stora Enso
Mats Fredlund	Industrial Representative	Stora Enso
Johan Larsson	Project leader	Korsnäs
Anders Söderbärg	R&D Dir. / Board	Note
Lucas Åhlström	Technical Chief	RFIG
Magnus Wikström	Board Member	Billerud

Evaluation Team

Douglas Reeve	Evaluator	Univ. of Toronto
Anne H Anderson	Vice Principal	Univ. of Dundee
Anthony Turner	Evaluator	Cranfield Univ.
Berit Sundby Avset	Evaluator	SINTEF

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Herbert Sander	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

HERO-M: Participants during the morning session 2008-11-14

Centre representatives

Lyubov Belova	Assoc. prof	KTH
Klara Asp Grönhagen	PhD student	KTH
Olga Razumorskij	PhD student	KH
Joakim Odqvist	Project leader	KTH
Huahai Mao	Reseacher	KTH
Annika Borgenstam	Vice Head/ Projectleader	KTH
Malin Selleby	Management committe	KTH
Pavel Korzhavji	Reseacher	KTH
Anders Engström	Director of product	Thermo Calc Software
Henrik Strandlund	Project leader	Thermo Calc Software
Ros-Mari Koch	Industrial partner	SSAB Oxelösund
Ulrika Borggren	Project leader	SSAB Tunnplåt
Per Lindskog	Project leader	Sandvik Tooling
Gunnar Brandt	Chairman Board	Sandvik Tooling
Eva Jacobson	Industrial partner	Höganäs AB
Karin Frisk	Industrial partner	Swerea KIMAB
Staffan Hertzman	Board member	-
John Ågren	-	-

Evaluation Team

Sybrand van der Zwaag	Prof.	Evaluator
Masato Enomoto	Prof.	Evaluator

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Lena Svendsen	-	VINNOVA

HERO-M: Participants during the afternoon session 2008-11-14

Centre representatives

Lyubov Belova	Assoc. prof	KTH
Joakim Odqvist	Project leader	KTH
Huahai Mao	Reseacher	KTH
Annika Borgenstam	Vice Head/ Projectleader	KTH
Malin Selleby	Management committe	KTH
Hemmanli Kumar	PhD student	KTH
Albin Stormvinter	PhD student	KTH
Stefan Sundin	Board Member	Erasteel
Anders Engström	Director of product	Thermo Calc Software
Henrik Strandlund	Project leader	Thermo Calc Software
Ros-Mari Koch	Industrial partner	SSAB Oxelösund
Ulrika Borggren	Project leader	SSAB Tunnplåt
Per Lindskog	Project leader	Sandvik Tooling
Gunnar Brandt	Chairman Board	Sandvik Tooling
Eva Jacobson	Industrial partner	Höganäs AB
Karin Frisk	Industrial partner	Swerea KIMAB
Staffan Hertzman	Board member	-
John Ågren	-	-
Gunnar Landgren	-	-

Evaluation team

Douglas Reeve	Evaluator	Univ Toronto
Anne Anderson	Evaluator	Univ Dundee
Sybrand van der Zwaag	Prof	Evaluator
Masato Enomoto	Prof	Evaluator

VINNOVA Representative

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Lena Svendsen	-	VINNOVA

PRONOVA: Participants during the morning session 2008-11-17

Centre representatives

Simon Fredriksson	CSO	OLINK AB
Bo Franzén	Assoc	Astra Zeneca R&D
John Löfblom	Postdoc	KTH
Sophia Hober	Prof.	KTH
Peter Nilsson	Assoc. Prof	KTH
Stefan Ståhl	Prof/ Dean	KTH
Mathias Ullen	Prof. Programme Director	KTH
Amelie Eriksson Karlström	Assoc. Prof, Centre Director	KTH
Per-Åke Nygren	Prof. Vice Centre Director	KTH
Emma Lundberg	Group Leader	KTH
Rebecca Rimini	Reseacher	KTH
Jochen Schwenk	Reseacher	KTH
Lisa Berglund	Group Leader	KTH

Evaluation Team

Markku Kulomaa	Evaluator	UFA/ETHZ
Kristiina Takkinen	Evaluator	VTT/Finland

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

PRONOVA: Participants during the afternoon session 2008-11-17

Centre representatives

Simon Fredriksson	CSO	OLINK AB
Bo Franzén	Assoc	Astra Zeneca R&D
Lars- Erik Nyström	Research Director	GE Healthcare
Maris Hartmanis	Vice chairman, Pronova	Ling Vitae
Björn O Nilsson	Chairman, Pronova	President, IVA
Sophia Hober	Prof.	KTH
Peter Nilsson	Assoc. Prof	KTH
Mathias Ullen	Prof. Programme Director	KTH
Amelie Eriksson Karlström	Assoc. Prof, Centre Director	KTH
Per-Åke Nygren	Prof. Vice Centre Director	KTH
Gunnar Landgren	Vice Rector	KTH

Evaluation Team

Douglas Reeve	Evaluator	Univ. of Toronto
Anne H Anderson	Evaluator	Univ. of Dundee
Kristiina Takkinen	Evaluator	VTT
Markku Kulomaa	Evaluator	UFA/ETHZ

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

BIOMATCELL: Participants during the morning session 2008-11-18

Centre representatives

Ulf Rolander	VD R&D	Sandvik Tooling
Agneta Edberg	Board of Directors	Link Med AB
Pentti Tengvall	BioMatCell, Biosum	Gothenburg University
Camilla Karlsson	Post-doc	Gothenburg University
Anders Lindahl	Proj. leader	Gothenburg University
Staffan Edén	Advisor	Gothenburg University
Jukka Lausmaa	Deputy director	Gothenburg University
Susanne Nilsson	Board of director	St Jude Medical AB
Magnus René	B o D	Arcam
Erik Östhols	Proj. leader	Sandvik
Marie Larsson	Board of directors	Region Västra Götaland
Ian Milsom	Chairman of the board	Gothenburg University
Peter Thomsen	Director	Gothenburg University
Björn Rydevik	Board of Directors	Gotenburg University
Pam Fredman		

Evaluation Team

Elisabeth Tanner	Evaluator	Univ. Of Glasgow
Josep A.Planell	Evaluator	UPC - IBEC

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA

BIOMATCELL: Participants during the afternoon session 2008-11-18

Centre representatives

Ulf Rolander	VD R&D	Sandvik Tooling
Agneta Edberg	Board of Directors	Link Med AB
Pentti Tengvall	BioMatCell, Biosum	Gothenburg University
Staffan Edén	Advisor	Gothenburg University
Jukka Lausmaa	Deputy director	Gothenburg University
Anna Öhlund	Manager Administration	Gothenburg University
Sofie Gunnarsson	Legal Counsel	Gothenburg University
Peter Kim	Senior Legal Counsel	Gothenburg University
Susanne Nilsson	Board of director	St Jude Medical AB
Erik Östhols	Proj. leader	Sandvik
Marie Larsson	Board of directors	Region Västra Götaland
Ian Milsom	Chairman of the board	Gothenburg University
Björn Rydevik	Board of Directors	Gotenburg University
Jens Laago Hellman	Assoc. professor	Chalmers Univ. of Tech.
Staffan Sjödin	Chairman	Chalmers
Klementina Österberg	Business Dev. Group/CEO of GUH	Gothenburg University

Evaluation Team

Josep A Planell	Evaluator	UPC - IBEC
Elisabeth Tanner	Evaluator	Univ. of Glasgow
Anne H Anderson	Evaluator	Univ. of Dundee
Douglas Reeve	Evaluator	Univ. of Toronto

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA

WINGQUIST: Participants during the morning session 2008-11-19

Centre representatives

Christina Haglund	Financial officer	Chalmers
Anita Anborn	Secretary	Chalmers
Bengt Lennartsson	Prof automation	Chalmers
Johan Carlsten	VP	Chalmers
Hans Johannesson	Prof Engineering Design	Chalmers
Bo Anulf	Chairman	Saab Automobile
Anders Claesson	SBC Engineering	Saab Automobile
Nader Anafi	Senior Manager Res & Adv Eng	Volvo Cars
Elna Holmberg	Research collaboration leader	Volvo Trucks
Henrik Runnemalm	Director Research & Technology	Volvo Aero
Lars Lindkvist	Man Software dev	RD&T Technology
Mats Källman	Manager Mechatronics	ABB Corporate Research
Uno Nävert	Director	FCC
Johan Carlson	Vice Director	FCC
Lennart Holmberg	R&D	Kongsberg Automotive
Rikard Söderberg	Wingquist	Chalmers

Evaluation Team

Jack Hu	Evaluator	Univ. of Michigan
Alison McKay	Evaluator	Univ. of Leeds

VINNOVA Representatives

Erik Litborn	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA
Magnus Wiktorsson	Programme Manager	VINNOVA

WINGQUIST: Participants during the afternoon session 2008-11-19

Centre representatives

Christina Haglund	Financial officer	Chalmers
Anita Anborn	Secretary	Chalmers
Bengt Lennartsson	Prof automation	Chalmers
Johan Carlsten	VP	Chalmers
Hans Johannesson	Prof Engineering Design	Chalmers
Bo Anulf	Chairman	Saab Automobile
Anders Claesson	SBC Engineering	Saab Automobile
Nader Anafi	Senior Manager Res & Adv Eng	Volvo Cars
Elna Holmberg	Research collaboration leader	Volvo Trucks
Lars Frånberg	Chief Engineering AE	Volvo Trucks
Henrik Runnemalm	Director Research & Technology	Volvo Aero
Lars Lindkvist	Man Software dev	RD&T Technology
Mats Källman	Manager Mechatronics	ABB Corporate Research
Uno Nävert	Director	FCC
Johan Carlson	Vice Director	FCC
Lennart Holmberg	R&D	Kongsberg Automotive
Rikard Söderberg	Wingquist	Chalmers

Evaluation Team

Douglas Reeve	Evaluator	Univ. of Toronto
Anne H Anderson	Evaluator	Univ. of Dundee
Alison McKay	Evaluator	Univ. of Leeds
Jack Hu	Evaluator	Univ. of Michigan

VINNOVA Staff

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Magnus Wiktorsson	Programme Manager	VINNOVA

WINGQUIST: Participants during the interview session 2009-03-06

Centre representatives

Rikard Söderberg	Centre Director	Chalmers
Bo Anulf	Integration Mgr	Saab Automobile
Johan Carlson	Vice Director	FCC
Hans Johannesson	Professor	Chalmers
Bengt Lennartsson	Professor	Chalmers
Andreas Dalman	Doctor	Chalmers
Christina Haglund	Financial Officer	Chalmers
Anita Aaboen	Secretary	Chalmers
Helmut Neunaert	Professor	Fraunhofer- ITWM
Panos Papalambros	Professor	Univ of Michigan
Hoda ElMaraghy	Professor	Univ of Wndsor, Canada
Uno Nävert	Director	FCC
Mats Källman	Manager	ABB
Henrik Runnemalm	Research Director	Volvo Aero
Nader Asnafi	Senior Manager – R&D	Volvo Cars
Elna Holmberg	Research Leader	Volvo Trucks
Johan Carlsten	Vicerektor	Chalmers

Evaluation Team

Douglas Reeve	Evaluator	Univ of Toronto
Anne Anderson	Evaluator	Univ of Dundee
Jack Hu (via Video Conf)	Evaluator	Univ of Michigan
Alison McKay (via Video Conf)	Evaluator	Univ of Leeds

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Magnus Wiktorsson	Programme Manager	VINNOVA
Andreas Larsson	Programme Manager	VINNOVA
Thomas Eriksson	Evaluation Process Leader	AB Realisator

SUMO: Participants during the morning session 2008-11-20

Centre Representatives

Magnus Nydén	Scientific coordinator	Chalmers
Anette Larsson	Project manager	Chalmers
Stefan Gustafsson	Reseacher	Chalmers
Diana Bernin	PhD student	Chalmers
Mikael Larsson	PhD student	Chalmers
Dan Isaksson	Postdoc	Chalmers
Mats Rudemo	Reseacher	Chalmers
Stefan Bengtsson	Vice President	Chalmers
Mats Stadig	Reseacher	SIK/Chalmers
Anne-Marie Hermansson	-	Chalmers/SIK
Joel Hagman	PhD student	SIK
Niklas Lorén	Projekt Manager	SIK
Marina Nordberg	Ind.representative (prod.dev)	Mölnlycke Health Care
Johan Brink	Reseacher	Göteborgs Universitet
Pentti Tengvall	BIOSUM director of studies	Gothenburg University
Lars Stubbend	Member of board/ SUMO	Astra Zeneca
Karin Emilsson	Member of board / SUMO	
Catherine Bissiere	Reseacher	Astra Zeneca
Rolf Andersson	Chairman of the board	SCA
Anna Ström	Reseacher of Unilever	Unilever

Evaluation Team

Helmut Möhwald	Evaluator	-
Joseph Seymour	Evaluator	-

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA
Alexander Hantosi	Legal Department (observer)	VINNOVA

SUMO: Participants during the afternoon session 2008-11-20

Centre Representatives

Magnus Nydén	Scientific coordinator	Chalmers
Anette Larsson	Project manager	Chalmers
Stefan Gustafsson	Reseacher	Chalmers
Mats Rudemo	Reseacher	Chalmers
Stefan Bengtsson	Vice President	Chalmers
Daniel Selin	Ekonomi Adm	Chalmers
Shabira Abbas	Reseacher	SCA, Chalmers
Niklas Lorén	Projekt Manager	SIK
Martin Svensson	Research Coordination Mgr	Lantmännen
Marina Nordberg	Ind.representative (prod.dev)	Mölnlycke Health Care
Johan Brink	Reseacher	Gothenburg University
Pentti Tengvall	BIOSUM director of studies	Gothenburg University
Lars Stubbend	Member of board/ SUMO	Astra Zeneca
Karin Emilsson	Member of board / SUMO	
Catherine Bissiere	Reseacher	Astra Zeneca
Rolf Andersson	Chairman of the board	SCA
Anna Ström	Reseacher of Unilever	Unilever

Evaluation Team

Douglas Reeve	Evaluator	Univ. of Toronto
Anne H Anderson	Evaluator	Univ. of Dundee
Helmut Möhwald	Evaluator	-
Joseph Seymour	Evaluator	-

VINNOVA Staff

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Margareta Danielsson	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA
Alexander Hantosi	Legal Department (observer)	VINNOVA

BiMaC Inno: Participants during the Morning Session 2009-03-03

Centre Representatives

Tom Lindström	Prof/Head	KTH
Micael Stehr	deputy Head	KTH
Göran Bengtsson	Chairman of the ex-centr board	Stora Enso
Katarina Jonasson	Board member	Tetre Pak
Folke Österberg	Board member	SCA
Ola Karlsson	Board member (suppleant)	Korsnäs
Kristofer Gamstedt	DLP4	KTH
Mikael Nygårds	DLP leader	KTH
Sören Östlund	Plattform manager, DLP1 leader	KTH
Lars Wågberg	Prof, platform coord Fibre Engin.	KTH
Eva Malmström	Board member	KTH
Emma Östmark	DLP3	KTH/SP Trätek
Lars Berglund	DLP4	KTH

Evaluation Team

Art Ragauskas	Evaluator	Georgia Inst Tech
Maija Tenkanen	Evaluator	University of Helsinki

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ranya Said	Programme Manager	VINNOVA
Thomas Eriksson	Evaluation Process Leader	AB Realisator Mgmt Consult.

BiMaC Inno: Participants during the Afternoon Session 2009-03-03

Centre Representatives

Tom Lindström	Prof/Head	KTH
Micael Stehr	Dep. Head	KTH
Göran Bentsson	Chairman BiMaC Inno board	Stora Enso
Gunnar Svedberg	Board member	STFI- Packforsk
Katarina Jonasson	Board member	Tetra Pak
Folke Östererg	Board member	SCA
Lars Berglund	Platform Coord.	KTH
Ola Karlsson	Board member (suppl)	Korsnäs
Gunnar Landgren	Vice President	KTH
Ulf Carlson	Adjunct Board Member	UC Consulting
Kristofer Gamstedt	DLP4 leader	KTH
Sören Östlund	DLP1 leader, platform manager	KTH
Raoul Stubbe	Adjunct board member	KTH Holding
Lars Wågberg	Prof Fibre Techn	KTH
Eva Malmström Jonsson	Board member	KTH
Emma Östmark	DLP3 leader	KTH/ SP Trätek

Evaluation Team

Doug Reeve	Evaluator	U of Toronto
Anne H Anderson	Evaluator	Univ of Dundee
Art Ragauskas	Evaluator	Georgia Inst Tech
Maija Tenkanen	Evaluator	Univ. Of Helsinki

VINNOVA Representatives

Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Ranya Said	Programme Manager	VINNOVA
Thomas Eriksson	Evaluation Process Leader	AB Realisator

BiMaC Inno: Participants during the Morning Session 2009-10-19

Centre Representatives

Tom Lindström	Head of Centre	KTH
Göran Bengtsson	Chairman of the BiMac Innovation Board	Stora Enso
Micael Stehr	Deputy H of C	KTH
Katarina Jonasson	Board Member	Tetra Pak
Ulf Carlsson	Board Member	UC Consulting
Gunnar Landgren	Board Member	KTH
Eva Malmström	Board Member	KTH
Emma Östmark	DLP3 manager	KTH/SP Trätek
Lars Wågberg	Competence Area Senior Scientist	KTH
Sören Östlund	Comp. Area Senior Scientist	KTH
Kristofer Gamstedt	DLP4 manager Comp Area Senior Scientst	KTH
Mikael Nygårds	DLP2 manager	KTH
Magnus Gimåker	PhD Student	KTH
Hui Huang	PhD student	KTH

Evaluation Team

Art Ragauskas	Evaluator	IPST/GAT
Maija Tenkanen	Evaluator	Univ.of Helsinki

VINNOVA Representatives

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Appendix D – Success Criteria for VINN Excellence Centre

In brief, successful VINN Excellence and Berzelii Centres are characterised by the following:

- Promoting sustainable growth by ensuring that new knowledge and new technological developments generated lead to new products, processes and services.
- Leading international research in different fields in collaboration between the private and public sectors, universities and colleges, research institutes and other organisations which conduct research.
- Research programmes are set up and carried out in collaboration between the various participants in order to solve key issues.
- Geographical programmes where the majority of work is conducted at a university or a college to achieve a critical size and interaction between research, post-graduate education and graduate education.
- Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence.
- Long-term collaborative finance from private and public sectors, the university/college and financing governmental agencies, to be able to recruit, develop and keep people with leading international competence.
- The activities are led by a manager and a board where the participants from the public and private sectors hold the majority in order to secure the direction of the Centres towards the requirements of the private and public sectors, i.e. needs-driven research.
- Set up in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).

When completing the evaluation it will also be considered:

- The gender perspective in the research programme; and
- Equality aspects and active promotion of an equal balance.

Appendix E – Criteria at the Second Call for Final Proposal

1 The proposal's potential to bring about renewal and to contribute to sustainable growth.

2 The profile and quality of the research programme and its potential to develop an excellent research environment.

3 Skills and commitments of participating actors from research, the business sector and public services, and the importance of these qualities for the actors' participation.

4 Concentrated research environment, forms of collaboration, and leadership.

5 The VINN Excellence Centre in relation to the long-ter strategy and innovation environment of the university. The Centre's ambitions and the direction of the research programme in relation to the university's research strategy and ambitions to build strong research and innovation environments.

Equality of opporunity and the need for a gender perspective will be considered in connection with VINNOVA's assessment of proposals.

VINNOVA´s publications

December 2009

See www.VINNOVA.se for more information

VINNOVA Analysis VA 2009:

01 Svenska tekniker 1620 - 1920

02 Effekter av statligt stöd till fordonsforskning - Betydelsen av forskning och förnyelse för den svenska fordonsindustrins konkurrenskraft. *For brief version in Swedish and English see VA 2009:11 and VA 2009:12*

03 Evaluation of SIBED. Sweden - Israei test bed program for IT applications. *Only available as PDF*

04 Swedish possibilities within Tissue Engineering and Regenerative Medicine

05 Sverige och FP7 - Rapportering av det svenska deltagandet i EUs sjunde ramprogram för forskning och teknisk utveckling. *Only available as PDF*

06 Hetast på marknaden - Solenergi kan bli en av världens största industrier

07 Var ligger horisonten? - Stor potential men stora utmaningar för vågkraften

08 Vindkraften tar fart - En strukturell revolution?

09 Mer raffinerade produkter - Vedbaserade bioraffinaderier höjer kilovärdet på trädet

10 Förnybara energikällor - Hela elmarknaden i förändring

11 Sammanfattning - Effekter av statligt stöd till fordonsforskning. *Brief version of VA 2009:02, for brief version in English see VA 2009:12*

12 Summary - Impact of Government Support to Automotive Research. *Brief version in English of VA 2009:02, for brief version in Swedish see VA 2009:11*

13 Singapore - Aiming to create the Biopolis of Asia

14 Fight the Crisis with Research and Innovation? Additional public investment in research and innovation for sustainable recovery from the crisis.

15 Life Science Research and Development in the United States of America - An overview from the federal perspective. *Only available as PDF*

16 Two of the "new" Sciences - Nanomedicine and Systems Biology in the United States. *Only available as PDF*

17 Priority-setting in the European Research Framework Programme

18 Internationellt jämförande studie av innovationssystem inom läkemedel, bioteknik och medicinteknik

19 Investering i hälsa - Hälsoekonomiska effekter av forskning inom medicinsk teknik och innovativa livsmedel

20 Analysis of Chain-linked Effects of Public Policy - Effects on research and industry in Swedish life sciences within innovative food and medical technology

21 Research Priorities and Priority-setting in China

22 Priority-Setting in U.S. Science Policies

23 Priority-Setting in Japanese Research and Innovation Policy

VINNOVA Information VI 2009:

02 Forskning om chefskap. Presentation av projekten inom utlysningen Chefskap; förutsättningar, former och resultat. *For English version see VI 2009:03*

03 Research on the managerial tasks: condition, ways of working and results. *Finns endast som PDF. For Swedish version see VI 2009:02*

04 Högskolan utmaningar som motor för innovation och tillväxt - 24-25 september 2008

05 VINNOVA news

06 Årsredovisning 2008

07 Innovationer för hållbar tillväxt. *For English version see VI 2009:08*

08 Innovations for sustainable Growth. *For Swedish version see VI 2009:07*

09 Forska&Väx.

10 Ungdomar utan utbildning - Tillväxtseminarium i Stockholm 4 mars 2009

11 Cutting Edge - Swedish research for growth

12 Mobilitet, mobil kommunikation och bredband - Branschforskningsprogram för IT & telekom. Projektkatalog

13 Forskning och innovation för hållbar tillväxt

VINNOVA Policy VP 2009:

01 TRANSAMS uppföljning av "Nationell strategi för transportrelaterad FUD" åren 2005 - 2007. Två uppföljningar - en för 2005 och en för 2006 - 2007. *Only available as PDF*

02 VINNOVAs internationella strategi - att främja hållbar tillväxt i Sverige genom internationellt forsknings- och innovationssamarbete

VINNOVA Report VR 2009:

01 Affärsutveckling inom trämaufaktur och möbler - hur skapas effektivare värdekedjor? *Only available as PDF*

02 Användarna och datorerna - en historik 1960 - 1985

03 First Evaluation of the Berzelii Centra Programme and its centres EXSELENT, UCFB, Uppsala Berzelii & SBI Berzelii

04 Evaluation of SAFER – Vehicle and Traffic Safety Centre at Chalmers - a Centre of Excellence with financing from VINNOVA. *Only available as PDF*

05 Utvärdering av forskningsprogrammet SkeWood. *Only available as PDF*

06 Managing and Organizing for Innovation in Service Firms - A literature review with annotated bibliography. *Only available as PDF*

07 Den tjänstedominanta logiken - Innebörd och implikationer för policy.

08 Tjänster och relaterade begrepp - Innebörd och implikationer för policy.

09 Underlag för VINNOVAs satsningar inom transportsäkerhetsområdet. *Only available as PDF*

10 Utmaningar och kunskapsbehov - Om innovation, ledning och organisering i nio olika tjänsteföretag. *Only available as PDF*

11 De två kulturerna på Internet - En utmaning för företag, myndigheter och organisationer. Huvudrapport

12 Uppföljning av VINN NU-företag

13 Kartläggning av svensk FoU inom området IT och miljö - med fokus på teknikens indirekta och systemmässiga effekter. *Only available as PDF*

14 Forska&Växa - Hållbar tillväxt genom forskning och utveckling i Små- och Medelstora Företag

15 Tjänsteinnovationer för tillväxt

16 Behovet av genusperspektiv - om innovation, hållbar tillväxt och jämställdhet. Utvärdering. *Only available as PDF*

17 Ekonomisk omvandling och makrologistiska kostnader. *Only available as PDF*

18 En undersökning av innovativa företags syn på strategiskt utvecklingsarbete i spåret av lågkonjunkturen. *Only available as PDF*

19 The Public Sector - one of three collaborating parties. A study of experiences from the VINNVÄXT programme.

20 Från hantverkskilt till hästföretag - Genusperspektiv på innovation och jämställdhet

21 Innovationer för hållbar vård och omsorg - Värdeskapande vård- och omsorgsprocesser utifrån patientens behov

22 Organising Work for Innovation and Growth. Experiences and efforts in ten companiess

23 Mid Term Evaluation of the Institute Excellence Centres Programme

24 Process Support, Communication and Branding - VINNOVA´s VINNVÄXT programme

25 The Innovation Platform

26 Citizens´ Services - Nordic and Baltic Research Needs

27 Kina och internet - Tillväxt och tilltro

28 eGovernment of Tomorrow - Future scenarios for 2020

29 Organisationsformernas betydelse i klusterverksamhet - Att organisera klusterarbete är en ständigt pågående process som ställer höga krav på ledarskap och långsiktig strategi

30 Inomhusskidbacke i Lindvallen, Sälen. *Only available as PDF*

31 Kartläggning av svenska klusterinitiativ. *Only available as PDF*

32 Service Innovations in Sweden Based Industries - Aiming for 30-60% revenue increase/Tjänsteinnovationer i Sverigebaserad tillverkningsindustri - Med sikte på 30-60 % intäktsökning

33 Chinese Views on Swedish Management - Consensus, conflict-handling and the role of the team

34 First Evaluation of the second, third and fourth Round of VINNOVA VINN Excellemce Centres - FASTE, SUS, FUNMAT, CHASE, GHz, MOBILE LIFE, iPACK, HERO-M, PRONOVA, BIOMATCELL, WINQUIST, SUMO, BIMAC INNO, WISENET and AFC

VR 2008:

01 Mot bättre vetande - nya vägar till kunskap på arbetsplatsen

02 Managing Open Innovation - Present Findings and Future Directions

03 Framtiden är öppen! Om problem och möjligheter med öppen källkod och öppet innehåll

04 First Evaluation of the Institute Excellence Centres Programme

05 Utvärdering av det Nationella Flygtekniska forskningsprogrammet - NFFP. Evaluation of the Swedish National Aeronautics Research Programme - NFFP

06 Utvärdering av Vehicle - Information and Communication Technology programmet - V-ICT

07 Kartläggning av ett halvt sekels jämställdhetsinsatser i Sverige

08 Politiken, offentlig verksamhet - en av tre parter i samverkan

09 Forsknings- och innovationspolitik i USA - Näringslivets fem roller

10 ”Born to be wild” - 55+... eller hur förvandla en global demografisk förändring till ett svenskt styrke- och tillväxtområde?

11 DYNAMO 2 i halvtid - Rapport från VINNOVAs konferens på Ulfsunda slott 10 - 11 april 2008

12 VINNVÄXT II - Generalist and Specialist Evaluation of process and knowledge development 2004 - 2007

13 Svensk makrologistik - Sammansättning och kostnadsutveckling 1997 - 2005

14 Leading Companies in a Global Age - Managing the Swedish Way

15 Chefskapets former och resultat. Två kunskapsöversikter om arbetsplatsens ledarskap

16 NRA Security - Swedish industry proposal for a National Research Agenda for security

17 University strategies for knowledge transfer and commercialisation - An overview based on peer reviews at 24 Swedish universities 2006

18 Vårda idéerna! - Trots många framgångsrika projekt inom vård och omsorg skapas inte varaktiga effekter. Varför förvaltas och utnyttjas inte idéerna?

19 Growth through Research and Development - what does the research literature say?

20 Sesam öppna dig! Forskarperspektiv på kvinnors företagande

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VINNOVA´s mission is to promote sustainable growth
by funding needs-driven research
and developing effective innovation systems

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