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VR 2007:14

FIRST EVALUATION

OF THE VINNOVA VINN EXCELLENCE CENTRES NGIL, HELIX, SAMOT AND ECO^2

TOGETHER WITH

THE STEM COMPETENCE CENTRE CICERO

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Swedish Energy Agency

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About VINNOVA

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First Evaluation of the VINNOVA VINN Excellence Centres NGIL, HELIX, SAMOT and ECO^2 together with the STEM Competence Centre CICERO

September – November 2007

by

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Preface

In this evaluation report The Swedish Governmental Agency for Innovation Systems (VINNOVA) and The Swedish Energy Agency (STEM) present the first evaluations of the second generation of Competence Research Centres (CRCs). In 1995, NUTEK launched the first generation of CRCs providing a ten-year investment in 28 Competence Centres at 8 Swedish Universities. VINNOVA and STEM took over the responsibility of the first generation CRCs and finalized that programme. The two agencies have initiated a second generation of CRCs that VINNOVA calls "VINN Excellence Centres" while STEM stayed with the name "Competence Centres". VINNOVA has also initiated, together with the Swedish Research Council, a slightly modified CRC version named the Berzelii Centra Programme.

The first generation of CRCs has, generally speaking, been very well received by Swedish society. Also, in a European context, the Swedish CRC programme has a very good reputation. 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 actively participate. In the second generation of CRCs the programme has also been changed to encourage increased participation of public partners.

At present VINNOVA is running 19 VINN Excellence Centres and 4 Berzelii Centra; and STEM is financing 6 Competence Centres, a total of 29 centres. The 5 centres evaluated in this report are those that have been operating for the longest period of time, nearly 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 development. This 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 experts to get to learn about the centre at an early stage and discuss scientific issues that are critical for the future. The evaluations also can have 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:

NGIL	Next Generation Innovative Logistics
HELIX	Managing Mobility for Learning, Health and Innovation
SAMOT	Service and Market Oriented Transport Research
ECO^2	Centre for Economical and Ecological Vehicle Design

together with the STEM Competence Centre:

CICERO Centre for Internal Combustion Engine Research Opus.

On behalf of VINNOVA and STEM we want to express our great appreciation to all the international evaluators. They accomplished their very hard work with great enthusiasm and professionalism. Their reports will be of great value for the further development of the VINN Excellence Centre and the Competence Centre programmes.

Stockholm in November 2007

Per Eriksson
Director General
Swedish Governmental Agency
for Innovation Systems

Thomas Korsfeldt
Director General
Swedish Energy Agency

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Introduction

From Monday, October 8, 2007, through Friday, October 12, 2007, four VINN Excellence Centres supported by VINNOVA (NGIL, HELIX, SAMOT, ECO^2) and one Competence Centre supported by STEM (CICERO) were evaluated. The centres were in the final months of Stage 1, the first, two-year part of a planned ten-year program.

The international evaluation team had generalist and specialist evaluators. The generalist evaluators were Douglas Reeve (all centres), Anne Anderson (NGIL, HELIX, ECO^2 and CICERO) and Per Stenius (NGIL, HELIX and SAMOT). There were two specialist evaluators for each centre (see table and Appendix C).

The team was exceptionally well supported from start to finish by the VINNOVA program staff (Mattias Lundberg, Thomas Eriksson and Erik Litborn) by the VINNOVA program managers for each Centre (Bo Essle, Carl Ridder, Pär Larsson, Åsa Vagland and Carl Naumburg) and by STEM program staff (Bernt Gustafsson).

The format for evaluation was the same for each centre:

1 pre-meeting of evaluators and VINNOVA staff;
2 scientific evaluation by specialists;
3 evaluators' private conference;
4 generalist evaluation (with participation of specialist evaluators); and
5 evaluators' conference and report writing.

This report is co-authored by the evaluators. Sections on individual centres were co-authored by the participating evaluators and the overview section was co-authored by the three generalist evaluators.

The evaluation team

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Professor and Dean **Anne H. Anderson,** University of Dundee**,** SCOTLAND
Professor emeritus **Per Stenius,** Helsinki University of Technology**,** FINLAND
Professor **Jorge Ambrósio,** Instituto Superior Técnico, PORTUGAL
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Acknowledgement

We thank the whole VINNOVA/STEM team and all the many centre participants for their efforts in setting up instructive and efficient presentations and facilities for the evaluation. We also thank the specialist evaluators for their partnership, and most particularly for sharing their abundant knowledge.

Program Level - Overall Impressions

The generalist evaluators were generally very impressed with the centres. The centres have many laudable qualities: a high level of academic competence; bright and enthusiastic students; a strong commitment to undertaking boundary-crossing research; a supportive university environment; engaged industry partners; and the vision and the will to add value to society by linking academic research to practical problems. The generalist evaluators found the evaluation process an efficient way to probe the progress, strengths and weaknesses of these new centres and to provide feedback to the centres and to VINNOVA/STEM program staff.

There are opportunities for improvement in individual centres and in the overall program as articulated in the report that follows. Two important, general aspects warrant discussion here: leadership and international benchmarking.

There is a need for improvement in Centre leadership at various points across the range of those responsible for creation of the vision of the centre and execution of its programs - directors, deputy directors and management teams, governing boards, senior university academic leaders and administrators, and university-industry project teams. There were fine examples of excellent leadership across the system, but the evaluators were frequently coming back to the issue of leadership. We believe the success of the VINNOVA/STEM program and of individual centres will benefit significantly by addressing leadership issues.

Generally speaking, we believe all the centres can increase the prospects of success and their potential for significant contribution to society if they are more proactive in challenging themselves at international levels. In all cases, International Scientific Advisory Committees can be better used to enhance the vision, focus and calibre of centre programs. Firstly, this means establishing effective collaborations with leading centres outside Sweden. Secondly, the centres can benefit from establishing an identity and participating in the wider international community, competing for funding, competing for talented students, competing for talented researchers. And thirdly, the centres can make use of the International Scientific Advisory Committees for internal review and advice to project leaders and students.

The VINNOVA/STEM centres have made excellent progress in a short time. We look forward to their great success.

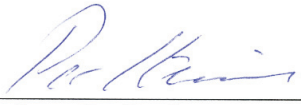
Recommendations for VINNOVA/STEM

- That VINNOVA/STEM should place more emphasis on the leadership, management and organization of centres for initial and continued funding, including the ongoing development of the director and management team organizational competency.
- That VINNOVA/STEM should continue with early and timely leadership training and development programs for all leaders and deputies and sharing of best management practice among centres.
- That centres be required to benchmark centre work against international leaders. An International Scientific Advisory Committee is essential to this effort.
- Each centre should be required, for the next stage, to develop their own qualitative and quantitative metrics of success and to define milestones of progress.
- That VINNOVA/STEM should require thorough, clear and consistent reporting (across all VINNOVA/STEM centres) according to a template provided by VINNOVA/STEM
    - of results and activities including: publications, patents, theses, posters, presentations, workshops, related research grants applied for/won, etc
    - of international activities including: collaborations with international researchers, visits outside Sweden, work of the International Scientific Advisory Committee and foreign visitors to Sweden
    - of finances, income and costs, and notably to distinguish financial support of PhD students when provided as in-kind by either the university or industry and check that centres have thoroughly, clearly and consistently written the reports in the way defined by the template.
- That VINNOVA/STEM establishes a mechanism to permit carryover of the surplus centre funds from one stage to another.
- That VINNOVA/STEM liaises with centres to develop an appropriate way of reporting additional external funding and dissemination of related but not VINNOVA/STEM-funded results as very important aspects of a centre's development and a metric of the success of a centre.
- That centres be advised to make presentations during the evaluations that closely follow the guidelines set by VINNOVA/STEM so as to increase the effectiveness of the evaluators' visit.
- That future evaluation visits include:
    1 an informal meeting with all students of a centre (students only) (for example, coffee after lunch); and
    2 presence of all students at the specialist and the generalist evaluations.

Stockholm, October 13, 2007

Professor Douglas Reeve

Professor Anne Anderson



Professor Per Stenius

Assessments of the Individual Centres

Evaluation of the NGIL Centre at Lund University

On Monday, October 8, 2007, in the morning the Vice Dean of LTH, Claes Malmqvist, the Centre Director, Mats Johnsson, project leaders and graduate students of the Competence Centre in Next Generation Innovative Logistics Centre (NGIL) briefed the scientific experts of the evaluation team, Jan Fransoo and Lauri Ojala, on the scientific progress and range of projects. In the afternoon the entire review committee discussed research and general issues concerning NGIL with the Dean of LTH, Gunilla Jönson, the director, industrial partners, senior scientists and graduate students with emphasis placed on the Competence Centre concept, interaction with industry and university, vision and strategy. We thank the NGIL and VINNOVA teams for their efforts in setting up instructive and efficient presentations and facilities for the evaluation, see also Appendix D.

NGIL Competence Profile

Long-term strategy and focus of NGIL

The Divisions involved deploy a variety of research methods, including mathematical modelling, case studies, simulation, and cross-sectional surveys. The competence areas are closely related and generally apply to supply chain issues that span multiple companies within a single supply chain. Each of the divisions involved has a strong profile in its specific research domain:

- Division of Production Management: production and inventory management
- Division of Engineering Logistics: risk management, tracking technologies
- Division of Packaging Logistics: design of packaging logistic systems

NGIL defines its research area as “innovative logistics”, and it develops new concepts and models with a focus on:

- (Supply Chain, or SC) Visibility
- Risk Management and Risk Sharing (both terms appear referring to commercial risks in SC’s)
- Adaptive/Flexible Logistics

While these three thematic areas are not explicitly defined, NGIL views the competence areas of visibility and risk management as its key competence areas. Levels of analysis comprise supply chain, firm, or functions/processes within firms.

Joint research programs with clear goals

The projects that have been selected in the first year are loosely related to NGIL's research area and competence profile. The Management team and Board have initiated the first tranche of projects in a pragmatic fashion. For the next years, it is important for NGIL to tie any new projects more explicitly to its competence profile.

Relations to international research groups

Each of the three Divisions has an established international profile and position - with the Division of Production Management having the strongest academic track record.

NGIL's planned initiatives to establish an international presence seem somewhat unclear and unstructured. NGIL needs to better organize and make visible its activities and profile as a Centre in order to establish an international position of its own. Researchers within the three participating divisions that have a clear and respected international profile need to be involved much more in establishing international connections under the NGIL banner.

NGIL defines as its main objective to be the premier research platform in innovative logistics. It would make sense to identify a number of other Research Centres against which NGIL would like to benchmark itself. These need not be the same Centres that NGIL is seeking collaboration with.

Concentrated research environment

The review documentation, while describing some very interesting projects, did not clearly articulate the nature of the research environment in an integrated centre or its added value to the existing research strengths within the individual divisions. These qualities were explored by the evaluators during the meeting but we still felt that considerably more effort is needed to strengthen collaboration within the centre. Today, the research profile seems to be linked to its three constituent Divisions and the individual academics within them. The evaluators got a sense of strong research activities within the division but weak collaboration between the divisions and even at times fairly weak commitment to NGIL.

For example, in response to questions about joint projects or PhD supervision, only one joint PhD supervision was mentioned. Although the academics did indicate some interest in expanding such joint activities no specific plans to enact this seemed to be in progress. The team did not respond very clearly when asked to describe how the centre had changed the kind of research activities they were undertaking. Given the calibre of some of the researchers involved in NGIL, such synergies and added value are possible but more energy needs to be expended to develop and implement the overarching research themes. We were disappointed to learn that one of the themes did not even have an identified leader. The other themes do have leaders who meet as part of the

Management Group but do not use this opportunity to shape the integrative research strategy for the Centre.

Industrial/public services involvement and interaction

NGIL has engaged a commendable number of industrial and public service partners, representing both SME:s, vary large companies and public service organizations in the Skåne area. Unfortunately, these were not well represented at the hearing so it was difficult to fully assess the extent to which the partners have been engaged in development of the NGIL program.

We were given some good examples of earlier strong cooperation between some of the research groups in NGIL and industrial partners. It was also evident that this cooperation was strong when creating the NGIL concept. However, there was little evidence that projects had been set up which implied true utilization of new possibilities in terms of cooperation an synergies made possible by NGIL. Cooperation seemed to be mainly with the individual academic research groups, not very different from what could have been organized without NGIL.

There was clear evidence that NGIL leadership is aware of the different means of knowledge transfer and practical cooperation in projects between industry and academia. So far, these have involved written reports, discussions on project planning and some seminars. Also, one associate professor from industry has been appointed. However, personal mobility of researchers between industry and university, demonstrably the most efficient way of transfer of knowledge and experience, had only been discussed on a very preliminary basis.

Thus, the collaboration between NGIL and its commercial and public sector partners is developing, but it was not apparent that the engagement with companies was different or deeper because of the centre. The evaluators feel that considerably more effort from the talented team of academics to go beyond their individual disciplines and projects is needed, so that the potential synergies of NGIL as a VINN Excellence Centre in terms of collaborative research themes and interactions with industry are established and fully utilized.

We were confused by the data on contributions from industry in cash and in kind. In particular, the nature of the budgeted in kind contributions from different partners were not clearly defined and the actual in kind allowances accounted for during the evaluation were extremely small compared to the budgeted ones. A break-down into individual sub-projects was provided only after specific request at the evaluation and showed that there apparently have been few, if any, cooperative projects between the three divisions participating in NGIL.

Leadership and management

The leadership and personal capacity of the centre director

A strong and vigorous director is essential to the success of the Centre from the following points of view: scientific, technical and engineering vision; motivation of colleagues and industry partners; organization of finances, committees and boards, seminars and visitors, reports and communications. The director is responsible for coordinating activities of the Centre, having established the administrative systems and personnel necessary to do so. It is also critical that the director have full support and cooperation of all academic colleagues who essential partners in creation of a cohesive and well-led centre. The NGIL Board is responsible to oversee the work of the director, and in order to ensure a high level of performance, to provide the processes for evaluation of performance, correction of poor performance if necessary. This review finds insufficient attention and commitment has been given to leadership and management of the Centre.

Status and role of the centre vis-à-vis the university organisation

As the contractor with VINNOVA the Dean of LTH has ultimate responsibility for ensuring that there is appropriate leadership of the Centre and should be on the Centre Board. Members of NGIL who report to the Board should not be on the Board.

NGIL involves three divisions; Engineering Logistics, Packaging Logistics, and Production Management, but does not have sufficient centralized operations, programming, recognition (internal or external), or culture. The evaluation committee is encouraged to notice the initiatives that involve other departments in the University not traditionally involved in logistics, such as physics and electrical engineering. Once the coherence between the core three departments in NGIL has been strengthened, further collaborations outside the three NGIL departments is encouraged

In line with our comments on the coherence of the research programme and industrial contacts above, NGIL needs to pay much more attention to organizing and making visible its identity within the University as a unit separate from the three participating divisions.

Interaction with university education (graduate and undergraduate)

According to limited anecdotal evidence, NGIL has favourable impact on student experience by enhancing student exposure to industrial problems and culture. More information about the influence on undergraduate and graduate education would be appreciated in future reports.

Recommendations to NGIL

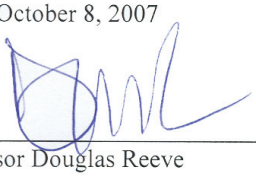
Our recommendations to NGIL are following, to be acted upon as a matter of urgency

- The NGIL Board should renew, support and strengthen the leadership and management of the Centre.
- In setting up projects, NGIL partners should endeavour to create projects which truly utilize the joint competencies represented by the academic research groups.
- Any new projects initiated at NGIL should be tied more explicitly to its competence profile and academic vision than has been the case in the present pragmatic procedure.
- NGIL should organize its activities and profile as a Centre to establish an international reputation of its own.
- NGIL should benchmark its activities against appropriate international centres.
- Activities of the Scientific Advisory Board and the Commercialization Committee as advisors in planning of projects, implementation of results and benchmarking should be initiated as soon as possible.
- The NGIL Board should be reorganized to include the Dean of LTH or other representative of the senior academic administration and to provide high level oversight. Members of NGIL who report to the Board should not be on the Board.
- NGIL should take measures to facilitate mobility of researchers between industry and university.
- NGIL should consider changing its name to ANGIL ("A Next Generation…") to facilitate common pronunciation in English and Swedish.

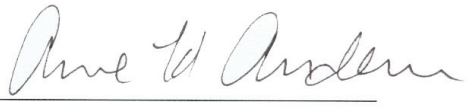
Recommendation to VINNOVA

VINNOVA should require NGIL and LTH to resolve the leadership and management issues associated with the Centre as a matter of urgency.

Lund, October 8, 2007

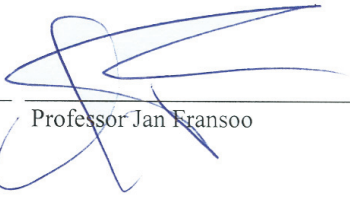


Professor Douglas Reeve

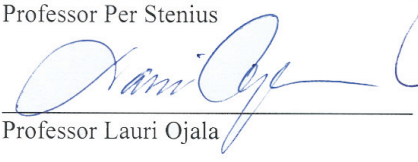


Professor Anne Anderson

Professor Per Stenius



Professor Jan Fransoo



Professor Lauri Ojala

Evaluation of the HELIX Centre at Linköping University

On Tuesday, October 9, 2007, in the morning the Centre Director, Per-Erik Ellström, research leaders, graduate students and representatives of the industrial partners of the VINN Excellence Centre Managing Mobility for Learning, Health and Innovation (HELIX), briefed the scientific experts of the evaluation team, Björg Aase Sørensen and Peter Totterdill on the scientific progress and range of projects. In the afternoon the rector of LiU, Mille Millnert presented the University's policy with regard to competence centres. The entire review committee discussed research and general issues concerning HELIX with emphasis placed on the Competence Centre concept, interaction with industry and university, vision and strategy. We thank the whole HELIX groups as well as the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation, see also Appendix D.

HELIX Competence Profile

Long-term strategy and focus of HELIX

HELIX is an interdisciplinary research centre with a clear focus on work organisation, and a major emphasis on the establishment of partnerships to develop the relationship between workplace innovation and regional development. This reflects a long-standing area of interest within Swedish work life research, and in many ways the Centre inherits the perspectives and traditions established over several decades. HELIX however states that it has clear ambitions to renew the conceptual framework and to apply novel approaches to the future development of this work. The Centre's activity is in the mainstream of European interest.

HELIX has built a strong partnership network of public and private stakeholders, and is well integrated within the University. Given the strength of senior academic involvement it has the potential to become a leading example of university-led collaboration in this field. This however depends on the ability to devise a long-term strategy for sustainability based on partner engagement and income diversification. The elements of such a strategy can be found in the intentions articulated by the Centre's management, but there is some way to go before these intentions are converted into practice. This is an area of some concern given that the need of formulating a strategy was identified already in the assessment of the application for HELIX.

Joint research programs with clear goals

HELIX has a clear and welcome focus on the collaborative production of knowledge. This appears to be well understood and appreciated by its public and private sector partners, and the potential for highly productive outcomes appears promising. However, to maintain a critical perspective is essential in order avoid a drift towards an

instrumental approach, and to ensure that research is multi-voiced. This appears to be recognised by the different stakeholders.

Individual research project emerge from a process of dialogue between researchers and practitioners, helping to ensure the practical relevance of the research effort while at the same time preserving the University's unique ability to ensure academic rigour. This balance is highly valued by partners. However, an unresolved issue is that the wide spread of projects currently underway in the Centre shows limited compliance with the strategic intention to produce a coherent and integrated research programme. This is not entirely remedied by the attempt to add cohesion under the heading of "mobility". We would emphasise the need to realise proposals for "cluster projects" as a means of integrating knowledge generated by research, thereby realising the added value that should be achieved in such a Centre.

There is a potential conflict of emphasis, at least in resource terms, between the production of different outcomes – for the partner organisations, of 'actionable knowledge' for wider dissemination, and of publication in international journals. Clear leadership is a necessary if not sufficient condition to define the most appropriate balance between these outcomes. Internal processes, including corresponding approaches to performance measurement, are also required.

Since its inception HELIX has been anchored in a conceptual platform based on interactive research methods. Interesting though this is, the task of educating graduate students in research methods necessitates exposure to a wider range of approaches in order to prepare them for the wider academic labour market. We do not know whether or not this is happening, but the issue should certainly be addressed.

Relations to international research groups

The International Advisory Board proposed within the original strategy has not been established. This has consequences in terms of missed opportunities for peer review and the sharing of learning and experience. HELIX should identify leading international research groups and centres in their area and encourage exchanges and research collaborations. The absence of involvement in EU programmes (or, indeed, any international programmes at all, as evidenced by the list of project applications provided to the evaluation team after the evaluation) is particularly surprising, and this is not sufficiently addressed by the proposed participation in a Danish FP7 bid. Participation in EU programmes adds both rich opportunities for the exchange of knowledge and experience, and a structured approach to methodological innovation. Both would add depth and relevance to HELIX.

To develop their international profile and collaborations will be one of the key tasks for the next stage of HELIX.

Concentrated research environment

HELIX has considerable potential to add value as a VINNOVA Centre. From the documentation and at the meetings the evaluators had a strong sense that the academics from different disciplines were enthusiastic about the centre and active in collaborating in projects across disciplinary boundaries. Indeed there was very little mention of the individual departments and a consistent advocacy of the HELIX benefits from senior professors to PhD students. PhD students see real advantages of Centre, commending the breadth of disciplinary input in supervision and the contacts with industry as a benefit for their research. HELIX also extends the training on offer to PhD students by the special research courses offered via the HELIX Graduate School.

The academics gave convincing accounts of how the nature of the research they were undertaking was strengthened and altered by HELIX. The HELIX selection process by which projects were created in partnership discussions – involving academics, business, trade unions, local authorities – were highlighted. The selection of projects for funding, via the monthly meetings of the Research & Innovation Council, was also reported to improve research by trying to ensure HELIX projects were of high interest both academically and for partners.

Strong efforts have been made to promote the visibility of HELIX, such as creating a concentrated working environment, an informative Internet site and numerous seminars. The provision by the University of dedicated co-located office and meeting space, visibly defined as the HELIX premises, is one valuable aspect of this sense of a centre identity which is to be commended.

In sum, HELIX is a vibrant centre with a real sense of partnership among the academics and their varied stakeholders. To deliver on the considerable potential of their work they should continue to develop their integrative research activities and benchmark themselves in terms of publication and policy impacts with leading international groups.

Industrial/public services involvement and interaction

We were impressed by the obviously very close and rewarding cooperation between all partners involved in the planning stages of the centre as a whole and in the design of individual projects. The Centre seems to genuinely engage its partners from industry, public sector and trade unions, in projects, in ways that would be hard to effect without the centre status. The evaluators were encouraged by the positive responses from all the partners at the meeting.

The potential impact of these partnerships for economic and policy outcomes of the research are considerable. When questioned the consortia gave good answers about how they would ensure the impacts of their findings. These policy and business

dissemination routes should be more explicitly articulated in the strategy and documentation of the Centre.

The Centre seems to genuinely engage its partners from industry, public sector and trade unions, in projects, in ways that would be hard to effect without the centre status. The evaluators were encouraged by the positive responses from all the partners at the meeting. Of particular interest was the active participation by industries with both cash and in kind contributions in HELIX projects although their direct impact on business profit generally could not be easily assessed. Also, it was demonstrated that projects in which there is cooperation with public services workers unions and public service organisations creates channels through which results could be disseminated and implemented in general working practices and possibly even legislation.

This had clearly created generally informal and easygoing contacts between all partners involved. In our opinion, the involvement of and interaction with industries, public service organisations and workers unions have been organized in a highly commendable way in a remarkably short time.

Leadership and management

The leadership and personal capacity of the centre director

A strong and vigorous director is essential to the success of the Centre from the following points of view: scientific, technical and engineering vision; motivation of colleagues and industry partners; organization of finances, committees and boards, seminars and visitors, reports and communications. The director is responsible for coordinating activities of the Centre, having established the administrative systems and personnel necessary to do so. It is also critical that the director have full support and cooperation of all academic colleagues who essential partners in creation of a cohesive and well-led centre. The Board, appointed by the President of the University, is responsible to oversee the work of the director.

It is apparent that the director has been successful in unifying the academic team and has been successful in creating the organization and environment for HELIX culture to thrive. Under his leadership the HELIX team has successfully promoted the Centre with a wide range of external partners who clearly are motivated to contribute cash and time to HELIX. It appears as though the Board functions well in providing leadership in the initial identification of projects.

There is some deficiency in leadership with respect to creating a rigorous intellectual environment, most pointedly evident by the above-mentioned lack of action on formation of an International Scientific Advisory Board. Although the Research and Innovation Council meets regularly (monthly), and members confer informally, and they have been effective in formulating and initiating pragmatic workplace projects,

there is some lack of leadership in formulating cohesive research based knowledge and theory.

Describe the status and role of the centre vis-à-vis the university organisation

HELIX is well supported by the senior administration of University in several ways: funding provided from central new funds; separate, attractive space; and recognition of the value of academic staff participating in, and leading, centres. LiU has a philosophy of committing the very best research leaders to leading such centres. Individual departments appear to be supportive of the multidisciplinary character of the Centre with few apparent barriers to the Centre's interdepartmental efforts.

Interaction with university education (graduate and undergraduate)

HELIX Graduate School is an excellent contribution to the creation of a value-added activity of the Centre creating a new multidisciplinary opportunity for study for students in the traditional departments. More information about the influence on undergraduate and graduate education would be appreciated in future reports. The enrolment of a 50% PhD student who is 50% employed by Saab provides an example of an outstanding opportunity for the student and is a good means of bridging between the academy and the industry. The fact that the Centre attracted 130 applicants for 13 PhD grants is a great credit.

Recommendations to HELIX

Our recommendations to HELIX are following,

- The International Scientific Advisory Board, to act as an advisor in planning and implementation of projects and international benchmarking should be initiated as soon as possible
- HELIX should engage more fully with the EU in the following ways:
  - by participation in EU policy dialogues,
  - by participation in European research and practice networks
  - by seeking funding from European research programmes
- HELIX should formulate a strategic research vision in dialogue with partners that would inform the selection of future projects
- HELIX should endeavour to formulate "cluster projects" as a means of integrating knowledge generated by research
- HELIX should endeavour to maintain a critical perspective in order avoid a drift towards an instrumental approach, and to ensure that research is multi-voiced

Linköping, October 9, 2007

Professor Douglas Reeve

Professor Anne Anderson

Professor Per Stenius

Professor Björg Aase Sörensen

Professor Peter Totterdill

Evaluation of the SAMOT Centre at Karlstad University

On Wednesday, October 10, 2007, in the morning the Rector of Karlstad University (KaU) Kerstin Norén, the Centre Director, Margareta Friman, project leaders, graduate students and representatives of the industrial partners of The Service and Market Oriented Transport Research Group (SAMOT) briefed the scientific experts of the evaluation team, Jon Sundbo and Peter White on the scientific progress and range of projects. In the afternoon the entire review committee discussed research and general issues concerning SAMOT with emphasis placed on the Competence Centre concept, interaction with industry and university, vision and strategy. We thank the whole SAMOT group as well as the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation, see also Appendix D.

SAMOT competence profile

The SAMOT centre is based on comprehensive and deep competence in service science (service management, marketing, operation) that has been developed in CTF, which is an advantage that should be maintained. It is a goal of the centre to focus on public transport by applying the service science approach on this sector and making this approach permanent. Public transport companies can benefit from this application, which is unique for the sector. Thus, the investigation and development of public transport can benefit from the SAMOT centre.

In many countries, it is the case that the public transport industry has placed relatively little emphasis on service quality and marketing. Hence the work of SAMOT will be of value to the public transport industry not only in Sweden but also elsewhere.

However, it is not completely clear how, and how much, service science can learn from this application. Which new research questions can be raised and answered from this approach? Can these questions and answers provide new knowledge that will be relevant to other public service or market based service sectors? Or is it just an application of known answers? The discussion in the meeting indicated that SAMOT can produce new knowledge. However, this is not explicitly stated in the long-term strategy of the centre.

There was strong evidence of good links with the public transport industry, both the operating companies and the public authorities, which plan and contract services from them. This assists in provision of data and guidance for research students in topics such as service tendering and operations in rural areas. This input may be quantified in terms of contributions in kind, which is typical of public transport operator's involvement in research activity. There was good evidence of international links, already a feature of service industry research at SAMOT, through membership of the management board, and visits by international scientists to Karlstad.

Concentrated research environment

The SAMOT concept was initiated by a group of professors associated with the Service Research Centre (CTF) at KaU and SAMOT continues to work in close cooperation with CTF. The goal was to form a group that comprehensively focuses on research in theoretical, methodological and empirical aspects of transport-related services, involving academic researchers as well as partners from the public transport section in active cooperation in specific research projects.

In the short time that SAMOT has been operating, the Centre has advanced remarkably far in achieving this goal, by setting up a dedicated group of young researchers supervising about 10 PhD students, with senior professors acting as advisors. The industrial partners are strongly engaged in the projects, as made evident by the fact that four of the students are financed by industry, and also by the several examples of cooperation described by industrial representatives at the hearing and in the evaluation report. Much effort has been devoted to create efficient means of knowledge transfer and penetrating discussion in the planning stages of projects and during their implementation. We believe that in these respects SAMOT is well on the way to creating a comprehensive and sustainable research environment. An important physical prerequisite for this is that the SAMOT management and researchers at KaU are well gathered together in premises located together with CTF. We also note that SAMOT has created a commendably informative website.

SAMOT projects during the presentations were often referred to as being conducted within CTF. SAMOT being a centre created by people associated with CTF, this is perhaps not so surprising, but it is not conducive to promoting the SAMOT image. Also, the presence of SAMOT was virtually invisible in the premises of CTF and even the visiting cards of SAMOT researchers referred to CTF, not to SAMOT. While these observations may be pertaining to just details, we believe that they reflect that a true "SAMOT" culture has not yet been fostered. CTF is the dominant entity in the minds of partners, on the business cards of SAMOT leaders, in the space occupied by SAMOT, and, one suspects, in international visibility. For SAMOT to establish a position as a nationally and internationally recognized group, collaborating independently with its supporting partners, and conducting front-line research in areas defined by its own strategic goals, it is vital that its identity, distinct from CTF, be fully established at all levels of organisation and information. We note that VINNOVA sees achieving such identity, based on the synergetic effect of cooperation between all partners involved, as an essential objective of VINN Excellence Centres.

At the request of the evaluation team, SAMOT subsequently provided a very helpful list of academic staff and researchers involved in its activities, and the percentage of their working hours within the University devoted to SAMOT, which clarified issues rose in the meetings.

Industrial/public services involvement and interaction

It is evident that SAMOT has created efficiently working partnerships with a wide array of corporate and public sector partners in the transportation field. One of these, Värmlandstrafik, supports three students within SAMOT, an impressive accomplishment. The representative of Veolia, one of the largest partners and part of an immense international concern, made a strong argument for the great benefits her firm would derive from interaction with SAMOT in customer satisfaction and in worker satisfaction. Yet, in spite of the great benefits to be had the contributions from all industrial partners are in kind only. Apparently there is little history of the transport sector supporting research except by in kind contributions. It would seem appropriate that benefits to the industry should be recognized by cash contributions to the research.

The details and nature of in-kind and in cash contributions by partners should be provided. For example, the contribution of Värmlandstrafik to salaries for graduate students apparently shows up as an in-kind contribution, which is somewhat misleading.

Interaction with university education (graduate and undergraduate)

According to limited anecdotal evidence, SAMOT has favourable impact on student experience by enhancing student exposure to real transport sector problems and culture. From the written report to the evaluators it appears that student/industrial partner cooperation is inherent in many of the research projects. SAMOT reported several master's theses were supervised as part of SAMOT activities. SAMOT activities also include a graduate course. All of this indicates commendable interaction between students and industrial partners, but more information about the influence on undergraduate and graduate education would be appreciated in future reports.

Leadership and management

The leadership and personal capacity of the centre director

SAMOT is managed by a capable and enthusiastic director. A strong and vigorous director is essential to the success of the Centre from the following points of view: scientific and technical vision; motivation of colleagues and industry/public sector partners; organization of finances, committees and boards, seminars and visitors, reports and communications. The director is responsible for coordinating activities of the Centre, having established the administrative systems and personnel necessary to do so. It is also critical that the director have full support and cooperation of all academic colleagues who essential partners in creation of a cohesive and well-led centre.

The SAMOT Board is responsible to for the vision and mission of the Centre and to oversee the work of the director and management team. The evaluators expressed some

concern that the SAMOT director, acting director and management team were *all* relatively junior in academic terms, i.e., below the rank of professor.

This review finds a high level of effectiveness in establishing an organizational framework for committees, boards, seminars, relations with partners, and communication via seminars, reports and the website. The establishment of the International Scientific Committee and a first meeting is good progress but the committee needs to be used to critique the work of students and researchers on a regular basis, at least yearly. The financial management and/or reporting of the Centre was not adequate; it was not clear how monies, particularly in-kind funds, have been deployed in support of the SAMOT mission.

Status and role of the centre vis-à-vis the university organisation

As indicated on page 2, it would be helpful to draw a clear distinction between the role of SAMOT and the larger CTF centre.

The evaluators would have preferred to hear more explicit descriptions of support to SAMOT from the KaU Rector and Vice-Rector. Cash funding to date and plans for future cash funding are inadequate. All-in-all our impression was that KaU provides insufficient support to SAMOT.

Budget issues and the university

In Year 1 KaU provided only kSEK 43 in cash to SAMOT. The total cash contribution in Stage 1 was only kSEK 750 against the cash contribution of kSEK 7000 by VINNOVA. There is considerable confusion in the financial reporting. The amount of the total budget of kSEK 14000 expended at KU in Stage 1 that is (will finally be) directed to academic activities amounts to kSEK 8025 (assessment report, p.14). However, it is not clear how this is divided between; 1a) student support and supervision and 1b) senior researcher salary. This division is important because 1a) can be at the discretion of SAMOT while 1b) can be driven by the necessity of covering salaries of existing researchers in existing units. Future planning must make clear the allocation between 1a) and 1b) and that this deployment is in support of the SAMOT mission.

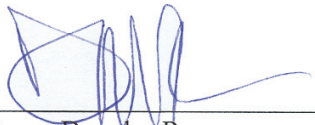
Management and administration is listed as a total of kSEK 3310 and again it is important to break this down to 2a) direct costs for SAMOT for manager/leader salaries, 2b) administrative staff directly employed on SAMOT business and of course 2c) other expenses. Note that in this accounting kSEK 750 is listed as "special subsidy to SAMOT" - it is a cost to KaU but income to SAMOT and so is unspent according to this analysis.

Recommendations to SAMOT

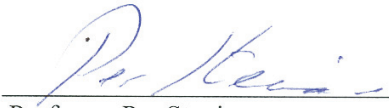
Our recommendations to SAMOT are the following

- SAMOT should endeavour to much more visibly establish its identity and research profile as a unit distinct from CTF.
- KaU should provide greater commitment to SAMOT-controlled funds than the reported kSEK 750 in Stage 1 and the proposed kSEK 750/a discussed at the evaluation, either in the form of cash or SAMOT-controlled student stipends. Such stipends should be reported as cash support.
- SAMOT should seek cash contributions from partners showing real benefit from SAMOT research in their operations.
- SAMOT should state explicitly how the application of service industry science on public transport can provide new knowledge about service behaviour.
- The international activity of SAMOT should be developed in an appropriate way by considering membership of relevant international public transport groups, such as the academic network of the International Union of Public Transport.
- The International Advisory Board should be utilized for critical review of ongoing projects and advice to graduate students.
- A clearer and more detailed accounting of SAMOT finances should be provided.

Karlstad, October 10, 2007

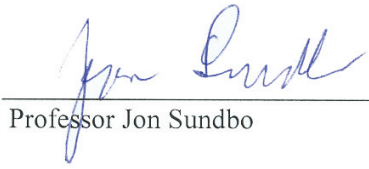


Professor Douglas Reeve



Professor Per Stenius

Professor Peter White



Professor Jon Sundbo

Evaluation of the ECO^2 Centre at Royal Institute of Technology

On Thursday, October 11, 2007, in the morning the Centre Director, Annika Stensson, project leaders, graduate students and representatives of the industrial partners of the VINN Excellence Centre for Economical and Ecological Vehicle Design (ECO^2) briefed the scientific experts of the evaluation team, Paul Sas and Jorge Ambrósio on the scientific progress and range of projects. In the afternoon the entire review committee discussed research and general issues concerning ECO^2 with emphasis placed on the Competence Centre concept, interaction with industry and university, vision and strategy. We thank the whole ECO^2 team as well as the VINNOVA team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation. In particular, we wish to compliment the ECO^2 team on an excellent report and presentations which greatly facilitated our evaluation, see also Appendix D.

ECO^2 competence profile

The ECO^2 centre on vehicle design aims to develop new paradigms for the design of different types of vehicles, road, off-road and railway, in a systematic way, including the concepts of economical and ecological design. The selected research projects are closely related to the ECO^2 research field and the competence profile of the partners. They address multi-vehicle aspects which is a guarantee for the generic use of the research results. The concept to centre the research program around generic Virtual Vehicles, with emphasis on common vehicle design aspects, gives evidence of a well-thought-out, long-term strategy and facilitates multi-disciplinarily.

The ECO^2 centre includes a strong partnership between a university-based team with an outstanding international reputation and partners from the major Swedish manufacturing industry, transport authorities, public services and small companies.

The virtual vehicle activity assists in finding a common language that describes all surface vehicle types and their characteristics. It identifies synergies between transportation modes and, in particular to the railway industry, provides a common framework to define the relevant vehicle components. This activity is used to filter and feedback all decision making process.

The area of aerodynamics is addressed through the project on crosswind stability and unsteady aerodynamics in vehicle design; this is a very relevant project especially for lightweight vehicles. It involves numerical modelling of vehicles, using Computational Fluid Dynamics, and experimental testing. The potential to use the methodologies to define models for different vehicles, to systematize study scenarios, and to define rules for model validation is very clear and worth exploring. These activities are also the foundation for improvements in terms of economical vehicles.

The activities on structural dynamics and NVH (Noise, Vibration and Harshness), are centred in the project associated to Multifunctional Body Panels, which, as for the previous project, is of relevance to lightweight vehicle design. The focus of this project is on multifunctional optimization of lightweight, multi-layered panels for various types of vehicles. This is clearly an area of activity that is common to all vehicles in all modes of surface transportation and, therefore, a systematic approach is appropriate. This project also sets the stage for future decisions of the centre to address the topic of active noise cancellation.

The area of vehicle dynamics is addressed by the ECO^2 suspension design activities. The objectives of this project include the identification of suspension-borne noise, reduced suspension travel and steps towards the acceptability of virtual testing, or suspension model validation. It is expected that in the future equivalent approaches will be used to address train suspension systems and a systematic approach to multi-vehicle suspensions but such plans were not discussed. This area of activity seems to be ideal to introduce paradigms of active and semi-active control into economic and ecological vehicle designs.

No clear links with other national or international projects or with international experts were yet evident. This situation is understandable during this first phase of centre activities. However, it is strongly recommended that international experts are involved in the centre activities during the next phases of the project.

In addressing the whole vehicle design there are some areas not addressed by the centre activities, such as: vehicle passive safety; power- trains; vehicle materials recyclables at the end of their service life; and systems control. While the centre cannot address all these areas, but there is a potential for synergistic collaborations with other centres or groups to fill such gaps.

Metrics to measure the achievements of the centre need to be defined taking into account not only the long-term objectives of the centre but also the partners' interests. Publication in peer-reviewed journals, patents, students graduated, etc. are items that should be included in such metrics.

Concentrated research environment

ECO^2 shows very significant potential as a VINNOVA Centre. From the documentation and at the meetings the evaluators had a strong sense that academics from different disciplines were enthusiastic about the centre and active in collaborating in projects across disciplinary boundaries. The review documentation describes a key integrative project, the Virtual Vehicle, as a way in which different strands of the Centre's work will be synthesized, notably across different kinds of vehicles. Presentations at the meeting were very thoughtful about the challenges of being a centre and how to overcome them.

The Centre has also gone some way to develop its profile internally, and is carefully considering how it spreads its influence across the other parts of KTH.

The distributed management structure which was outlined in the report is also a way in which the academics facilitate multidisciplinary collaborations. A good deal of thought and external advice was involved in developing this structure. It seems an excellent model; particularly noteworthy aspects include the rotating, delegated responsibilities to enthusiastic younger staff (the Assistant Management Group (AMG)) for vision as well as operation. There is also a commendable gender balance in the management structure of Centre. The evaluators feel this management structure will be a key aspect in the long-term success of ECO^2 and its staff.

The Centre Coordination Group (CCG) is also an innovative and impressive aspect of how the consortium is developing the potential of the centre. This group is where the AMG meets with industry to develop exciting multidisciplinary, industry-focused projects. At the presentation the added value of the centre was clearly articulated in the process of project development and selection to ensure that multi-vehicle multidisciplinary projects involving at least two industry partners are facilitated and funded. These projects were reported to be quite significantly different from the way the academics would have operated before ECO^2, where any industry-related research would have been bilateral, involving only one industry partner with KTH.

It was well argued by the companies present at the meeting the added value of this broader systems approach. The approach to building the consortium was carefully judged to limit the direct competitors so that in-depth collaboration with sharing of knowledge is possible. In order to maintain the value of the centre the board will decide on any new companies who might wish to become involved and may well reject direct competitors.

The way in which funding is set aside from specific projects for explorative research, as a means of developing future project ideas, is commendable. This is one important way in which ECO^2 adds value as a VINNOVA Centre.

As yet ECO^2 has not been very active in developing bids for other forms of external research funding. As the centre moves to the next stage, the consortium should use the centre as a means of developing collaborative bids for other forms of external research funding, nationally and internationally for example via EU Framework funds. The added value of the VINNOVA Centre as a way of leveraging other externally funded projects and PhD students should then be evidenced.

Industrial/public services involvement and interaction

The industrial partners were well represented at the evaluation. It is evident that there is a high degree of engagement of the partners and that there are significant levels of effective in-kind support. The companies provide input on a number of levels, the

Board, the CCG, the industrial PhDs, the Environmental and Technical monitors and the Steering Committees.

Arrangements for intellectual property rights (IPR) appear to be satisfactory for both the industry and the academic side although it was noted that the ECO^2 contract pre-dates VINNOVA's present model contract.

The Board has taken a decision not to admit new major players who would be competitors to those major players who are presently part of the Centre. This is one indicator of the high value these companies place on membership in the Centre and suggests that this membership deserves significant cash contributions. Apart from the problems of large competitors joining the Centre, the entry of new industry partners who would bring new expertise and resources to the Centre, particularly small- and medium-sized enterprises will be vital to the growth and development of the Centre vision and expertise.

Interaction with university education (graduate and undergraduate)

As noted in the evaluation report, one route from ECO^2 to university education is via the teaching undertaken by the participating academics, all of whom are actively engaged in undergraduate and postgraduate courses and are already starting to incorporate the research findings as they emerge. As the results from ECO^2 projects grow this input will increase.

One significant and innovative way of impacting on education, which the evaluators were pleased to learn about, was the ECO^2 co-sponsorship of the Spiros Urban Concept Car. This was an entry in the Shell Eco Marathon an international student competition. The student team was supervised by ECO^2 vice director, Dr. Per Wennhage. In addition the contribution of ECO^2 academics and industry partners to the engineering course, Vehicle Engineering for a Better Environment, is a good way to feed key research findings into education.

At the PhD level, the PhD student who attended the evaluation meetings was clear about the advantages of being an ECO^2 student in terms of the multidisciplinary aspects of his project and his excellent access to industry.

Leadership and management

A strong and vigorous director is essential to the success of the Centre from the following points of view: scientific and technical vision; motivation of colleagues and industry/public sector partners; organization of finances, committees and boards, seminars and visitors, reports and communications. The ECO^2 director clearly has these skills in abundance. It is also critical that the director have full support and cooperation of all academic colleagues who essential partners in creation of a cohesive and well-led centre and again the review finds very a positive situation at ECO^2. The ECO^2 Board is

responsible to for the vision and mission of the Centre and to oversee the work of the director and management team. ECO^2 has established an excellent management structure which is important not only for the prosecution of the scientific mission of the Centre but for training and development of junior academic colleagues. The evaluators were highly impressed with the broad contributions to leadership of the director, the management team, academic colleagues and, acting through the Board, the Centre Coordination Group (CCG), and the partners. The work done in management has been very effective in creating a unique and effective ECO^2 culture.

There are a few steps that the Centre should undertake to complete the organizational structure: establish the International Scientific Committee; create a calendar of events and archive of events for the website and future reporting, enhance the visible identity of ECO^2 in the laboratory and work space (for instance on business cards); create a mechanism for reporting related work important to the Centre (including publications, seminars, and grants applied for) that is positively influenced by the Centre but not financed by the Centre;

Status and role of the centre vis-à-vis the university organization

Support by KTH is excellent. Cash funding to date is supportive of the efforts of the Centre. KTH is paid overhead of 35% on salaries which is not reported separately but is contained within project costs. It is recognized that the cost of providing research infrastructure is significantly more than 35% and so in a real sense KTH is providing tangible support to the VINNOVA Centre.

It appears as through there are good laboratory and office spaces for the Centre although there is no Centre facility per se; this may not be necessary given the cohesive management culture and the supportive environment of the Department of Aeronautical and Vehicle Engineering.

Recommendations to ECO^2

Our recommendations to ECO^2 are:

- That an effort be made to quantify the different aspects of the Virtual Vehicle to aid the project decision process but also to help in identifying achievements.
- That the research team keep in mind the synergies in the generation of models (for instance between buses and trains), or the simulation scenarios and, with particular emphasis, on the experimental model validation techniques.
- Although at this stage the approaches used to study Multifunctional Body Panels are exemplified by the application to the roof of a car, a more global and systematic approach should be used in the future.
- That ECO^2 seek other external research funding, nationally and internationally for example via EU Framework funds.
- That ECO^2 immediately establish an International Scientific Committee.
- That in the next round of financing ECO^2 member companies should provide cash contributions as well in-kind contributions.
- That in future years, the Board encourages the entry of new industry partners who would bring new expertise and resources to the Centre, particularly small- and medium-sized enterprises.
- That ECO^2 further develops its web presence and international profile to ensure its high quality research activities have maximum impact.

Recommendations to VINNOVA

Our recommendations to VINNOVA regarding ECO^2 are:

- That ECO^2 be commended for its innovation in idea generation and project development processes and Centre management and that at a future meeting of VINNOVA the Centre be asked to make a presentation on this organizational development.

Stockholm, October 11, 2007

Professor Douglas Reeve

Professor Anne Andersson

Professor Paul Sas

Professor Jorge Ambrósio

Evaluation of the CICERO Centre at Royal Institute of Technology

On Thursday, October 11, 2007, Henrik Alfredsson, the Centre Director, project leaders, graduate students and representatives of the industrial partners of the STEM Excellence Centre, The Centre for Internal Combustion Research Opus, CICERO, briefed the scientific experts of the evaluation team, Ricardo Martinez-Botas and Simone Hochgreb on the scientific progress and range of projects. In the afternoon the entire review committee, joined for part of the time by the Acting Rector, Anders Ericsson, discussed research and general issues concerning CICERO with emphasis placed on the Competence Centre concept, vision and strategy, Centre organization, and interaction between industry and university. We thank the whole CICERO group as well as the VINNOVA/STEM team for their efforts in setting up instructive and efficient presentations and facilities for the evaluation, see also Appendix D.

Competence profile

CICERO addresses an important gap in the engineering and science applied to processes in gas exchange systems of internal combustion engines. Although there have been advances in this area over many years, there is currently a pressing need for more advanced, transient, validated models as well as physical understanding, driven by the need to increased system efficiency and comply with emissions regulations in the EU and worldwide.

The group of academics that constitute the core of CICERO brings outstanding calibre to the centre. Their complementary skills and envisaged interactions in this highly interdisciplinary area are invaluable, and clearly justify the need for such a centre of expertise. This is fully recognised as a need by industry, and brings an opportunity for engine research in fluid mechanics and acoustics. We currently do not know of any other group in the world that addresses systematically the necessary problems in the gas exchange area.

Although the general objectives of the centre are made clear, the vision and strategy for achieving the stated objectives is not well articulated. The specific challenges that the various projects will address in the long term need to be stated, and a set of deliverables should be made explicit.

The report and presentations did not reflect on the current state of the art, as related to where CICERO can or will go. Benchmarking the current understanding of both individual projects and the overall science relative to the existing literature needs to be addressed so as to justify the choice of future directions. For example, this exercise might address how well current predictions for steady or unsteady flows in a typical subsystem can be made and identify the gaps in knowledge. In addition, within each

individual project one needs to highlight what is new, what gap is being filled, and how the project advances the knowledge base.

Much of the reporting seemed to highlight the long lead times in building facilities. Yet much of the science to be developed must already be in progress, in the form of progress reports of student directly associated with the centre, as well as projects started before CICERO, but which are leading to new ideas on the theme. Excellent examples presented are the 3D to 1D network modelling, the acoustic modelling and the corona mass flow measurement method, all of which represent unique contributions to the gas exchange area with a great deal of novelty.

There appeared to be little discussion of how proposed projects are prioritized – should this be based on industry needs, potential scientific impact, and availability of expertise or equipment. It would be good to engage in identification of clear criteria for down selection of potential projects.

Concentrated research environment

The added value of a Centre was poorly articulated in the report. At the meeting, the industry partners had a clear vision for the centre but the academics were still rather hesitant. At the presentation it became apparent that there was interest in working on new research challenges across discipline boundaries. There is also clear potential added value of the centre but the academics need to work harder to articulate their vision for CICERO and show how this is shaping the kind of research projects they are undertaking.

The new CICERO laboratory will be one important way that the Centre will develop its distinctive expertise and this combined with the academic standing of the senior researchers' means CICERO can make a very significant contribution as a centre if the academics develop a clear vision and strategy. Although setting up the laboratory is a lengthy process, this strategic thinking can be undertaken immediately and indeed we would have hoped to see more evidence of this by this time in CICERO's development.

The industry partners were clearly very engaged and indeed have driven the agenda from the start, identifying the expertise at KTH and its potential fit to industry needs. This is very clear evidence of the importance of the CICERO research domain for the Swedish automotive industry. Some of the industry partners as a Centre Board also operate as the Board for related Centres: CERC (Combustion Engine Research Centre) at Gothenburg and KCFP (KompetensCentrum FörbränningsProcesser) at Lund. Industry representatives at the meeting described how this was used to ensure the long-term complementarities of the research agendas.

The industry representatives identify clear benefits of engaging with a long term research Centre and in operating as a consortium of all the leading automotive companies collaborating in long-term, pre-competitive research.

One of the PhD students present at the meeting did describe some advantages of being part of CICERO in terms of the range of disciplines that fed into his project. This confirmed the policy in the report of having each CICERO PhD supervised by senior academics from different research groups. He also anticipated benefits of the industry involvement.

It seems that there have been some issues around PhD and staff recruitment and retention. This seems to have some effect on the progress achieved to date in the Centre. The evaluators acknowledge that in engineering this is a common problem; nonetheless, it needs to be addressed in CICERO.

As the Centre moves to the next stage, participants should use the Centre as a means of developing collaborative bids for other forms of external research funding, nationally and internationally for example via EU Framework funds. The added value of the STEM Centre as a way of leveraging other externally funded projects and PhD students should then be evidenced.

Industrial involvement and interaction

There is strong participation from the industry partners. Importantly, the industry partners are credited with the vision to recognize the need for the work undertaken by CICERO and identify, at KTH, the team who were capable of undertaking it. They have supplied over kSEK 3000 in cash in these first two years. Significant in-kind support is also provided although it seems that greater participation by industry scientists and engineers would be productive. The present industry partners have indicated concern about expanding the number of partners. Academic partners have ambition to increase support and to add expertise through increasing industry participation.

Interaction with university education (graduate and undergraduate)

As noted in the evaluation report, one route from CICERO to university education is via the teaching undertaken by the participating academics, all of whom are actively engaged in undergraduate and postgraduate courses and are already starting to incorporate the research findings as they emerge. As the results from CICERO projects grow, this input will increase.

The evaluators were also pleased to learn about the major bid for funding (12 million SEK) for an Internal Combustion Engine Graduate School which has been submitted to VINNOVA as a joint project with CERC and KCFP. This is to be commended.

The report noted the CICERO one-day research seminar for PhD students where short research presentations were made, and the intention to hold such events annually. The evaluators are convinced of the value of such activities and feel they should be held more frequently and supplemented by Centre events where the competence of the research students is developed.

Leadership and management

A strong and vigorous director is essential to the success of the Centre from the point of view of scientific and technical vision; the director is clearly a visionary leader in fluid dynamics but there is some short fall in articulating the overall technical vision of the Centre. The director certainly commands the respect of colleagues and industry partners. The director is responsible for coordinating activities of the Centre, having established the administrative systems and personnel necessary to do so. The evaluators were concerned with the heavy burden of leadership on the director (60% on centre leadership) and the limited number of other persons assisting with the operations and execution of activities of the Centre.

The evaluators encourage the centre leadership to proceed urgently with plans for hiring into the academic tenure stream, to replace Eric Olivier and, indeed, to press KTH to increase the academic complement by an additional hire. Additionally, increasing the management capability of the leadership group is a priority; this might be accomplished for instance by delegating to existing or newly hired junior academics or by taking on adjunct staff from industry. In either case it is very important that organizational, managerial skills be recognized as being in need of supplementation through the talents and experience of the added personnel. This will permit the present academic leadership to devote greater attention to the overarching issues of application of their engineering science to engine technology.

The Board is responsible for approving the vision and mission of the Centre and to oversee the work of the director and management team. The evaluators were impressed by the industry representatives' vision of and commitment to CICERO.

The financial management and reporting are satisfactory, except with respect to equipment funding. However the process and criteria for decision making concerning funding projects, personnel and equipment was unclear. However, there are many deficiencies in reporting of the work of the Centre: the strategic vision is not articulated in the report; the considerable progress in equipment and laboratory construction is not described; there is no reporting of grants applied for (notably there was no mention in the report, and it was only latterly drawn out, that kSEK 12000 was applied for creation of a graduate school in IC technology with three other universities); reporting of events, such as meetings, seminars etc. is not complete.

CICERO had not yet established an International Scientific Advisory Committee; the director suggesting that it is early days. The evaluators believe that early engagement of such a committee is effective in setting direction and accelerating progress.

Status and role of the centre vis-à-vis the university organization

CICERO is a new unit that has academic members from several different laboratories and divisions. The system seems to work reasonably well with good cooperation

among various units. CICERO's identity as separate unit is emerging but needs to be strengthened. CICERO appears to be well supported by the School of Industrial Engineering and Management within which it is located. KTH has a strong history and successful culture for university industry interaction. However, cash financial support from KTH is significantly less than is received by comparable Centres.

Recommendations to CICERO

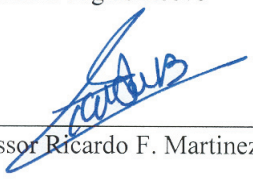
Our recommendations to CICERO are following

- A clear vision for CICERO should be formulated, including: distinctive nature; added value; specific benchmarks regarding modelling or experimental advances or capabilities; process and criteria for decision-making concerning funding projects;
- Projects should be articulated with respect to: current state of the art; specific challenges; objectives; deliverables; and criteria for selection.
- The investigators should immediately build projects using the existing analytical capabilities, in parallel with the development of experimental facilities requiring long lead times.
- The centre should identify areas where specific expertise from other recognised groups can be helpful and thus achieve an exchange for mutual benefit (for example, using specialized instrumentation for fast measurements).
- The Centre should devise innovative and pro-active strategies for recruitment of staff and PhD students.
- The centre leadership should proceed urgently with plans for hiring into the academic tenure stream and to press KTH to increase the academic complement by an additional hire.
- Organizational and managerial skills should be supplemented
- The academics should use the Centre as a spring-board for national and international external funding.
- CICERO should remain open to increasing industry partners where it is strategic.
- CICERO should arrange research seminars several times a year and should organize a Summer School with instructional elements.
- An International Scientific Advisory Committee should be initiated as soon as possible
- CICERO should increase its visibility and identity as a distinct unit, internally and externally.
- KTH should provide greater commitment of CICERO-controlled funds, particularly cash (kSEK 1000 in Stage 1).

Stockholm, October 12, 2007

Professor Douglas Reeve

Professor Anne Andersson



Professor Ricardo F. Martinez-Botas

Professor Simone Hochgreb

Appendices

Appendix A

Guidelines for the evaluation

Guidelines

Evaluation of the VINNOVA VINN Excellence Centre
– Centres of Excellence in Research and Innovation

June 2007

Contents

1 Background

1.1 The Programme background

VINNOVA and STEM are both governmental agencies financing competence centre programmes. Both the VINNOVA VINN Excellence Centre Programme and the STEM Competence Centre Programme is a link in the agencies effort to develop university-industry interaction. Creating and developing vigorous academic research environments, in which industrial companies/public services participate actively and persistently in order to derive long-term benefits is one of the major aims.

The first generation of Centres of Excellence in Research and Innovation programme was initiated by NUTEK 1992 as the Competence Centres Programme. At that time NUTEK was responsible also for the areas that later on became the responsibility of STEM and VINNOVA. At present STEM is running five competence centres and VINNOVA 23. These guidelines cover the evaluation of one STEM and four VINNOVA centres. VINNOVA has undertaken to perform and administrate the evaluation of these five centres. All of these centres were started 2006. For simplicity reasons, these guidelines refer to the VINN Excellence Centre programme and, if not specifically specified, they are also valid for the STEM Centre Programme.

The overall objective with the programme is to promote sustainable growth in Sweden. This means that the VINN Excellence Centre programme 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 a VINN Excellence Centre is a strong research environment 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.

For more information see www.vinnova.se or www.energimyndigheten.se www-page.

1.2 Evaluation background

The VINNOVA VINN Excellence Centre is intended to run for up to 10 years and the building-up and development of the centres is based on stepwise funding and follow-up. A number of industrial companies/public services, a university or institute of technology, and VINNOVA 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 is manifested in a Model Agreement for VINN Excellence Centres.

During the current stage 1, which comprises the initial two years, the activities of the centre are built up. 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 Partners contribute with at least the same amount. After the first stage 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 agreement 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.”

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 has to be completed in good time (preferably 3 months) before the expiration of stage 1.The 5 centres will be evaluated in one group during 8-12 october 2007, see details Appendix 1.

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 and STEM have decided on whom to invite.

3 The task of the evaluators Aspects to be covered by the evaluation

This first evaluation of the five centres will be carried out at an early stage, already after less than 20 months of activities. Its primary purpose is to evaluate the new established organisation of the centre and the corresponding activities to perform the research programme in a centre format. Thus, the evaluation will not be to review scientific and industrial results. Neither are the "generalist" experts expected to review in any detail the scientific and technological content of the centres´ research programmes. The objective with this first evaluation is to serve as a good reference for the next coming evaluations(s).

The main focus of the evaluation should be to form an opinion of the approach and measures taken so far by the individual centres and to judge the potential for their long-term development towards successful VINN Excellence Centre.

As a basis for the evaluations of the VINN Excellence Centre, VINNOVA has formulated a number of criteria (see Appendix 2).

Due to the early stage for this first evaluation VINNOVA considers it especially valuable if the following criterias are paid special attention to by the evaluators:
(To be further discussed within the evaluation team)

- **"A clear competence profile"**
  Long-term strategy and focus of the centre.
  Joint research programmes with clear goals.
  Relations to international research groups.
- **"Concentrated research environment"**
  Strength of collaboration within the centre:
  - between disciplines and departments
  - between academia and companies/public services
  - between companies/public services.
  - Value added by being a centre.
- **Industrial/public services involvement and interaction**
  Active participation of the companies/public services.
  Mutual personal mobility between academia and industry/public services.
- **Leadership and management**
  The leadership and personal capacity of the centre director

Describe the status and role of the centre vis-à-vis the university organization. Interaction with university education (graduate and undergraduate).

Although the individual centres should be the main elements to be evaluated, it is desirable that the evaluators also comment on the concept of VINN Excellence Centre as a whole, as well as on structural and other problems.

4 Organization of the evaluation

The composition of the evaluation group is decided by VINNOVA. The group itself decides on the distribution of work among its members.

The basic documentation, in principle the Centre report to the international Evaluation groupe, from the centres and VINNOVA will be distributed by VINNOVA to all members of the evaluation group 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 evaluation report should be finished the same evening as the evaluation was performed. This means that the evaluation team for the NGIL competence centre meets in Lund in the evening on Sunday October 7, 2007, performs the evaluation on Monday October 8, 2007, and write the evaluation report during the train transportation to Linköping where the report is finished and the scientific experts to NGIL leaves the team. Simultaneously the scientific experts of the HELIX competence centre join the evaluation team and the evaluation team introductory meeting is held, and so on.

During the site visits the evaluators will meet with the following parties of the VINN Excellence Centre:

- the Centre Director
- representatives from participating companies/public services
- research leaders/program directors active within the centre
- the Chairman of the Centre Board of Directors and
- university staff incl. representatives from the Vice-Chancellor´s office.

VINNOVA staff will 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. See detailed schedule in appendix 1.

The evaluation of the five centres will be carried out during week 41, 8-12 October, 2007. The evaluation report is due at the beginning of December.

5 Centre report to the international evaluation team

The basic documentation, in principle the Centre report to the international Evaluation group, from each of the 5 centres will be distributed by VINNOVA to the members of the evaluation team during week 37 (10-14 of September), 2007. The template that should be used is presented in appendix 3.

The report should be submitted electronically (pdf-files) to VINNOVA and be available at VINNOVA not later than Friday, September 7th, 2007 at 8:00 o´clock.

6 Report of the evaluation group

The work of the evaluation team shall result in a report to VINNOVA/STEM written in consensus by the group. The evaluation team shall be unanimous in its conclusions.

Preferably, the report should comprise a section (approx. one fifth) with comments on the concept of VINNOVA VINN Excellence Centre, including discussions of structural and organisational problems. Another section (approx. four fifth) should deal with each centre individually as outlined above.

VINNOVA appreciates a discussion on priorities of actions to be taken by 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 report of the evaluation group will be presented to VINNOVA/STEM. It will also be openly circulated to all centres and, on request, to any other agencies or persons 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, accomodations 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
Preliminary Time Schedule

Sunday October 7, 2007

20:00 - 22:00 Introductory meeting for the NGIL Evaluation Team in Lund

Monday October 8, 2007

09:00 - 11:00 NGIL Scientific Expert Evaluation Session

11:00 - 13:00 Lunch Meeting between Scientific and "Generalist" Experts

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 HELIX Evaluation Team in Linköping

Tuesday October 9, 2007

09:00 - 11:00 HELIX Scientific Expert Evaluation Session

11:00 - 13:00 Lunch Meeting between Scientific and "Generalist" Experts

13:00 - 15:00 "Generalist" Expert Evaluation Session

15:00 - 20:00 Work session for the evaluation team including train transportation to Karlstad

20:00 - 22:00 Introductory meeting for the SAMOT Evaluation Team in Karlstad

Wednesday October 10, 2007

09:00 - 11:00 SAMOT Scientific Expert Evaluation Session

11:00 - 13:00 Lunch Meeting between Scientific and "Generalist" Experts

13:00 - 15:00 "Generalist" Expert Evaluation Session

15:00 - 20:00 Work session for the evaluation team including train transportation to Stockholm

20:00 - 22:00 Introductory meeting for the ECO2 Evaluation Team in Stockholm

Thursday October 11, 2007

09:00 - 11:00 ECO2 Scientific Expert Evaluation Session

11:00 - 13:00 Lunch Meeting between Scientific and "Generalist" Experts

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 CICERO Evaluation Team in Stockholm

Friday October 12, 2007

09:00 - 11:00 CICERO Scientific Expert Evaluation Session

11:00 - 13:00 Lunch Meeting between Scientific and "Generalist" Experts

13:00 - 15:00 "Generalist" Expert Evaluation Session

15:00 - 20:00 Work session for the evaluation team

20:00 - 22:00 "Generalist" experts finalising of the evaluation report

Appendix 2
VINNOVAs Success Criteria for VINN Excellence Centre

A successful centre of excellence:

- offers industry/public services an attractive and concentrated research environment for collaboration and networking, problem solving, and long-term competence development; the centre forms a strategic part of the university that has signed the agreement;
- enjoys sustained participation from industry, public services in the management, implementation, and financing of a research programme of mutual interest and attracts contributions from industrial and/or public partners amounting to at least as much as VINNOVA financing;
- has a clear competence profile in which the centre is internationally competitive and is able to adapt and strengthen it with regard to the needs of the interested parties and the development of science and technology;
- renews and expands its circle of interested parties in industry, including SMEs; and/or public services
- is well established in the long term strategy and innovation strategy of the university or institute of technology, takes advantage of the research and innovation environment/s that the university, in collaboration with other actors, has developed/is planning to develop, for example within the framework of the so-called collaboration mission of a Swedish university.
- is characterised by mutual personal mobility between the academic and industrial R&D environments in that
    - PhD students and academic researchers conduct research in active collaboration with and within industrial companies;
    - industrial R&D staff are active in the centre's academic environment;
- contributes to the academic undergraduate and postgraduate education;
- enjoys external financing for activities which strengthen the centre's competence profile and base;
- achieves results which the companies/public services can exploit and which lead to scientific qualifications (PhD/Licentiate degrees, articles in international journals, etc.);

- collaborates with other research groups and research institutions
- increases its collaboration at the international level in line with the industrial partners' ambitions.
- generates results outside of the core interests of the participating actors that can be utilised and further developed, e.g. by the set-up and development of new high-tech and research-based companies

The above criteria will be used as a basis for the evaluations of the activities of the centres that VINNOVA/STEM will perform.

Appendix 3
Instructions for Centre Reports to the International Evaluation Team

Each of the five centres that will be evaluated should submit a report to VINNOVA.

The centre report should be submitted electronically (pdf-files) to VINNOVA and be available at VINNOVA on Friday September 7th, 2007, 08:00 a.m. AT THE LATEST.

The reports will be forwarded to the international evaluators by VINNOVA.

It is recommended that the report contains no more than 20 pages (normal size). Only the appendix indicated below should be included.

The following information should be given in the report:

1 Summary
Proposal for a summary (goals, strategies, research profile), possibly to be included in the evaluation report (max. 250 words).

2 Long-term goals and strategies for the centre
(at least a 5-years perspective). (1/2 - 1 page)

3 Research area and competence profile of the centre
The position of the centre in relation to internationally leading groups should be stated. Also a list of current international collaborations should be included. List the relations between the centre´s program and other research programs of relevance to the centre and the research groups involved. (2 p.)

4 Short overview of participating research groups/departments and industry/public services partners
(for companies incl. number of employees and areas of interest in the centre). (1-2 p.)

5 Financial report for stage 1
(2 years for most centres) showing contributions from VINNOVA, the university and the individual companies (cash and in kind separated) as well as a specification of costs. (2 p.)

6 Summary of research program and subprograms for stage 1
Research staff (list showing different categories, names and man years) from universities, institutes and companies/public services involved in the different subprograms. (5 p.)

7 Collaboration within the centre. Industrial/public services involvement and interaction
Describe forms and extent of measures taken to achieve strong links and integration between research groups/departments, between academia and companies/public services, and between companies/public services.
Describe especially measures taken to stimulate mutual personal mobility between the industrial/public services and academic R&D environments. Elaborate about value added being a centre compared to other and previous ways of research collaboration and about your efforts and experiences so far. (3 p.)

8 Management and organization of the centre
The role and activities of the Centre Director (CV in summary as an appendix) and the Board of Directors.
Describe the status and role of the centre vis-à-vis the university organization. Comment on advantages and disadvantages.
Interaction with university education (graduate and undergraduate). (2 p.)

9 Examples of experiences and achievements
from the preparation of the centre and the implementation of stage 1 so far. (1 p.)

10 Preliminary plans for development of the centre during the next 3 years in relation to the long-term goals. (2 p.)

CRITERIA at the FIRST CALL FOR FINAL PROPOSAL (the four VINN Excellence Centre to be evaluated here)

"Within the framework of the overall goal to promote sustainable growth, VINNOVA will use the following criteria in the assessment and prioritisation of a submitted final VINN Excellence Centre proposal:

1 The proposal's potential to bring about renewal and to contribute to sustainable growth. The profile and quality of the research programme.
The proposal's potential to bring about renewal.
Vision and potential to contribute to sustainable growth.
The focussing and profiling of the research programme.
The multidisciplinary and innovative character of the research programme.
The proposal's relevance to the intentions of the invitation.
Scientific quality and renewal.
Technical quality and renewal.

2 Skills and commitments of participating actors from research, the business sector and public services.
The skills of the research groups by international comparison, profiles and resources in the area proposed. Other participating parties' skills, resources and documented commitments.

3 Concentrated research environment and forms of collaboration
Effectiveness through critical mass and concentration of resources.
Leader- and entrepreneurship.
New and creative forms of interaction between actors in such areas as communication of results and their applications, mobility, international co-operation, and knowledge transfer.

4 The VINN Excellence Centre in relation to the long-term strategy and innovation environment of the university
The Centre's ambitions and the direction of the research programme in relation to the university's long-term strategies and ambitions to build strong research and innovation environments.
The Centre's capability to take advantage of the research and innovation environment/s that the university, in collaboration with other actors, has developed or intends to develop in co-operation with other actors, e.g. research institutes, incubators, foundations for technology transfer, and holding companies.

VINNOVA applies the principle of gender equality in awarding grants, which means that if several proposals are judged to be of equal quality, proposal submitters from the underrepresented gender take precedence (less than 40 per cent is regarded as not equal opportunity)."

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-term 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 opportunity and the need for a gender perspective will be considered in connection with VINNOVA's assessment of proposals.

Appendix B

Evaluation programme

Appendix B

Evaluation programme

The outline of the evaluation work was:

June	Evaluation Guidelines was sent to Evaluation Team and Centre Leaders
Sept 7th	Status reports from the centres were delivered to VINNOVA
Sept 7-14	Status reports were delivered to the Evaluation Team
Oct 7-13	Pre-meeting, interviews and writing of the first draft
Oct 8	Interviews on NGIL in Lund
Oct 9	Interviews on HELIX in Linköping
Oct 10	Interviews on SAMOT in Karlstad
Oct 11	Interviews on ECO2 in Stockholm
Oct 12	Interviews on CICERO in Stockholm
Oct 13	First draft of the report ready
Oct 31	Final draft from the evaluation team is sent to VINNOVA
Nov 1	Final draft is sent by VINNOVA to the centre leader for comments on facts
Nov 7	Dead-line for comments from the centre leaders to VINNOVA
Nov 8	Comments from centre leaders are sent to the evaluation team
Nov 15	Final report ready for printing
Nov 30	Final report ready for distribution

Appendix C

The Evaluation Team

Appendix C

The Evaluation Team

Generalists or Competence Centre Experts

Professor and Chair Douglas Reeve
Department of Chemical Engineering and Applied Chemistry
University of Toronto
CANADA

Professor and Dean Anne H. Anderson
College of Art, Science & Engineering
University of Dundee
SCOTLAND

Professor emeritus Per Stenius
Department of Forest Products Technology
Helsinki University of Technology
FINLAND

Specialist Evaluators (Scientific experts)

NGIL

Prof dr ir Jan Fransoo
Chair Operation Management & Logistics
Technische Universiteit Eindhoven
THE NETHERLANDS

Professor Lauri Ojala
Department of Marketing, Logistics
Turku School of Economics
FINLAND

HELIX

Professor Björg Aase Sörensen
Arbejdsforskningsinstituttet
Oslo
NORWAY

Professor Peter Totterdill
Nottingham Business School
Nottingham Trent University
ENGLAND

SAMOT

Professor Peter White
Transport Studies Group
University of Westminster
ENGLAND

Professor Jon Sundbo
Roskilde Universitetscenter
Roskilde
DENMARK

ECO2

Professor Paul Sas
Department of Mechanical Engineering
Afd. PMA
Katholieke Universiteit Leuven
BELGIUM

Professor Jorge Ambrósio
IDMEC/IST
Instituto Superior Técnico
PORTUGAL

CICERO

Professor Ricardo F. Martinez-Botas
Department of Mechanical Engineering
College London
ENGLAND

Professor Simone Hochgreb
Department of Engineering Imperial
Cambridge University
ENGLAND

Appendix D

List of participants at the interviews

Appendix D

List of participants at the interviews

NGIL: Participants during the morning session

Centre Representatives

Sten-Åke Tjärnlund	Director Trade & Industry, Helsingborg, chair NGIL	Helsingborg city
Nils Eric Svensson	Business Development & Innovation	Region Skåne
Ernst Wehtje	R&D, Bioett, PC-member	BIOETT
Håkan Jöne	-	PipeChain AB
Asif Bokhari	-	PipeChain AB
Klas Malmqvist	Research Dean	LTH
Andreas Norrman	Head dept of IML	LTH
Sven Axsäter	Prof	LTH
Carina Johnsson	Engineering logistics, PhD student	LTH
Sten Wandel	Prof, management logistics	LTH
Johan Marklund	Associate Prof., Production Mgmt	LTH
Mats Johnsson	Managing Director, Packaging Logistics	LTH
Jonas Karlsson	Project assistant NGIL	LTH
Johan Lundin	PhD student, Eng Logistics	LTH

Evaluation Team

Prof Jan Fransoo	Prof	Evaluator
Prof Lauri Ojala	Prof	Evaluator

VINNOVA Staff

Bo Essle	-	VINNOVA
Mattias Lundberg	-	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA

NGIL: Participants during the afternoon session

Centre Representatives

Bengt Sahlberg	Board Member	BIOETT
Nils Eric Svensson	Busin. Dev Manager	Region Skåne
Gunilla Jönsson	Dean/Rector	Lund University/LTH
Sten Wandel	Prof	LTH
Andreas Norrman	Ass prof/Head of Department of IML	LTH
Helena Lindh	PhD Student	LTH
Sven Axsäter	Prof	LTH
Johan Marklund	Associate Prof.	LTH
Mats Johnsson	Managing Director	LTH
Jonas Karlsson	Project assistant NGIL	LTH
Johan Lundin	PhD student, Eng Logistics	LTH
Daniel Hellström	PhD	LTH
Carina Johnsson	PhD student, Engineering Logistics	LTH

Evaluation Team

Jan Fransoo	Prof	TU Eindhoven
Lauri Ojala	Prof	Turku School of Econ
Anne H Anderson	Vice Principal	University of Dundee
Per Stenius	Professor emeritus	TKK, PS Interfaces
Doug Reeve	Professor	Univ. of Toronto

VINNOVA Staff

Bo Essle	Programme Officer	VINNOVA
Mattias Lundberg	Programme Officer	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

HELIX: Participants in the morning session

Centre Representatives

Roger Lantz	VP	SAAB Inc
Elsy Söderberg	HR manager	Social Insurance Office
Jan-Olof Andersson	CEO	Rimaster Inc
Ragnar Ludvigsson		Swedish Metal Workers´Union
Andreas Bolling	PhD student	SAAB/Helix
Jostein Pettersen	PhD Student	Helix
Hanna Antonsson	PhD Student	Helix
Magnus Klofsten	Professor	Helix
Jörgen Eklund	Professor	Helix
Kerstin Ekberg	Professor	Helix
Lennart Svensson	Professor	Helix
Per-Erik Ellström	Professor	Helix
Henrik Koch	Professor	Helix
Elisabeth Sundin	Professor	Helix

Evaluation Team

Peter Totterdill	Director	UKWON
Bjorg Aase Sörensen	Professor	HIVE/AFI

VINNOVA Staff

Carl Ridder	Programme Manager	VINNOVA
Pär Larsson	Programme Manager	VINNOVA
Mattias Lundberg	Programme Manager	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

HELIX: Participants in the afternoon session

Centre Representatives

Roger Lantz	VP	SAAB
Elsy Söderberg	HR manager	Social Insurance Office
Jan-Olof Andersson		Rimaster
Yvonne Stolt		Kommunal
Ragnar Ludvigsson		IF Metal
Andreas Bolling	PhD student	SAAB/Helix
Mille Millnert		LiU
Jostein Pettersen	PhD Student	Helix
Hanna Antonsson	PhD Student	Helix
Magnus Klofsten	Professor	Helix/LiU
Jörgen Eklund	Professor	Helix/LiU
Kerstin Ekberg	Professor	Helix/LiU
Lennart Svensson	Professor	Helix/LiU
Per-Erik Ellström	Professor	Helix/LiU
Elisabeth Sundin	Professor	Helix/LiU
Henrik Koch		Helix

Evaluation Team

Anne H Anderson	VINNOVA Generalist	University of Dundee
Per Stenius	Prof. Emeritus	PS Interfaces
Doug Reeve	Prof. & Chair	University of Toronto
Bjorg Aase Sörensen	Professor	HIVE/AFI
Peter Totterdill	Professor	Kingston/UKWON

VINNOVA Staff

Carl Ridder	Programme Manager	VINNOVA
Pär Larsson	Programme Manager	VINNOVA
Mattias Lundberg	Programme Officer	VINNOVA
Erik Litborn	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

SAMOT: Participants in the morning session

Centre Representatives

Kerstin Norén	Rektor	Karlstads Univ
Britt-Marie Carlsson	Adm	Karlstads Univ
Lena Hansson	Adm	Karlstads Univ
Patrik Gottfridson	Research SAMOT	Karlstad University
Per Echevern		KaU
Carolina Camer	PhD candidate	KaU
Linda Rahkola	Adm	KaU
Torborg Chetkovich		Veolia Transport
Märta Lena Schwaiger		SLTK
Jan-Olof Seveborg		Karlstadsbuss
Tommy Gärling	SAMOT	GU
Åsa Rönnbäck		Värmlandstrafiken AB
Per Magnus Bengtsson		Värmlandstrafiken AB
Bo Enquist		CTF/SAMOT
Bo Edvardsson		CTF/SAMOT
Margareta Friman		
Markus Fellesson		

Evaluation Team

Peter White
Jon Sundbo

VINNOVA Staff

Åsa Vagland		
Mattias Lundberg		
Erik Litborn	Programme Manager	VINNOVA

SAMOT: Participants in the afternoon session

Centre Representatives

Torborg Chetkovich		Veolia Transport
Märta Lena Schwaiger		SLTK
Åsa Rönnbäck		Värmlandstrafiken AB
Per Magnus Bengtsson		
Margareta Friman		CTF/SAMOT
Jörg Pareigis	PhD Student	SAMOT
Britt-Marie Carlsson	Adm	KaU CTF
Lena Hansson	Adm	KaU SAMOT
Patrik Gottfridson	PhD B.H	KaU SAMOT
Per Echevern	Researcher	Karlstad University
Gunnel Kardemark	Vice Rector	Karlstad University
Jan-Olof Seveborg		Karlstadsbuss
Tommy Gärling		SAMOT
Bo Enquist		CTF/SAMOT
Bo Edvardsson		CTF/SAMOT

Evaluation Team

Douglas Reeve
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Peter White
Jon Sundbo

VINNOVA Staff

Åsa Vagland		
Mattias Lundberg		
Erik Litborn	Programme Manager	VINNOVA
Thomas Eriksson	Programme Manager	VINNOVA

ECO^2: Participants in the morning session

Centre Representatives

Urban Emborg	VD (President)	AZ ACOUSTICS AB
Sara Paulsson	Manager Design for Environment	Bombardier Transportation
Stefan Edlund	Chief Eng. TM	Volvo 3P
Henrik Tengstrand	chairman ECO2	Bombardier Industry
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Per Wennhage	Ass. Prof	KTH
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Björn Lindgren	Technical Manager Fluid Mechanics	Scania CV AB
Håkan Björnsson	Technical Specialist	Volvo Car Corp.
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Laszlo Fuchs	Prof fluid mechanics	KTH CICERO
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Nils Tillmann	Researcher	KTH- Cicero
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Nils Tillmark	Researcher	KTH CICERO
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Simone Hochgreb	Professor	Cambridge University
Riccardo Matinez-Botas	Professor	Imperial College

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VINNOVA´s publications

November 2007

See www.VINNOVA.se for more information

VINNOVA Analysis

VA 2007:

01 Nanoteknikens innovationssystem

02 Användningsdriven utveckling av IT i arbetslivet - Effektvärdering av tjugo års forskning och utveckling kring arbetslivets användning av IT. *For brief version in Swedish and English see VA 2007:03 and VA 2007:13*

03 Sammanfattning - Användningsdriven utveckling av IT i arbetslivet - Effektvärdering av tjugo års forskning och utveckling kring arbetslivets användning av IT. *Brief version of VA 2007:02, for brief version in English see VA 2007:13*

04 National and regional cluster profiles - Companies in biotechnology, pharmaceuticals and medical technology in Sweden 2004. *Only available as PDF. For Swedish version see VA 2005:02*

05 Nationella och regionala klusterprofiler - Företag inom fordonsindustrin i Sverige 2006

06 Behovsmotiverade forskningsprogram i sektoriella innovationssystem. *For English version see VA 2007:15*

07 Effekter av den svenske trafikksikkerhetsforakningen 1971-2004. *For brief version in Swedish and English see VA 2007:08 and VA 2007:09*

08 Sammanfattning - Effekter av den svenska trafiksäkerhetsforskningen 1971-2004. *Brief version of VA 2007:07, for brief version in English see VA 2007:09*

09 Summary - Effects of Swedish traffic safety research 1971-2004. *Brief version of VA 2007:10, for brief version in Swedish see VA 2007:07.*

10 Effects of Swedish traffic safety research 1971-2004. *For brief version in Swedish and English see VA 2007:08 och VA 2007:09*

11 Svenskt deltagande i sjätte ramprogrammet. *Only available as PDF*

12 The role of Industrial Research Institutes in the National Innovation System

13 Summary - User-driven development of IT in working life - Evaluating the effect of research and development on the use of information technology in working life. *Brief version of VA 2007:02, for brief version in Swedish see VA 2007:03*

14 VINNOVAs fokus på effekter - En samlad ansats för effektlogikprövning, uppföljning, utvärdering och effektanalys

15 Needs-driven R&D programmes in sectorial innovation systems. *For Swedish version see VA 2007:06*

16 Biotechnology, pharmaceuticals and medical technology in Sweden 2007 - Cluster profiles

VINNOVA Forum

VFI 2007:

01 Universitetet i kunskapsekonomin *(Innovation policy in Focus)*

02 Tillväxtgenvägen - affärsinnovation i svenska tjänsteföretag *(Innovation policy in Focus)*

VINNOVA Information

VI 2007:

01 Forska&Väx - Program som främjar forskning, utveckling och innovation hos små och medelstora företag

02 MERA-programmet - Projektkatalog. *For English version see VI 2007:03*

03 The MERA-program - Projects. *For Swedish version see VI 2007:02*

04 DYNAMO 2 - Startkonferens & Projektbeskrivningar

05 IT för sjukvård i hemmet - Projektkatalog. *For English version see VI 2007:13*

06 VINNVÄXT - Ett program som sätter fart på Sverige! *For English version see VI 2007:09*

07 Årsredovisning 2006

08 Het forskning och innovationskraft - VINNOVA 2006. *For English version see VI 2007:10*

09 VINNVÄXT - A programme to get Sweden moving! *For Swedish version see VI 2007:06*

10 Red-hot research and innovation power - VINNOVA 2006. *For Swedish version see VI 2007:08*

11 Research and innovation for sustainable growth. *For Swedish version see VI 2006:20*

12 Projektkatalog - Genusperspektiv på innovationssystem och jämställdhet. Forsknings- & utvecklingsprojekt för hållbar tillväxt

13 *Under production.* IT in Home Health Care. *For Swedish version see VI 2007:05*

14 VINN Excellence Center

VINNOVA Policy

VP 2007:

01 Innovativa små och medelstora företag - Sveriges framtid. SMF-strategi från VINNOVA

02 Forskningsstrategi för miljöteknik - Redovisning av regeringsuppdrag till Formas och VINNOVA. *Only available as PDF*

VINNOVA Report

VR 2007:

01 Design of Functional Units for Products by a Total Cost Accounting Approach

02 Structural Funds as instrument to promote Innovation - Theories and practices. *Only available as PDF*

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04 VINNVÄXTs avtryck i svenska regioner - Slutrapport. *For English version see VR 2007:06*

05 Utvärdering VINNVINN Initiativet

06 Effects of VINNVÄXT in Swedish regions - Final report. *For Swedish version see VR 2007:04*

07 Industry report on exhaust particle measurement - a work within the EMIR1 project. *Only available as PDF*

08 Swedish innovation journalism fellowships - en utvärdering. *Only available as PDF*

09 Rörlighet för ett dynamiskt arbetsliv - Lärdomar från Dynamoprogrammet

10 Miljöbilar och biodrivmedel - Hur påverkas Sverige av EUs direktiv?

11 Evaluation report by the VINNVÄXT International Review Team

12 DYNAMO Arbetsgivarringar för ökad rörlighet - En slututvärdering av projekt om arbetsgivarringar inom DYNAMO-programmet

13 Är svenskt management konkurrenskraftigt? - Trettio ledare om svenskt management, dess konkurrenskraft och framtida utveckling - resultat från en intervjuundersökning

14 First Evaluation of the VINNOVA VINN Excellence Centres NGIL, HELIX, SAMOT and ECO² together with the STEM Competence centre CICERO

VR 2006:

01 Det förbisedda jämställdhetsdirektivet. Text- och genusanalys av tre utlysningstexter från VINNOVA

02 VINNOVAs FoU-verksamhet ur ett jämställdhetsperspektiv. Yrkesverksamma disputerade kvinnor och män i VINNOVAs verksamhetsområde

03 ASCI: Improving the Agricultural Supply Chain - Case Studies in Uppsala Region. *Only available as PDF*

04 Framtidens e-förvaltning. Scenarier 2016. *For English version see VR 2006:11*

05 Elderly Healthcare, Collaboration and ICT - enabling the Benefits of an enabling Technology. *Only available as PDF*

06 Framtida handel - utveckling inom e-handel med dagligvaror

07 Tillväxt stavas med tre T

08 Vad hände sen? - Långsiktiga effekter av jämställdhetssatsningar under 1980- och 90-talen

09 Optimal System of Subsidization for Local Public Transport. *Only available as PDF*

10 The Development of Growth oriented high Technology Firms in Sweden. *Only available as PDF*

11 The Future of eGovernment - Scenarios 2016. *For Swedish version see VR 2006:04*

12 Om rörlighet - DYNAMO-programmets seminarium 12 - 13 juni 2006

13 IP-telefoni - En studie av den svenska privatmarknaden ur konsument- & operatörsperspektiv

14 The Innovation Imperative - Globalization and National Competitiveness. Conference Summary

15 Public e-services - A Value Model and Trends Based on a Survey

16 Utvärdering av forskningsprogrammet Wood Design And Technology - WDAT

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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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