Third Evaluation of Berzelii Centres

Exselent, UPSC & Uppsala Berzelii

MARY O´KANE ET AL

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Third Evaluation of Berzelii Centres

Exselent, UPSC & Uppsala Berzelii

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Preface

In this evaluation report the Swedish Research Council (VR) and the Swedish Governmental Agency for Innovation Systems (Vinnova) present the third evaluation of the Berzelii programme.

The Berzelii Centra programme can be regarded as one of several programmes in the second generation of Competence Research Centres (CRCs), e.g. investments in strong research and innovation milieus. In 1995, NUTEK launched the first generation of CRCs providing a ten year investment in 28 Competence Centres at 8 Swedish Universities. Vinnova and the Swedish Energy Agency (STEM) took over responsibility of the first generation CRCs and finalized that programme. This form of investments has during the resent years been implemented in several financing organisations in Sweden with an aim to achieve concentration of resources in university research to deliver strong industrial impact.

The Berzelii programme was initiated in the research bill in 2004, where VR and Vinnova were given the task of setting up the programme with the aim of creating centres with strong scientific excellence, large innovation potential and strong collaboration with relevant industry partners.

Four centres were granted funding through the Berzelii programme from the start 2007. The programme was divided into four phases, each representing a step towards a strong innovation partnership with industry. Each phase was then to be evaluated in order to assess if the centres where developing in the right direction and therefore be granted funding for the next phase in the programme. The first phase was to establish the organizational set-up and long term goals for the centres. The second phase was to further develop scientific excellence and to establish contact with industry partners, followed by the third phase directed towards assessing outputs and outcomes of these efforts. The fourth and final phase of the programme gives continued funding for the Berzelii centres to achieve long term impact in developing collaborations with industry partners.

Three out of four Berzelii centres have now been evaluated after the third phase of the programme and the result of the evaluation is presented in this report. These centres are: UPSC, Exselent & Uppsala Berzelii. The fourth centre, SBI, was delayed through the second phase, and will be evaluated for the third phase in 2017.

This evaluation includes advice and recommendations on how each centre can become more efficient and effective. Based on the evaluation results, Vinnova and VR have decided that all three centres will be approved for the fourth phase of funding in the Berzelii programme.

On behalf of Vinnova and VR we want to express our great appreciation to all the international evaluators. We especially want to give our gratitude to the generalist evaluators, Mary O'Kane (Chair), Alison McKay and Russell Morris. All evaluators accomplished their very hard work with great enthusiasm and professionalism. Their report will be of great value, not only for the further development of each individual centre, but also for the continuation of the Berzelii programme.

Stockholm in January 2016

Charlotte Brogren
Director General
Vinnova

Sven Stafström
Director General
VR

1 Introduction

The third and last evaluation has been realized. Three Berzelii centres were evaluated during the time period November 2014 until October 2015 by two generalists and two experts per centre. The chief evaluator was Professor Mary O'Kane, a former university vice-chancellor, a member or chair of many Government and private sector boards and committees, and as current part-time Chief Scientist and Engineer for the State of New South Wales, Australia. The other generalists were Alison McKay, Professor of Design Systems at University of Leeds, UK, and Russell Morris, Professor at School of Chemistry at University of St Andrews, Scotland. The experts were chosen from a list of recommended people, one list for each centre. The recommendations were done by the centres themselves.

Exselent and UPSC were evaluated in November 2014 and Uppsala Berzelii in October 2015.

The prerequisites for this evaluation were somewhat changed compared to the process during the second evaluation. The actual interview time was shortened, the number of evaluators present on the interview day was decreased and new steps were introduced. The time for the actual interview was shortened and lasted for 3-4 hours compared to one and a half day previous time. This was possible because a pre-interview process was introduced and many questions could be answered in the comments to the pre-evaluation report and this lead to the fact that the range of discussion points were not as wide as before. The pre-interview process contained these new steps:

- Pre-interview report sent to evaluators six weeks before interview day
- Pre-evaluation report sent out to centres three weeks before interview day
- Comments from centres on pre-evaluation report to evaluators two weeks before interview day

The pre-interview report documentation consisted of the latest version of the operational plan, an evaluation report and the latest scientific advisory board report. More detailed description on the evaluation process and the content in the evaluation report etc. can be found in the appendices 1-2, the guidelines for the evaluations.

The following chapters are written by the evaluators with unchanged wordings. The summary, the overarching report includes also the centres belonging to the VINN Excellence since they were evaluated in connection to the Berzelii centre programme centres and the general statements are valid for this programme also. Almost the same evaluation criteria were used for the two programmes.

2 Overarching report from the generalist evaluators on Berzelii and VINN Excellence centres stage 3 centre evaluations, 2013-2015

Evaluation outcomes

Three Berzelii Centres and 17 VINN Excellence Centres were evaluated over the period 2013-15. All centres but one are performing to a standard that merits continued funding in stage 4, in some cases with conditions contained in recommendations.

There is considerable variation in centre performance and in the prospects for continuation beyond stage 4 as illustrated by the following table:

CENTRE	PERFORMANCE
UPSC [BERZELII]	Exceptional; partners want to continue beyond Stage 4
GHZ [VINNEX]	Excellent; partners want to continue beyond Stage 4
CHASE [VINNEX]	Excellent; partners want to continue beyond Stage 4
FUNMAT [VINNEX]	Excellent; beyond Stage 4 unclear
BIMAC INNOVATION [VINNEX]	Very good; partners want to continue beyond Stage 4
HELIX [VINNEX]	Very good; partners want to continue beyond Stage 4
HERO-M [VINNEX]	Excellent research with good industry impact; beyond Stage 4 unclear
PRONOVA [VINNEX]	Unusual VINNEx Centre structure; research very good and has industry impact; probably bilateral collaboration at best post Stage 4
EXSELENT [BERZELII]	Research very good; industry impact moderate; beyond Stage 4 unclear
MOBILELIFE [VINNEX]	Very good; partners discussing beyond Stage 4 scenarios
FASTE [VINNEX]	Very good; partners want to continue beyond Stage 4
ECO 2 [VINNEX]	Good; beyond Stage 4 not finalised
WINGQUIST [VINNEX]	Good; partners want to continue beyond Stage 4
AFC [VINNEX]	Good; plans for beyond Stage 4 not advanced
CESC [VINNEX]	Good; partners discussing beyond Stage 4 scenarios
UPPSALA BERZELII	Reasonable; partners want to continue beyond Stage 4
SUMO [VINNEX]	Reasonable; partners are not sure yet if they wish to continue beyond Stage 4 but discussions are ongoing among the industrial partners
SAMOT [VINNEX]	Reasonable; beyond Stage 4 not clear at evaluation
BIOMATCELL [VINNEX]	Has produced research results at an appropriate level for a VINN Excellence Centre but has more to do to increase the commercial impact of its work. No clear idea yet about beyond Stage 4.
IPACK [VINNEX]	Unsatisfactory

Observations on the programmes and the centres

International perspective

Over the years of Vinnova/VR centre evaluations, we are happy to note that the centres are generally performing at a 'good to very good' level when benchmarked against centres outside Sweden – with a small number at world-leading standard.

10-year funding

The 10-year funding of centres has proved to be important. It has been interesting to note how even the very best centres took some time to settle down and build high-impact cooperation with their industry partners. For weaker centres this settling down period has taken much longer and, as can be seen from the table above, some are yet to realise their industry impact fully. Tough reviews at each of the centre stages have proved beneficial in providing feedback, as have the International Scientific Advisory Boards (ISABs). It is a pity that some of the centres have been reluctant to arrange regular ISAB meetings. It is notable that the leading centres make heavy use of their ISABs, and that the best ISABs provide strong recommendations to the centres.

The importance of vision, mission and strategy

The best performing centres each have a well-articulated vision, a challenging mission, and a strategy that provides a detailed roadmap for achieving the mission. This strategy is renewed and refreshed as the centre prepares an operational plan for each stage of the centre. The weaker centres did not have such well-linked visions, missions and strategies.

The importance of an effective board and a strong director

The crucial role of the centre board, and especially the board chair, is possibly somewhat overlooked by Vinnova and VR in establishing centre success criteria, but it is clear that a strong, active and visionary board working with and supporting a strong director is crucial to bring a centre to a high standard. Several centres pointed out that Vinnova's director training programme was also very helpful in this regard.

The importance of 'added value' in the centres

A well-founded and well-run Centre is more than the sum of its parts. The centre should act as a focus for all the research, training, and translation/commercialisation activity. In the centres with the best leadership from the board and management, this happens naturally but, in the poorer performing centres, this aspect is almost completely missing. We suggest that that the 'added value' provided by being a centre (as opposed to simply a set of bilateral collaborations) is specifically requested as part of the evaluation paperwork so that it can be more formally assessed. At the very least, this will flag the issue to the centres that have not realised the importance of it themselves.

Partner motivations and contributions

In the best performing centres, the centre and all the partners have a good understanding of the motivations, contributions (cash, in-kind and intangible) and expectations of each of the centre partners with regard to the centre. This clarity is important so that the centre can target satisfying its partners' needs and keeping them involved in the centre while maximising the centre's overall impact and thereby delivering on the funding bodies' expectations.

International experience for PhD students

We are happy to note that the centres increasingly expose their PhD students to work experience outside Sweden. However, in this respect the centres do not yet perform at the level of mainland European universities.

Two centres merging – a good outcome

One particularly good result (at the time of stage 3 evaluation, in this case late 2014) is that two of the most outstanding centres in the evaluation, GHz and Chase, are considering a merger after stage 4. This would create a high impact centre, both in terms of industry impact and research impact, and should be encouraged.

GHz and Chase intend to have a joint project in stage 4. The evaluation team believes this is a vital step on the path to a merger and, accordingly, the centre agreement should be drafted in a way that would make this easy to implement.

Making sure high-impact centres maximise their international visibility

GHz and Chase combined would be a very good candidate for any future centre programme introduced by Vinnova (as would UPSC). We suggest any such program ought to encourage these new centres to use Vinnova (or Vinnova/VR) funding as the core funding which helps such centres attract funding from other prestigious sources. Currently there is an artificial divide. The UPSC and GHz teams in particular have a lot of funding which is separate from the Berzelii (UPSC) and VINN Excellence (GHz) funding and the artificial separation means that the international impact and strength of the centres are less visible than they could be, especially internationally.

More generally, there is a need for the centres to aim for higher international visibility, giving conscious attention to developing their brands.

Gender balance – more could be done

Despite Vinnova and VR's emphasis on gender balance, we were disappointed to note that no significant efforts were observed actively to steer the gender balance in several of the centres evaluated. This applies both to centres with a male dominance and to centres with a female dominance. In this respect, the centres seem to be lagging behind industry.

Supporting new and unusual fields

One encouraging outcome of the VINN Excellence programme is its effective support in growing fields that do not traditionally have a presence in academic research. There are two notable examples in this crop of centres – Faste working in the field of functional products and CESC working to minimise the environmental impact of the ICT industry. The fact that these centres are finally performing at a satisfactory level is testament to the effectiveness of the VINN Excellence programme in nurturing and building up critical mass in new disciplines for Sweden.

The importance of conscious endorsement of Centre Operational Plans

Over several evaluations, one VINN Excellence centre, ProNova, has proved challenging for evaluators. While it is clear that it has world-leading researchers, the industry-engagement arrangements of the centre seemed to be structured in a way that provided little support for translating results for industry partners' uptake. This issue was repeatedly criticised in evaluations with those evaluations being regarded as unfair by the centre. This mystery was finally cleared up in the stage 3 evaluation when it became clear that the centre had received approval for an initial operational plan that set out an industry engagement mode of operating which differs subtly but significantly from that used in the other VINN Excellence centres.

Subsequent operational plans for the centre reflected the initial one in this respect and were approved by Vinnova but the difference was not brought to evaluators' (or indeed senior Vinnova programme managers') attention. The complexity of what is required in the centre operational plans probably contributed to this. Simplifying these requirements and sending all extraneous material to appendices would help with this issue. We suggest the core of the operational plan focus on KPIs and timing for the centre, its projects, and processes of partner impact.

More funding flexibility needed between stages

In the interests of smooth transition between centre stages, we recommend that Vinnova/VR allow more flexibility in funding arrangements between stages so that money can be carried forward if there are good reasons to do so.

Provision of commercialisation/technology transfer expertise

Commercial/industrial impact is expected of all the centres funded by Vinnova and VR. It is notable that different centres start from different points in their previous experience with industry collaboration and that many of the weaker centres would benefit from some help from experienced commercialisation or technology transfer professionals. The exact nature of the contribution is likely to depend on the skills already present in the centres.

Two examples illustrate where provision of expertise could have been very valuable. Firstly, the AFC VINN Excellence centre at Lund is in a field where much of the innovation needs to be developed through spin out companies (a total of nine for AFC). The centre would have benefitted from more specialist expertise in spinning out companies from an academic environment. The second example is the Exselent Berzelii centre at Stockholm, where there seemed little previous experience of working with industry. This centre would have benefitted very early on from some more structured technology transfer expertise working quite closely with the management team. Different centres would benefit in different ways but Vinnova/VR should act as facilitators in order that suitably qualified people could join the Board, management or research team in order to improve the pull through of research into impact. Finding the right people (e.g. those who have been CEOs of spin out companies or successful technology transfer experts) is key here, and Vinnova/VR are likely to be best placed to help with this process.

Comments on process

Two process innovations were introduced by Vinnova for the 2014-15 evaluations.

1 Remote evaluator – two experts in the field of the centre were engaged for each evaluation, one present at interview and one (the 'remote specialist evaluator') participating by phone in pre- and post-interview discussions and contributing to the pre- and post-interview reports. For the 2014 Gothenburg centres, this process seemed to work reasonably well in three cases and less well in the other two, despite good intentions all round. For the later evaluations, the teams took the approach of having the remote evaluator contribute fully to the pre-interview report and night-before-interview discussion, but did not require the remote evaluator generally to contribute to the writing of the final report; rather asking them to be the first editor of this report. The revised process was in our opinion much more successful. Nevertheless, we suggest sending the remote evaluators a simple

questionnaire asking them what did and did not work well for them and seeking their suggestions for improvement. While the lowering of the quality and depth of the Vinnova evaluation process as a result of having only one expert evaluator present during interview might be tolerable at stage 3 evaluations, the physical presence of two generalist evaluators at interview remains a key requirement for a professional evaluation of a centre.

For one centre, Faste, the specialist evaluator, who was to attend the interview, fell ill and could not be replaced at short notice. In this case, what worked well was that both specialist evaluators 'coached' the generalist evaluators on the (for this case quite significant) specialist issues in the pre-interview discussion and the interview and subsequent final report processes went remarkably smoothly.

2 Pre-report – for the 2014-15 evaluation rounds, a pre-report covering all the matters of the evaluation (and not just scientific matters as in the previous round) was sent to each centre before interview, with each centre having the chance to respond either before or at the interview. We were concerned initially that this might make the interview stilted but in practice the process seemed to work quite well. The only concern we have is that one centre, BIOMATCELL, received a neutral-to-positive report before interview (and made no pre-interview comments on the report) but the final report was much more negative.

Use of specialist evaluators in common

It would have been helpful for the centres and their evaluators if there were at least one common specialist evaluator for centres operating in the same or close fields. This would allow more precise evaluation of the centres and pave the way for closer collaborations between them. Groups that would have benefitted from a specialist evaluator in common are:

- GHz + Chase
- Wingquist + Faste
- Hero-m + FunMat
- CESC + Mobile Life
- BIOMATCELL + SuMo + BiMaC Innovation

Clarifying what is needed in evaluation processes at different stages

Over the lifetime of the two programmes, Vinnova, VR and the evaluators worked hard to improve and make more efficient the centre evaluations at the three evaluation stages through refining the associated guidelines, interview arrangements and reports. Nevertheless we suggest some further reflection over what worked well in the evaluation processes and what didn't would be valuable before the start of the centres to be funded from the current call. Accordingly we suggest that a discussion should take place between Vinnova, VR, key evaluators, and one or two chairs and directors of successful centres on what worked and was helpful to the centres and to the funding agencies in getting ready for the next stage and what was not useful from the evaluation processes.

20 November 2015

Mary O'Kane (Chair) *Alison McKay* *Russell Morris*

Anja Skrivervik *Sybrand van der Zwaag*

3 Evaluation of Exselent

A Berzelii centre at Stockholm University

Introduction

On 4 November 2014, the Chair of the Centre Board, Jan-Erik Nyström, board members, the Centre Manager, Niklas Hedin, colleagues of the Exselent Berzelii Centre, PhD students, external partners, and university representatives had a formal interview with the four members of the evaluation team (Mary O'Kane (Chair) and Alison McKay as generalists and Russell Morris and Svetlana Mintova as specialists). At interview Mats Jarekrans, Mårten Jansson, Mårten Berg and Thomas Eriksson were also present on behalf of Vinnova as was Maria Bergström from VR. We thank all members of the Centre and the Vinnova and VR teams for their efforts in providing information for the evaluation via the self-evaluation report and the meeting with the evaluation team.

This evaluation is particularly focused on the output from the Centre in the form of scientific, societal and industrial results and the impact of this output. Exselent is a centre with excellent scientific output and impact but with much weaker societal and industrial output and impact although it has improved significantly in these areas during Stage 3.

Long-term Vision, Mission and Strategy

The Centre has an appropriate vision and mission although these could be profitably re-visited in the pre-Stage 4 Operational Plan.

Over Stage 3 and with significant help from its Board, the Centre has improved its strategy for engaging with industrial partners and for capturing innovations arising from new research. While this is to be commended, the strategy could be extended further to improve the Centre's impact on industrial partners.

How the Centre addressed the recommendations of the previous Review

The Centre has improved significantly since the last evaluation and generally has addressed many of the recommendations of the last evaluation well. Some issues remain however – including regarding commercialization and building strong links with cognate groups worldwide.

Centre Partners

The Centre has a good balance of industrial partners and has recruited several new partners during Stage 3. From the presentation at interview, approximately 60% of Centre projects involve one or more industrial partners. At this stage in the Centre's development the evaluation team would expect to see more industrial involvement in projects from a wider range of companies. For example, we would expect to see at least double the current number of industrial partners in preparation for becoming a self-sustaining Centre after Stage 4. From discussions with partners at interview, it is clear that the Centre is highly appreciated by partners but

tangible measures to provide concrete evidence of impact are not yet available. With respect to needs identification processes, the Centre has well-established, PI-led processes to identify and define problems with industry partners, which lead to the development of collaborative projects. However, additional processes are needed to identify opportunities for innovations where groups of companies can collaborate with researchers on longer-term pre-competitive research.

Scientific Quality and Productivity

The goal of this part of the report is to review the performance of the Centre in a scientific context concentrating on the following two areas:

- research area, competence profile and critical size
- research program and results.

Porous materials are defined as solids possessing pores or channels in the diameter range 0.4 – 2 nm (microporous), 2 – 50 nm (mesoporous) and > 50 nm (macroporous). The use of porous materials in certain industrial applications is relatively mature (e.g. catalytic cracking in the petroleum industries, ion exchange in water softening and detergents, etc.). However, all these uses rely on purely inorganic framework materials. Currently, new areas of application utilising novel classes of solids incorporating inorganic-organic hybrids and purely organic materials are being developed for use in several emerging technologies such as gas storage and separations, fine chemical synthesis, catalysis and biomaterials. One of the challenges for those involved in basic research in this area is that the emerging technological applications are in a range of quite different areas spanning many industries, from pharmaceuticals and medicine to environmental remediation and energy storage. There is no such thing as a 'porous materials industry' per se, but there is significant interest from a wide range of commercial companies undertaking many different activities.

Research Area, Competence Profile, People, Facilities, Critical Size

In Stage 3, the scientific focus of the Centre has evolved to concentrate on three main areas (down from four during Stage 2). The three areas of 'main competency' are: Catalysis, New Materials and Characterisation, and Uptake, Separation and Delivery. The vision is to combine New Materials with the obvious applications of Uptake, Separation and Delivery into one area so giving a total of two main areas in Stage 4.

Each of these areas contains a significant critical mass of scientific leaders and each has engaged significantly with industries of different types and there is evidence of scientific excellence in all of the thematic areas. There are 14 different Centre Partners listed in the documentation and new partners that have been added since Stage 2 include a global company (ExxonMobil) as well as several smaller entities. This almost doubles the number from Stage 2, which is encouraging, but the level of external funding is still relatively low for a Centre of this kind. To be sustainable there is still a need for further enhancement of industry links (in terms of both number and quality of links). There was very encouraging evidence presented at interview of the positive effect Exselent has had on two small SMEs in particular – Biokol and NeoZeo AB – which may have ceased trading without the scientific input from the Centre.

The 27 project leaders are split between each of the themes fairly evenly and include three relatively recent additions in Gao, Mendoza and Wan. The research competence is augmented by some excellent collaborations with external scientific groups, several of whom are truly world leaders. It is clear that the lack of engineering competency, which has been highlighted previously, is at least on the agenda for improvement during Stage 4. The International Scientific Advisory Board, in their very helpful and perceptive report, also noted this aspect.

Overall, there is no doubt that the scientific members of the Centre have excellent capabilities and competences. There seems to be a good spread between senior scientists who are established in their fields and newer appointments. There remains a gender imbalance, and eliminating this must also be a long-term goal of the Centre. However, such an imbalance is common within STEM-based research centres across the world and so does not in itself indicate underperformance of the Centre specifically. The team is also very international, which is an important aspect of the Centre.

It is good to see that industrially-funded appointments have been successful during Exselent, and we appreciate that further hiring using this model is under consideration.

Research Programme and Results

The Centre has published a large number of scientific papers in the primary literature (164 journal articles) during Stage 3, showing an increase of 30% more than in Stage 2. The metrics introduced to measure the quality of the scientific output are impressive and indicative of basic science that can generally be called excellent. The Centre has three patent filings from this Stage. It is not entirely clear from the documentation whether this is really an acceptable level of commercialization activity or not, although the fact that two of these patents are already licensed to industry and the third is under serious discussion is a very good sign. Commercialization is an area that the Centre has focused on during Stage 3 at least in terms of setting up procedures for identifying novelty/inventiveness in the scientific output.

In relation to the three general themes it is clear that the New Materials and Characterization theme continues to provide science of the highest quality. It is interesting to note that this theme has been expanded to include non-porous materials. It is disappointing that Nobel Biocare, the main partner interested in biomaterials, has left the Centre, but the addition of ExxonMobil and SinoSteel, two significant players in their respective fields, is a measure of the high regard that this particular aspect of the Centre's activities attracts. The 96 papers published include some in the highest quality journals (Nature and Science), which supports the general feeling of excellent scientific quality. The statistic that 7 out 19 new zeolite structures reported worldwide during Stage 3 have been characterized by the Centre is startling! The contribution of Exselent to the upkeep of the International Zeolite Association structure database is very much appreciated by the porous materials community.

The projects listed for the Catalysis theme also show evidence of high quality science. The emphasis seems to be on developing new types of catalyst for the fine chemicals and pharmaceuticals industry, and include aspects of porous material-supported nanoparticle catalysts and activation of hydrocarbons by O_2.

The Uptake, Separation and Delivery theme is the newest area of expertise in the Centre and is clearly still developing. However, there is no doubt that aspects such as Carbon Capture and Storage are of great scientific interest with significant activity throughout the academic world. It is less clear how interaction with industry is driving this activity and whether there is really a new market for porous materials in this area. However, there are clearly opportunities in the general area of separation in particular where the skills of the team could be very successfully applied to needs-driven research. Other new applications include thermal storage based on water adsorption/desorption cycling and air/water purification, which are areas where porous materials could have great impact.

Conclusion

There is no doubt that there is much world-leading fundamental science activity ongoing within Exselent. The number of industry-academic engagements continues on an upward trajectory although more will be needed if the Centre is to become truly sustainable beyond the Berzelii funding period. There is excellent evidence that the collaborative culture within the Centre has been transformed by the funding, and it is also clear that attitudes to industrial interactions have significantly changed for the better. It is notable that the focus of Exselent has changed from almost entirely fundamental science-centred towards one where applications-driven research is highly valued.

It is the responsibility of the Centre management to ensure that the positive changes in culture that are evident from the improved industry-academic engagements and internal collaborations are sustained and enhanced during Stage 4 and beyond the funding period. Involvement of new industrial and academic groups will strengthen the Centre's position in new materials, advanced structural characterization and ultimate application in catalysis and separation.

Output and Impact

As noted above, the scientific output and impact is very strong from this Centre.

At interview the Centre's industrial partners present made it clear that they were satisfied that they were getting good value from the Centre however they did not offer any quantitative evidence of significant commercial impact derived from being a partner to the Centre although, again as noted above, it was pointed out that two of the smaller industrial partners probably owed their survival to the Centre.

One significant new partnership for the Centre is with Exxon Mobil, which is now the largest industrial partner in terms of contributions. This partnership is a good example of where excellence in science (structural characterisation of zeolites) can generate interest and activity in high technology companies. The concept behind this partnership could be replicated with other scientific strengths of the Centre being matched to potential new significant partners.

Organisation and Management of the Centre

The Centre has a dedicated and effective Board under the leadership of an excellent Chair. It also has a very good International Scientific Advisory Board, which is adding value to the Centre both by highlighting strengths and identifying opportunities for improvement. The management team structure and processes appear to be effective in encouraging research and

innovation within the project areas. However while the Centre seems to be operating as a reasonably effective and coherent entity, the lack of resources focused on cross-area developments, commercialization and other impacts raises concerns that the full potential of the Centre is not yet being realised.

The Centre is strongly supported by the host Department but the evaluation team was concerned that the University philosophy of devolving responsibility to the host Department for development (including assisting with any future funding support in the post-Berzelii funding period) of research concentrations such as this Berzelii Centre puts the Centre at a disadvantage to other such centres where the host university provides significant guidance and support centrally. That said, the evaluation team noted the comment that SU Holdings has improved recently and is providing better commercialization support than previously.

The Centre was allocated 15MSEK from Vinnova and 15MSEK from VR for Stage 3 of which 25 MSEK was spent. The underspend was largely the result of not spending funds allocated to impact. This was matched by a similar contribution from the University, largely in the form of an in-kind contribution of staff time, and 13.75MSEK from industrial partners.

Training Personnel of High Competence

Given the research outputs in high impact journals, the Centre has recruited and is developing people of international competence and experience. Mobility of personnel between University and industry is low and, from the interview, it is clear that PhD students would value more opportunities to interact with industry and work on industry-focused projects.

The gender balance of the Centre is improving and it is good to see that the management team has been creative in finding ways to improve the gender balance during Stage 3. But there is more to do in this regard.

Long term development during Stage 4 and beyond

It is clear that the Board and management have been focusing on plans for Stage 4. For this Centre, actions taken in Stage 4 will be critical to giving the Centre a chance of continuing successfully when the Berzelii Centre funding finishes.

Summary and Recommendations

The overall conclusion of the evaluation team is that the scientific quality of the Centre is excellent. The involvement of industry in the projects has improved markedly during Stage 3 but is still not yet at the level required to ensure sustainability of the Centre beyond the ten-year funding period. Commercialization activity is below what one might have expected from a Centre of this type.

The PhD students were enthusiastic about their research but the value of belonging to the Centre seemed limited. Recommendation 2, below, addresses this.

Given this, the evaluation team makes the following recommendations.

Recommendation 1

That the Centre work during Stage 4 to build a structure that aims to maximise output and impact and to set the Centre up for being sustainable and successful in the post-Berzelii funding phase. This should include:

- re-visiting the Vision to ensure that the objectives for the Centre are clear for all participants and partners
- agreeing measures of success and including these explicitly in the Operational Plan for Stage 4
- developing a more systematic approach to analysis of partners' and potential partners' needs
- immediately moving to employ a 'tech savvy' person to manage engagement with industry. This role of this person should be to:
  - identify and approach potential new industrial partners
  - prioritise, on the basis of initial contact, the potential partners for follow up meetings. This will remove the need for the Centre director to be involved at such an early stage
  - act as the conduit through which potential licensing partners could be found for patented results
- continuing the development of IP generation and protection strategies and considering enriching it with processes such as technology licensing.

Recommendation 2

That the Centre improve the cohort experience for PhD students to enhance their current research and future career prospects through, for example, training (such as in innovation, enterprise and entrepreneurship), a Centre seminar series, workshops, focused group meetings, and more opportunities to explore research and innovation opportunities with industrial partners.

Conclusion

Exselent is performing at an excellent level in scientific terms and has improved significantly in terms of industrial impact although there is much more to do in this regard to reach the standard expected of a Berzelii Centre at the end of Stage 3.

Assuming the recommendations are addressed, the evaluation team recommends continued funding.

Mary O'Kane (Chair) *Alison McKay*

Russell Morris *Svetlana Mintova*

4 Evaluation of UPSC

A Berzelii Centre at Swedish University of Agricultural Sciences and Umeå University

Introduction

On 5 November 2014, the Chair of the Centre Board, Carl Kempe, board members, the Centre Director, Ove Nilsson, colleagues of the UPSC Berzelii Centre, PhD students, external partners, and university representatives had a formal interview with the four members of the evaluation team (Mary O'Kane (Chair) and Alison McKay as generalists and Isabel Allona and Teemu Teeri as specialists). At interview Mats Jarekrans, Mårten Jansson, Mårten Berg and Thomas Eriksson were also present on behalf of Vinnova as was Maria Bergström from VR. We thank all members of the Centre and the Vinnova and VR teams for their efforts in providing information for the evaluation via the self-evaluation report and the meeting with the evaluation team.

This evaluation is particularly focused on the output from the Centre in the form of scientific, societal and industrial results and the impact of this output. The Centre is progressing exceptionally well with high-impact scientific results and strong impact on industry partners and the forest industry more generally.

Long-term Vision, Mission and Strategy

The Centre's vision and mission are appropriate and the strategy for realising the mission and achieving the vision is robust and effective.

How the Centre addressed the recommendations of the previous Review

The Centre has addressed the recommendations of the Stage 2 evaluation well.

Centre Partners

As noted in the Stage 2 evaluation report, the Centre has a very good balance of academic and industrial partners, each partner with a clear role and contribution to the Centre. For Stage 3 the Centre has added one new industrial partner, Skogforsk, and the Swedish Forest Industries Federation is associated with the Centre and provides a new route for exploitation and commercialisation of the research. Each adds to the coverage of the industrial partners and strengthens the Centre as a whole. We were impressed that all Board members participated in the interview and, more generally, were impressed by their high level of commitment to the Centre.

Processes used for needs identification and articulation are strong. A real strength of these processes lies in the range of sources and methods used to collect information that is used to stimulate needs-driven research. The introduction of the Industrial Graduate Research School in Stage 3 is a further strength, creating new opportunities for collaboration between researchers and industry.

Scientific Quality and Productivity

Research area, competence profile, people, facilities, critical size, and processes for ideas generation

UPSC consists of 35 research groups and has more than 100 scientists. Its field of competence ranges from basic cell biology and biochemistry, plant molecular biology, genetics, developmental biology, and plant physiology to analytical chemistry and chemometric analysis. Its expertise goes from metabolomics to genomics, bioinformatics to plant breeding and from cell biology to tissue culture. Several of the group leaders rank among the top scientists in the world, and the Centre proudly announces that in Sweden only Uppsala University has a higher number in this metric – meaning further that plant sciences in Umeå match in scientific productivity with medical sciences in the whole country. Critical size is met not only in numbers, but in the way the Centre has succeeded in integrating the 35 groups, meaning that these groups truly work for common goals.

The Centre brings together a large number of research groups at UMU and SLU in Umeå and provides them resources in the form of up-to-date technical platforms (among them it is important to highlight the spruce somatic embryogenesis and transformation platform that will produce a great benefit to the advance in spruce functional studies), financial support and, above all, a forum for reciprocal communication with industry. Successful implementation of the latter is the most amazing achievement of the Centre, which has led to a well-maintained focus of the scientific research and opened up possibilities for second-tier funding possibilities of which sequencing of the Norway spruce genome is the most remarkable. It is noteworthy that although the Berzelii Centre funding is not the only source of the total funding of the research groups, the way the funding was set up by VR/Vinnova and executed by the UPSC shows great insight - a great success that has been synergic to obtaining funding from other sources.

The research area of the wider Centre, (thought of broadly, including as many as possible of the research groups working at UPSC), is defined under three "task forces", which are defined based on the research needs of forestry in Sweden. Each task force gets contributions from several research groups and each research group typically participates in several task forces. Further, each task force is divided into sections of *Basic research* and *Applied projects*, the former feeding the latter. In spite of the way the task forces are formed from the practical needs of the industry, all three are addressing questions very relevant to plant biology, meaning the research is at the cutting edge of science, making it easy to evaluate the research using generally accepted metrics of basic research. The interface between *Basic research* and *Applied projects* is unique. Part of the Berzelii Centre funding is reserved for funding of "Proof-of-concept projects" and part for "Strategic projects". Through this the groups working in the Centre can apply for funding to take forward new ideas towards their applications. This kind of "Grants within grants" strategy allows allocation of resources to the most promising ideas at the time they emerge.

Scientific output and impact of scientific results

Bibliographic metrics summarized in the report show both very high quality of scientific publications (number of articles in top general journals or top plant science journals), and also a clear improvement during Stage 3 of the already impressive output during Stage 2. The "crown jewel" of the outputs is the first draft of the genome sequence of Norway spruce, which as a

scientific task was a brave mission that was successfully completed. This achievement, a scientific triumph in itself, is just a beginning for what is to come in terms of our understanding of plant evolution and of practical forest tree breeding.

The Centre has achieved strong links with companies and integrated well with them. It is important to highlight the biannual workshops organized with the Swedish Forest Industries Federation to communicate recent Centre developments as well as to hear industry needs. Moreover, the Centre has established an important program of mobility between the industrial partners and academia. Finally, there is a tight collaboration with SweTree Technologies to identify patentable innovations at an early stage.

International comparators with other Centres and Collaborations

During the period of a few decades the Umeå Plant Science Centre has grown into an internationally very well recognized research centre, comparable to the Max Planck Institutes in Germany, the John Innes Centre in UK or the VIB in Ghent, the other leading European plant science research institutes. The Berzelii Centre for Forest Biotechnology has played a central role in taking UPSC in a track of translating basic research into applications. As seen from the scientific output metrics, this has not taken place at the expense of the volume or quality of the scientific outcomes; perhaps, on the contrary, it has had a role in enhancing excellence.

There is an increase in the international collaboration with centres along the world, beginning with the INRA in France, UBC and Quebec University in Canada and Copenhagen University in Denmark. Now, UPSC has signed new agreements with the RIKEN in Yokohama, Japan, and the Max Planck Institute in Golm, Germany, and is preparing new ones for interacting with plant biology Centres of Excellence in Finland and with the CRAG in Spain.

Overall conclusion – scientific quality and productivity

The UPSC Berzelii Centre for Forest Biotechnology program has directed the well-known Umeå Plant Science Centre to a track that connects academic basic research with industry-level applications in an exceptional way. The basic science at UPSC has not only been maintained at high level but the scientific quality and productivity has reached an exceptional standing. This has been possible with the Berzelii Centre funding, and the other resources it have been possible to leverage because of the Berzelii Centre status, its facilities and especially its interface with industry

Output and Impact - output from and impact of the Centre in the form of societal and industrial results with particular focus on impact on Centre partners

As noted above, the Centre's outputs and impact are very strong. Partner participation is enthusiastic and committed, and clearly partners are deriving tangible benefits from their involvement. For example, research in the Industrial Graduate Student Research School program solved a problem in nursery seedling survival rate that immediately turns into very substantial savings. Another innovation, the SeedPAD technology, will make it possible to directly sow elite tree seed and make wider use of genetically improved material in forest renewal.

The forest industry in Scandinavia, and arguably globally, benefits from the Centre's high productivity and effective translation of results to business. In this context the role of SweTree

Technologies is particularly interesting. The Berzelii Centre has also made important contributions to the public discussion concerning genetic modification (the GMO debate). Public interest in science was promoted in the School Project where 10,000 school children reported changes in autumn colours of aspen leaves and this way got involved in making science.

Organisation and Management of the Centre

The Board has good representation across the industry partners and plays a key role in determining the direction of the Centre's research. The Centre has an impressive Director and the management team structure and processes are effective in developing research and innovation within the project areas. The provision of a budget, allocated by the Board, to support new projects and ideas (Section 7.5) is a strength. From the reports and results, the Centre is operating as a highly effective and coherent entity.

From its report, the International Scientific Advisory Board (ISAB) regards the Centre's research and impact as pioneering and world leading. The ISAB is well constituted.

The Centre has a necessarily strong identity within the complex "Centre within a Centre" environment in which it sits. The initial impression of its web site (www.upsc.se) is good but some pages are incomplete (e.g. the researcher web pages include two post docs and no PhDs) and the Berzelii role/branding is unclear.

A significant strength of the Centre is its academic structure and the support provided by the two universities. While the leadership of the Centre is cognisant of the challenges of being a large Centre, for example managing communication within the Centre, they are working to address these challenges and the ethos of the Centre permeates all levels with the Centre and the universities to which it belongs. In addition, the introduction of a mentoring scheme for new and junior researchers is addressing the particular issue of communication.

The Centre was allocated 15 MSEK from Vinnova and 15 MSEK from VR for Stage 3; there has been a small underspend on this because of the time taken to establish the Industrial Graduate School. The universities contribute in excess of 210 MSEK, of which approximately 85% is in-kind support for staff, and in excess of 15 MSEK is provided by the industrial partners.

Training Personnel of High Competence

As a Centre within a Centre, the Centre is having a high impact on the training and development of a large number of researchers. The Centre includes researchers from over forty nations which brings international competence and experience. The management team has proactively managed the gender balance of the Centre and achieved excellent results.

From the report and interview, the Centre encourages researchers to make international visits (to conferences and other research groups) and the recently launched industrial PhD programme provides a formal mechanism for mobility of personnel between the universities and industry. At interview we met six PhD students: some at the beginning of their studies and others later. The students were very positive about their experience in the Centre. They particularly

appreciated the approachable staff (many of whom operate an open door policy), their easy access to equipment (when compared with the universities where they completed their Masters degrees, for example), the fact that they belong to reference groups in addition to the supervisory teams, and opportunities for them to meet industrialists (for example, through Centre retreats and conferences). In response to questions around how their Centre experience might be improved they suggested more career development and training opportunities such as a new version of the Centre-led seminar series on careers outside academia that was run earlier in the Centre's life.

Long term development during Stage 4 and beyond

The evaluation team is pleased to note that the plans for Stage 4 continue the Centre's tradition of seeking to address challenging topics that are industry relevant.

With regard to beyond Stage 4, all Centre partners have agreed that it is important to continue the Centre and they all have agreed to support the Centre financially beyond Stage 4 at or above current funding levels. The commitment of this support will be formalised in a letter of intent as part of the Stage 4 contractual arrangements. For its part the Centre will agree to:

- continue producing world class research at least at its current level
- continue to attract external funding at least at it current level
- continue the academic-industrial network that produces and shares knowledge and innovations
- continue strong outreach towards the rest of society
- be evaluated in 3-5 year periods against these goals.

Summary and Recommendations

UPSC is an exceptionally good research centre in international terms. It carries out high-impact fundamental research and delivers superb research training as part of a wider industry-focused set of activities. These are key to transforming the productivity of forest industries in Sweden and, through the reach of Nordic forest companies, globally. Vinnova and VR are to be commended for shaping and promoting such an unusually successful industry-transforming centre through their Berzelii Centre program.

The very success of the Centre raises questions as to whether or not it could use developments in other disciplines to drive its impact even further. Tools associated with big data, data analytics, biomodelling and computational biology are all fields which the Centre draws on already to varying degrees but which could serve this Centre even more.

Recommendation 1

That the Centre explore how it might use developments in other disciplines to create new scientific directions and thereby drive its impact even further.

The Centre is having a significant economic impact on its industry partners and this impact is likely to grow over time. It would be helpful for the Centre, its partners and the government funding bodies if this impact were formally estimated.

Recommendation 2
That the Centre quantify its economic impact to date and model likely future impact.

In the light of the Centre's exceptional performance, its future plans, and partner support and impact, the evaluation team makes an explicit funding recommendation to Vinnova and VR.

Recommendation to Vinnova and VR

That Vinnova and VR consider continued funding of the UPSC post-Stage 4.

Conclusion

UPSC is performing at an exceptional level. The evaluation team recommends continued funding.

Mary O'Kane (Chair) *Isabel Allona*

Alison McKay *Teemu Teeri*

5 Evaluation of the Uppsala Berzelii Technology Centre for Neurodiagnostics

A Berzelii Centre at Uppsala University

Introduction

On 16 October 2015, the Chair of the Centre Board, Helena Nordvarg, board members, the Centre Director, Fredrik Nikolajeff, colleagues of the Uppsala Berzelii Centre, PhD students, external partners, and University representatives had a formal interview with the evaluation team (Mary O'Kane (Chair) and Russell Morris as generalists and Gitte Moos Knudsen and Laura Lechuga as specialists). At interview Mats Jarekrans and Mårten Jansson were present on behalf of Vinnova and Maria Bergström on behalf of VR. We thank all members of the Centre and the Vinnova/VR team for their efforts in providing information for the evaluation via the self-evaluation report, comments on the pre-interview report and the meeting with the evaluation team.

This evaluation is particularly focused on the output from the Centre in the form of scientific, societal and industrial results and the impact of this output.

Long-term Vision, Mission and Strategy

The long-term Vision and Mission of this Centre are compelling and well articulated. The strategy for achieving them as outlined in the documentation and at interview is however somewhat loose and does not adequately emphasise actions designed to ensure the Centre is more than the sum of its parts, or more than a relatively loose collection of bilateral projects. This is a pity as the Mission of the Centre is excellent and addresses a very important societal challenge and the Centre has assembled a very good collection of partners to tackle this challenge.

How the Centre addressed the recommendations of the previous Review

The Centre reports that it has addressed or is actively addressing all 10 recommendations from the Stage 2 evaluation. However some of the actions taken seem somewhat superficial.

For example, at the last evaluation the Board Chair was very clear that one of the most pressing needs for the Centre was for cash particularly to recruit new PhD students. Accordingly a recommendation was made that "That the Centre Board secure significantly increased cash contributions for Stage 3." The response to this recommendation however displays a rather passive governance/management approach. Several of the other recommendations are equally poorly dealt with. The overall impression is of a management that is letting the Centre as a whole drift somewhat without strong leadership to address the issues raised.

It is pleasing to note the integration of bioinformatics into the Centre as a result of another recommendation from the previous evaluation. This is an important support topic for a centre such as this and could be exploited even more than it is at present.

Centre Partners

The Centre comprises a single academic institution, Uppsala University, ten companies (several of which are SMEs), and a public sector partner, Uppsala University Hospital. The company, UU Project AB (fully owned by Uppsala University Holding Company), is to be a commercial partner for all Centre researchers without obligations to other companies within the Centre. Most partners seem to continue to be active in the Centre, contributing to projects of particular interest to them and some contribute to the Centre overall as well, through board membership for example.

The evaluation team remains concerned that company partners are not contributing cash to the Centre and that several of them have reduced their in-kind contributions significantly below the amounts agreed in the budget presented in the current Organisational Plan. Taken together this suggests that the company partners are becoming less convinced of the value of being in the Centre although it was explained at interview that industry changes had contributed to problems in this regard.

Scientific Quality and Productivity

Research area, competence profile, people, facilities, critical size, and processes for ideas generation

The Centre has three main focus scientific and technological areas of research: Alzheimer's disease (AD), chronic pain, and explorative research (mainly focused on developing analysis tools). During Stage 3 efforts have been directed towards generating results exploitable by the industrial partners.

Numerous scientific and technological achievements have been made in Stage 3; the Centre has published more than 53 international publications. Few of them are in high ranked journals, IF≥ 6, although we note that applied science and technology work can be on a different timescale than original basic science or purely clinical sciences. In addition, Centre partners have been invited as speakers to 16 international and 14 national meetings and have arranged two open symposia. It is hard to break down how much of the science would have happened without the Berzelii Centre funding, but it appears that most of the scientific outputs are within the defined themes of the Centre.

It was reassuring to see that a high proportion, roughly 70%, of the papers published from the Centre (or rather, publications wherein the Centre was acknowledged) had co-authors from more than one of the Centre partners.

The Centre expected to have at least 8 patent applications or granted patents during Stage 3 as a direct consequence of the developments at the Centre. It is unclear to the evaluation team to what extent this goal has been achieved since at interview a different number was given compared to the written report. Accordingly, the output of patents or IPR protection is hard to evaluate.

When asked about the main scientific outcomes of the Centre the answer at the interview was:

1. PET ligand for diagnosis and monitoring of Alzheimer's disease (AD)
2. Biomarker candidates in pain

Accordingly, this review focuses on these achievements and below a more in-depth analyses of the outcomes is given.

1 Development of antibody-based PET imaging probes

Rationale: In AD, amyloid-beta (Aβ) peptides deposit in the parenchyma and to some extent in vessel walls of the brain. These Aβ monomers gradually aggregate and form larger soluble molecular species (oligomers/protofibrils), which eventually result in insoluble fibrils and senile plaques. The neurofibrillary tangle is another intracellular protein inclusion seen in brains of patients with AD and frontotemporal dementia. These abnormally configured proteins can readily be identified by immunostaining of brain tissue, which means that effectively the diagnoses can only be made with certainty after the death of the patient. Currently used methods for diagnosing and monitoring of AD include measurements of cerebrospinal fluid content of proteins and/or in vivo imaging of amyloid- or tau-specific radiotracer binding. Although the latter biomarkers are fairly good at discriminating between differential diagnoses at early disease stages, they are less suitable to follow disease progression or to monitor drug intervention. Thus, because of this unmet need, the Centre has taken on a quite challenging task, namely to use an antibody-based rather than a small molecule approach. The idea is to radiolabel the antibody against Aβ protofibrils *and* to bring it over the blood-brain barrier by means of the tranferrin receptor. In 2013, the Centre published in J Alzheimers Disease the in vitro and ex vivo characteristics of a new antibody-based radioactive ligand, [125I]mAb158, which binds to Aβ protofibrils with high affinity. [125I]mAb158 was specifically taken up in brain of transgenic mice expressing amyloid-β protein precursor (AβPP) as shown ex vivo. The brain uptake of was age- and time-dependent, and saturable in AβPP transgenic mice with modest Aβ deposition. The evidence for specific binding to soluble Aβ protofibrils was indirect in that young AβPP transgenic mice devoid of Aβ deposits also show some [125I]mAb158 brain uptake. In a subsequent paper from 2014, the researchers show that their antibodies efficiently immunoprecipitate soluble Aβ aggregates in human AD brain extracts. The commercial opportunity for BioArctic is to have a cGMP product ready for clinical testing in 2017-18 and to have licensing opportunities.

The evaluation team finds that although the paper was published back in 2013, the Centre did not yet publish any convincing data in further support of the imaging approach and one could have hoped for faster progress. Further, although the methodology is important from a clinical point of view, the commercial potential for PET radioligands may be questionable.

2 Biomarker candidates in pain

Rationale: At present, no reliable methods exist (clinical signs, biomarkers, gene polymorphisms etc.) for identification of who will develop chronic pain after, e.g., trauma. In addition, no biomarkers are known that can guide diagnosis and treatment of chronic pain. Thus, there is a large potential for new and important discoveries, in order to improve the situation for chronic pain patients. In particular, the Centre aims to identify biomarkers associated with chronic pain in animals as well as carry out research focused on the development of peptidomimetics as candidate drugs for the treatment of neuropathic pain and other chronic pain states. Partly financed by the Centre, a biobank containing specimens from well-phenotyped

pain patients has been built with an estimated number of 1000 patients with different pain profiles. The biobank has also received additional contributions from centres abroad.

The cerebropal fluid from several hundred patients with neuropathic pain due to radiculopathy caused by herniated disc(s) has been analysed using a multiplexed protein biomarker panel and identified 12 top candidates that separate controls from chronic pain patients. The data have not yet been published, but the biomarker findings were confirmed to have been replicated in a separate sample.

The evaluation team finds that the data are encouraging but also points out that the large heterogeneity of pain patients – in spite of meticulous clinical phenotyping – will complicate the interpretation of data. We suggest using the bioinformatics expertise available within the Centre to help identify subgroups of patients across their phenotyping, in order to try to see how, e.g., the top 12-15 CSF biomarkers perform within these subgroups. If the Centre succeeds in identifying subgroups or valid biomarkers, the commercial potential of a chip to identify subtypes of pain patients or even monitoring intervention effects is considered good.

3 Diamond waveguide for molecular fingerprint

Rationale: To identify biomarkers in patient specimen using highly sensitive diamond waveguides as a new concept for rapid and sensitive bioanalysis, complementary to already existing methods.

The Berzeii Centre's spinout Molecular Fingerprint is pursuing a new technology based on IR sensing using diamond waveguides which can afford selective identification at the molecular level including protein conformational changes. The technology is protected by a granted EU patent, which has been extended to the US.

This project was also presented in the last evaluation and although some promising results have been achieved during Stage 3, the technology is in a very early stage. Proof-of-concept applications still need to be demonstrated and validated to have a more real picture of the real utility of the technology. Among the many open issues are: the quality of the waveguide diamond chip; its reproducibility and reliability; how to achieve a multiplexed platform; how to find a suitable commercial laser source; the read-out method; and how to perform a complete miniaturisation and integration of the platform. Commercialisation only seems likely in the medium to long term.

In addition, there is no clear connection between this technological platform and how it can be effectively employed for the identification of biomarker patterns in the AD and pain diseases to fulfill an effective early diagnosis or disease monitoring. Some preliminary work in glycosylation patterns has been mentioned, which can be related to AD, but no results were shown at interview. The Centre could contribute to the development of a high-tech product for Molecular Fingerprint spinout but, at this stage, the technology is too immature to guarantee its success.

International comparators with other Centres and Collaborations

There are some aspects which can be seen as competitive, particularly the tight interaction between clinicians and technological developments and rapid translation into a clinical setting.

Although individual partners and companies may be well-known internationally, the evaluation team does not generally see the Centre as clearly internationally visible.

Overall conclusion - scientific quality and productivity

Judged by standard (which we recognise in some cases is clearly insufficient) measures of quality and productivity, the Centre has had a reasonable publication record with an average distribution between impact categories. The outcomes will lead to some new products, processes and services (such as the biobank) but not to a large number of them.

The fundamental science seems to be good but the overall impact on partners, and by extension on society as a whole, is relatively modest at present.

Notably the biobank and its management is one of the main realisations of the Centre. The relationship between academia and the companies is also good and seems to have improved in some ways during this stage. One spinout has come out from the Berzelii Centre; it is still at a preliminary stage.

The impact of the results in the companies, and especially in the SMEs, participating in the Centre and on the end-users is in general not considered of high level.

Output and Impact - output from and impact of the Centre in the form of societal and industrial results with particular focus on impact on Centre partners

There are three themes and a total of fourteen separate activities listed in the written report – this represents a large amount of work ongoing in the Centre. There are some exciting impacts and potential impacts among these projects, but it is clear that in the last year focusing down the resources onto activities that will maximise the impact would be beneficial.

The impact highlights in terms of the scientific advances was relatively well presented during the course of the interview. There are some clear benefits to some of the Centre partners. For example the impact on the research direction in BioArctic was well described. Similarly, there is obvious benefit in the development of the pain biobank, which does seem relatively well connected to the Centre activities. It was also good to see one spinout company described. There was some confusion over the amount of IPR produced from the Centre, with a disparity between the written report and the interview, but that is perhaps simply a function of who owns the patents since the Centre cannot own any IPR itself.

However, the Centre does seem to have an issue in really understanding what a Centre should be, and how the focal point provided by the Centre should impact on all the partners in multiple ways. There is no doubt that the impact of the training of the staff and students in the Centre has been good, and that there are some ‘softer’ impacts that were probably not well described in the written report but are there nonetheless. The feeling remains that much of the collaboration is bilateral and that the potential for developing further impact has been missed by not really using the Centre as a tool to focus multilateral activity.

Recommendation 1
That the Centre management work hard to capture and quantify *all* the beneficial impacts so that at the end of the current funding the extent of the benefit to the research community and Swedish society can be properly assessed.

Organisation and Management of the Centre

As described above there is a feeling that the added value that being a Centre should provide has not been fully realised. This was brought up early in the interview and never addressed satisfactorily, either by the management or by the Board (despite the evaluation team coming back to the issue at least once during the interview). A centre should be more than simply the sum of its parts and it is not clear that this is the case here.

This view is backed up strongly by the fact that none of the companies involved provide cash to support the Centre, implying as noted above that only in-kind funding to support the individual, bilateral projects is valuable. The evidence suggests that the companies see limited added value in the Centre. From the answer to one of the questions from the pre-interview report it also looked as if the Centre was not taking a central role in other aspects of the exploitation of the research. The evidence and the discussion certainly leave a strong impression that the Centre is not performing as a coherent entity. This is a failure of the management of the Centre.

Training Personnel of High Competence

The interview with the PhD students and recent graduates went very well. The students are well disposed to the Centre and gave a good account of their roles within the research programmes. They did a good job explaining why they benefit from being part of the Centre. Those involved closely with the academic partners are very motivated by their participation in developing potential new products – they are clearly enjoying the experience. There is no doubt that students are well trained, but it would be helpful, in implementing Recommendation 1, if data on destinations of students on graduation could be collected and made available to back up the assertions that graduated students are well received by Swedish employers.

It was a little disappointing that the PhD students don't seem to get any specific training from the Centre (in terms of courses etc.) that is not already provided by Uppsala University. An opportunity to support the students as a specific cohort has been missed.

As one would expect from the field, there are no real gender issues. The Board has good input from senior industry of both genders, although it was notable that the older academics were all male.

Long term development during Stage 4 and beyond

The Centre's plans for Stage 4 and beyond are still quite fluid but have been the subject of Board discussion in recent months. It is important that the Stage 4 plans are crystallised soon and include strong mechanisms to maximise the impact from the Centre's most promising projects in the single year remaining. It is important this happens so that the Centre is in a good position to secure support for establishing a successor organisation. This is something the Board and management indicate they would like to do but the exact form of which is not yet clear although the Centre intends to apply in the forthcoming competence centre call and the

University intends to apply for other government funds to support academic/industry collaboration in this general field.

Recommendation 2
That the Centre focus on a small number of its most promising projects with the intention of achieving significant impact in its final year.

Recommendations to Strengthen the Centre

In summary, our recommendations are:

1. That the Centre management work hard to capture and quantify *all* the beneficial impacts so that at the end of the current funding the extent of the benefit to the research community and Swedish society can be properly assessed.
2. That the Centre focus on a small number of its most promising projects with the intention of achieving significant impact in its final year.

Conclusion

The Uppsala Berzelii Technology Centre for Neurodiagnostics is an example of a Berzelii Centre producing some good outputs with reasonable impact.

The evaluation team recommends continued funding.

Mary O'Kane (Chair) *Gitte Moos Knudsen*

Laura Lechuga *Russell Morris*

6 Guidelines for the third evaluation of Berzelii centres 2014-01-23

Background

The Programme background

This document constitutes the guidelines for the evaluation of two Centres with financing through the Berzelii Centres programme. The programme aim is to create and develop vigorous academic research milieus in which industrial and/or public partners actively participate in order to derive long-term benefits for society. The programme is also a link in the governmental effort to develop university-industry interaction.

The overall objective of the programme is to promote sustainable growth in Sweden. This means that the programme should create new, internationally competitive concentrations of highly qualified scientists with the task of conducting long term 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 Berzelii Centres programme deals with early stage industrial research closely related to basic research. The research activities involve increasing intense collaboration between the participating actors. Hence each of these Centres is a strong research milieu positioned in a strong innovative environment. Ideas outside the core activities of the participating actors can also potentially be utilised and further developed, e.g. by the set-up and development of new high-tech and/or research-based companies.

The Berzelii Centres programme requires a substantial engagement from industrial and/or public partners, especially after phase two. During phase 1 and 2 the focus has been to identify and perform research projects with special interest for the industrial parts and also leading to scientific results of high value. At phase 3 and 4 the effort should partly be focused in generating results exploitable by the industrial parts. In parallel, the continuation of more basic research, where the industrial parts sees future opportunities should be maintained. The financial conditions over the potential 10 year period for a Berzelii Centre shows a turnover of more than 170 MSEK where 100 MSEK is cash contribution from the Swedish Research Council, VR, (50%) and the Swedish Governmental Agency for Innovation Systems, Vinnova, (50%).

VR as well as Vinnova are both running other research programmes. For more information please visit the homepage for each organisation i.e. www.vr.se and www.vinnova.se.

Evaluation background

The Berzelii Centres programme is intended to run for up to 10 years. The building-up and development of the Centres is based on stepwise funding and follow-up and evaluation process. A number of industrial companies, research institutes and/or public services together with a university constitute the parties of a Centre. The parties contribute jointly to the Centre's research programme, financially or in the form of active work.

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

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

STAGE	YEAR	RESEARCH COUNCIL (VR)	VINNOVA	UNIVERSITY	INDUSTRIAL AND PUBLIC PARTNERS
1	1 2	5 MSEK 5 MSEK	2 MSEK 4 MSEK	> 7 MSEK > 9 MSEK	Ca ½-1 MSEK (recommendation)
2	3 4 5	5 MSEK 5 MSEK 5 MSEK	5 MSEK 5 MSEK 5 MSEK	> 5 MSEK > 5 MSEK > 5 MSEK	2-4 MSEK 2-4 MSEK 2-4 MSEK (recommendation)
3	6-8	15 MSEK	15 MSEK	> 15 MSEK	> 15 MSEK
4	9-10	10 MSEK	10 MSEK	>10 MSEK	>10 MSEK
TO BE USED FOR COMMERCIALISATION (AVAILABLE DURING STAGE 3-4):			4 MSEK		

In order to fulfil the main purpose of the evaluation (to give an input to the decisions about Stage 4, the development of the Centres, or other specific actions), the evaluation has to be completed in good time before the expiration of Stage 3. Two Centres will be evaluated in Nov 2014, see Appendix 1 and 2.

Main goals of the evaluation

The main intentions of the evaluation are to give input:

- to the development of each of the Centres during and after phase 4.
- to decisions for all parties about phase 4
- to other specific actions needed for phase 4
- to decisions and actions concerning each Centre after the termination of phase 4

The evaluation team

Each Centre will be evaluated by a team of international experts. Two scientific experts in the team will have the competence and the task to evaluate the Centre from a scientific point of view. Two 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. The scientific experts will evaluate one specific Centre while the “generalist” experts will participate in the evaluation of both Centres. It is important that the Centres can guarantee no conflict of interest with the proposed experts. Furthermore, Vinnova will take efforts to check potential conflicts of interest.

The task of the evaluators

This third evaluation of the Centres will be carried out during the eighth year of the Centre's operation.

Its primary purpose is to evaluate the output from the centres, in the form of scientific, societal and industrial results and the impact of these results on both end-users and, in particular, on the partners in the Centre, with special focus on what has been achieved in phase 3 compared to earlier phases.

The evaluators will also form an opinion concerning the approach and measures taken so far by individual Centres to judge the potential for their long-term development. This includes both the major results that the centre wishes to achieve and see in Stage 4, but also the Centre´s vision beyond Stage 4. Evaluators may offer suggestions for remedial action to enhance the prospects for long-term Centre success.

As a basis for the evaluations of the Berzelii Centres VR/Vinnova has formulated a number of success criteria (see Appendix 3). Centres are asked to prepare reports (prior to the evaluation) according to the guidelines in Appendix 4.

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

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

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

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

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

- Impact on partners, with special focus on phase 3 (in the light of the expected increased contribution from the partners during this stage)
- Financial Report for Stage 3
- Organisation and Management of the Centre
- Personnel of High Competence
- Centre Partners (from the point of view of organisational effectiveness)

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

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

Organisation of the evaluation

The composition of the evaluation team is decided by VR/Vinnova. The evaluation team itself decides on the distribution of work among its members.

The basic documentation, in principle:

- the Centre report to the evaluation team, from the Centre to Vinnova/VR[1]
- the operational plan for Stage 3[2]
- the evaluation report of Stage 2[3]
- the most recent report from the International Scientific Advisory Board

These documents will be distributed by VR/Vinnova to all members of the evaluation team not later than six weeks prior to the evaluation. The evaluation team will deliver its pre- evaluation report including queries (maximum 4 pages) to Vinnova four weeks prior to the evaluation interview. This draft report will then be sent to the Centre for comment. The Centre's comments should be delivered to Vinnova for transfer to the evaluation team not later than two weeks prior to evaluation interview.

Each evaluation session starts with the evaluation team introductory meeting the day (evening) before the evaluation interview and ends when the evaluation report is completed during the same day. The goal is that the first draft of the final evaluation report should be finished on the day of the interview.

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

During the interview session the evaluation team is interested in meeting:

- the Centre Director
- the Chairman of the Centre Board of Directors and several board members
- representatives from several of the industrial and public partners (both groups if relevant) including at least two from SMEs (if relevant)
- university staff incl. the Vice-Chancellor or a representative appointed by the VC to represent her or him
- as many as possible of the research leaders and/or program directors active within the Centre. If concerned research leaders and/or program directors are not able to attend the evaluation interview, the reason for this should be stated in each case.
- maximum 6 doctoral students

VR/Vinnova staff will be present at the evaluation interviews. The staff will act as administrators and will not take active part in the evaluation, but may add information during work sessions.

Each evaluation will take place over one day and will be divided into two sessions.

Each evaluation interview will take place over *one* day between 9.00 – 13.30. The evaluation team will meet all main parties from the Centre (see above) as a group (with the exception of doctoral students, see below). The Centre should prepare a presentation focusing particularly on the Centre's results to date and the impact of these results on end-users, in particular the partners in the Centre. The focus of the presentation should be on achievements during phase 3. The presentation should be timed to take no longer than 30 minutes, leaving ample time for questions and discussion, noting that when the presentation is given, the members of the evaluation team will generally ask questions through the presentation. Thus the presentation is

best thought of as the 'organizing thread' for the interview. At least 30 minutes of the interview will be devoted to a doctoral-students-only meeting with the evaluation team. See detailed schedule in Appendix 1.

Centre arrangements in connection with the evaluation

The Centres are asked to propose at least six scientific experts for the evaluation and send the suggestions to Vinnova upon request. It is important that the Centres can guarantee no conflict of interest with the proposed experts.

The basic documentation, including the Centre report and the financial report should be submitted electronically (pdf-files) to Vinnova and be available at Vinnova no later than September 19th 2014(see also Appendix 2). The template that should be used for the Centre report is presented in Appendix 4. Vinnova will take efforts to check that the financial report meets the requirements.

The Centre must be prepared to have dialogue with Vinnova concerning potential clarification and provision of additional information to the financial report before the interview.

In addition to the Centre report including the financial report, the Centre will provide to Vinnova the operational plan for Stage 3 and the last report of the International Scientific Advisory Board. These documents, along with the evaluation report of Stage 2, will be provided to the evaluation team by Vinnova. If the operational plan has been upgraded during Stage 3 the centre is responsible to send this as pdf-files to Vinnova no later September 19th 2014.

Vinnova requires, prior to the evaluation, copies of the IP agreements that each Centre's university has signed with each of the staff and students of the Centre (in accordance with the Centre Agreement). Those documents should be sent as a PDF file (s) to Vinnova not later than September 19th 2014.

Furthermore the Centres should:

- invite Centre representatives to the interview sessions
- provide paper copies of presentations at the start of evaluation interviews
- provide name cards for the table for all participants during the interviews
- arrange that the evaluation team can meet with up to 6 PhD students during the day before the second evaluation session, preferably in the evaluation location, or close to this location
- provide to Vinnova access arrangements for evaluators to password-protected parts of Centre web sites where project plans and reports should be available one month prior to the evaluation
- provide to Vinnova any comments on and respond to any queries in the pre-interview draft report at least two weeks before the evaluation interview
- note that for UPSC travel/accommodations of Centre representatives should be covered by centre or partner

Finally the Centre leader should confidentially review, with respect to facts, the first draft of the final evaluation report from the evaluation team and deliver any comments to Vinnova within one week of receiving the draft final report.

Report of the evaluation team

The work of the evaluation teams shall result in a report on the Berzelii Centres evaluated during autumn 2014, one for each Centre. Each Centre evaluation report should be the consensus view of the evaluation team. The evaluation team shall be unanimous in its recommendations.

Each report should focus particularly on the output from the Centres in the form of scientific, societal and industrial results and the impact of these results on both end-users and, in particular, on the partners in the Centre, with special focus on what has been achieved in phase 3 compared to earlier phases.

Following the submission of the final report from the evaluators, VR/Vinnova will request a discussion with each Centre, represented by at least the Chairman of the Board and the Director, regarding the recommendations received from the evaluation team. This discussion should be completed before contracts are signed to ensure that the recommendations be implemented prior to and during Stage 4.

Handling and distribution of the evaluation report

The report from the evaluation team will be presented to VR/Vinnova. The report will also be openly circulated to all Centres and available at the Vinnova webpage.

Remuneration to the evaluators

Vinnova will pay for all costs for evaluation team members including travel, accommodation etc.

Appendix 1, Time schedule for evaluations

November 4, Exselent in Stockholm

Monday November 3, 2014
19:00 - 21:00 Introductory meeting for the Exselent Evaluation Team (Generalists and Experts)

Tuesday November 4, 2014 at Vinnova
09:00 - 10:30 Exselent Scientific Expert Evaluation Session at Stockholm University
10:30 - 11:30 Generalist Evaluation Session at Stockholm University
11.30 - 12:00 Lunch
12:00 - 12:30 Meeting with up to 6 Exselent PhD students at Stockholm University
12:30 - 13:30 Continuation of Generalist Evaluation Session at Stockholm University
13:30 - 20:00 Exselent report writing and dinner

November 5, UPSC in Stockholm

Tuesday November 4, 2014
20:00 - 21:00 Introductory meeting for the UPSC Evaluation Team (Generalists and Experts)

Wednesday November 5, 2014 at Vinnova
09:00 - 10:30 UPSC Scientific Expert Evaluation Session at Vinnova
10:30 - 11:30 Generalist Evaluation Session at Vinnova
11.30 - 12:00 Lunch
12:00 - 12:30 Meeting with up to 6 UPSC PhD students at Vinnova
12:30 - 13:30 Continuation of Generalist Evaluation Session at Vinnova
13:30 - 20:00 UPSC report writing and dinner

Appendix 2, Delivery dates for reporting

IPR AGREEMENTS	September 19th 2014
FINANCIAL REPORT TO VINNOVA FROM CENTRES	September 19th 2014
EVALUATION REPORT TO VINNOVA FROM CENTRES	September 19th 2014
FINAL VERSION OF FINANCIAL REPORT TO VINNOVA FROM CENTRES	September 19th 2014
OPERATIONAL PLAN FOR STAGE 3 TO VINNOVA	September 19th 2014
MOST RECENT REPORT FROM THE INTERNATIONAL SCIENTIFIC ADVISORY BOARD	September 19th 2014
DELIVERY FROM VINNOVA OF PRE- EVALUATION REPORT TO EACH CENTRE	October 3rd 2014
RESPONSE ON PRE- EVALUATION REPORT FROM CENTRES	October 17th 2014
EVALUATION REPORT TO CENTRES FROM VINNOVA	December 9th 2014
FACT FINDING REVIEW BY CENTRES OF EVALUATION REPORT	within 1 week after report is received
DISCUSSIONS OF RECOMMENDATIONS IN EVALUATION REPORT	Dec 2014 (before signing center agreement)

Appendix 3, Success Criteria for Berzelii Centres Programme

In brief, a successful Berzelii Centre is characterised by the following:

- Research programmes are set up and carried out in active collaboration between the various participants in order to solve key issues.
- Leading international research in different fields in collaboration between the private and public sectors, universities and colleges, research institutes and other organisations which conduct research.
- Ensuring that new science based knowledge generated lead to new products, processes and services.
- An equality opportunity environment with active promotions for an equal balance of gender.
- The majority of work is conducted at a university to achieve a critical size and interaction between research, post-graduate education and graduate education.
- Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence.
- Long-term collaborative finance from private and public sectors, the university/college and financing governmental agencies, to be able to recruit, develop and keep people with leading international competence.
- The activities are overseen by a board where the participants from the public and private sectors hold the majority in order to secure the direction of the Centres towards the requirements of the private and public sectors, i.e. needs-driven research.
- Established in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).
- A gender perspective in the research programme.

Appendix 4, Instructions and template for Centre Reports to the Evaluation Team

Each of the Centres to be evaluated has to submit a report to Vinnova electronically (pdf-files). The reports will be forwarded to the evaluation team by Vinnova. Guidelines for report contents and length follow. Facts about the Centre are to be compiled in section 11. It is recommended that other sections of the report refer to and emphasize these basic facts in order to put them in the relevant context. The Centre Report should be co-authored by all members of the management team of the centre, e.g. they are all *signatories* of the report, and the report should be approved by the board prior to release (to Vinnova).

Above all it is important for the Centre to "tell its story" especially, for this evaluation, with regard to the output from the Centre in the form of scientific, societal and industrial results and the impact of these results on end-users, in particular the partners in the Centre. If the recommended format is not conducive to this, judicious variation of the format is allowed.

The number of pages below is maximum!

Title page bearing the signatures of the co-authors and, indicating approval, the signature of the chair of the board

Summary (1 page)

- Progress and prospects of the Centre, important qualitative and quantitative scientific based results for Swedish society, highlights, breakthroughs, etc.
- Summarise the major outputs from the Centre in the form of scientific, societal and industrial results during phase 3.
- Provide a summary of how results have been utilized by the scientific society, by partners and, if relevant, by other users.

Long-term Vision, Mission and Strategy (0,5 page)

- Provide a ten-year perspective on the Vision, Mission and Strategy of the Centre in the context of the Success Criteria, see Appendix 3. Indicate if there have been any significant changes in the Vision, Mission and Strategy of the Centre during Stage 3.

Research Area, Competence Profile and Critical Size (2 pages)

- Briefly describe the core competency of the Centre's research team both in terms of research competency (e.g. we have strength in molecular biology, metabolomics and large scale computation) and personnel.
- Describe the facilities that the Centre has developed or plans to develop to support the program.
- Describe the personnel and facilities available to the Centre (through collaboration within or beyond the university) that contribute to establishing competence profile for the research of the Centre.
- State the position of the Centre when compared to internationally leading groups.
- Comment on new types of collaborations since establishing the Centre. Describe the value added by being a Berzelii Centre compared to other forms of research collaboration.
- Comment on the Centre with respect to "critical size".

Centre Partners - companies and public service partners (2 pages)

For each of the partners describe:

- their corporate profile (number of employees, main products, location of operations etc.).
- how their business interests are aligned with the Centre research efforts
- how they interact with the Centre (including planning, personnel and facilities).
- how many years they have been active partners of the Centre

Concerning the overall strategy and considering the Centre as a whole:

- describe and give examples of the potential way in which key issues could be identified by partners to stimulate needs-driven research for the the Centre´s future research activities.
- describe and give examples of the potential mechanisms to be used by the Centre for translation of science based knowledge to innovation and into new products, processes, and services.
- Give examples of measures taken or that will be taken by the Centre to achieve strong links and integration between the Centre and companies/public services, and among companies/public services.

Research Program and results (8 pages)

- Provide an overview of the research program and its major scientific results during phase 3..
- Provide brief descriptions of the research projects of the Centre, led by either academic or industrial partners. In addition to basic science and methodology, describe the need the research addresses, the question to be answered and the industrial objectives.
- Provide a summary statement concerning research productivity during phase 3.. (Particulars of research output are to be listed in the Appendices under Publications and Presentations Activity and International Activity.).
- Changes in research direction during phase 3.

Impact on partners (8 pages)

- Provide an overview of how results (if already available) have been utilized by partners to establish new products, processes and services during phase 3.
- Provide brief descriptions of the current plans for implementation of results.
- Provide a description of how the partners anticipate to use and implement the results from the Centre.
- Provide a detailed overview of the major industrial and societal results achieved by the Centre and describe how these results and the research results have been utilized by partners and others to establish new products, processes and services to date during phase 3..
- In particular, provide concrete evidence within the Centre theme of at least two cases (preferably 3-5 cases) of joint projects between the industry/public sector people and the academic researchers of the Centre and the plans forward for these projects.
- Also provide concrete evidence - via proof of technological/other breakthroughs, advancements, transition to industry/public sector, etc. - that competence for Sweden in the knowledge (technical) area of the Centre has been enhanced.

Financial Report for Phase 3 (2 pages)

- Discuss any concerns regarding financing matters.
- Describe existing sources of non-Centre funds supporting related research.
- Describe the nature and magnitude of in kind contributions, both personnel, equipment, testing, etc. It is important to be as complete as possible in reporting of in kind contributions

so that the evaluators can see the true magnitude and understand the nature of the in kind contributions.

Organisation and Management of the Centre (2 pages)

- Describe the role, relationship and activities of the organizational units in the Centre, e.g Board of Directors, Management team, International Scientific Advisory Board or other.
- Comment on the scientific/industrial leadership of the Centre.
- Describe and give examples for the development processes of the Centre, e.g. result implementation in industry/public sector, project selection, project review, project termination etc. What steps are taken to stimulate innovation processes from ideas/results to products and services? Give examples and indicate how often these processes have been employed during phase 3.
- Describe the status and role of the Centre vis-à-vis the:
  - partners
  - university organisational units.
  - central administration.
  - the faculty.
  - other centres.
- Comment on things that work well and things that don't in the management of the Centre. Give examples.
- Describe the communication procedures to both Centre participants and to partners? Describe measures taken to provide equality of opportunity, particularly but not only, from a gender perspective.

Personnel of High Competence (2 pages)

- Describe and give examples for measures taken to stimulate mutual personal mobility between the industrial/public services partners and the Centre.
- Describe and give examples for the contribution of the Centre to university education during phase 3. (graduate and undergraduate): e.g. courses taught, seminars given, students supervised other than those already listed under research projects, etc.
- What measures have been taken to recruit, develop and keep people with leading international scientific/industrial competence? What is the percentage of PhD students engaged by the Centre whose first degree is from:
  - another Swedish University?
  - outside Sweden?
- What measures have been taken to provide opportunities for PhD students to travel or study abroad?

Plans for Development (3 pages)

- Describe the plan for development of the Centre over the next two years (Stage 4) in relation to the long-term objectives. Concentrate on scientific results and implementation of results in industry/public sector.
- Describe the plan for development of the Centre beyond stage 4.

Further information (1 page)

- Please provide information of particular interest to the evaluation team that has not been covered in any other section of the guidelines.

Response to the evaluation report before start of stage 3 (2 pages)

- Present the outcome (the implementation) of each recommendation given from the evaluation in end of stage 2 (before start of stage 3). You can refer to other chapters in this report, if appropriate.

Facts about the Centre

A *CV* in summary of the Centre Director (2 pages)

B *Centre Partners*

TABLE 1: List Centre Partners (Companies/public sector units), the name, position, and location of the key contact

C *Board of Directors*

TABLE 2: List the name, position, company, and location of the members of the Board of Directors

D *Management Team*

TABLE 3: List the name, position in the University, role on the team for the persons in the Management Team

E *International Scientific Advisory Board (ISAB)*

TABLE 4: List the name, position, university/company, location for the members of the formal ISAB. List the dates of all ISAB meetings in Stage 3.

F *Research Program*

TABLE 5: Research Projects and Staff (for each project: project title, project leader, staff and student names, start/end date, and person-years by year (include company and public sector personnel also)).

G *Publication and Presentation Activity*

TABLE 6: List publications (with citations and journal impact factors if appropriate): Categorise the publications under the numbered headings, in the following order:

1 Peer-reviewed articles
2 Peer-reviewed conference contributions (the results of which are not presented in other publications)
3 Review articles, book chapters, books
4 Patents (give date and registration)
5 Open access computer programs that you have developed
6 Popular science articles/presentations

Not: Include only articles (or equivalent) that have been published or accepted for publication. Include work funded by VR and Vinnova. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

H *International Activity*

TABLE 7: List collaborations with international researchers, visits outside Sweden (conferences, seminars, university visits, etc.), and foreign visitors to the Centre. Include work funded by VR and Vinnova. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

I *Financial Reports* (use the templates in Appendix 6 (in the attached Excel file "Financial Report for Stage 3"))

TABLE 8: Overall resources available

TABLE 9: Overall expenditures

TABLE 10: Research personnel
TABLE 11: Project expenditures
TABLE 12: Related research grants

J *Websites*

Provide relevant websites for the Centre, the University, research partners, research collaborators, etc.

- (If relevant, provide access to password-protected parts of centre web sites where project plans and reports should be available.)

Appendix 5, Templates for the Financial Statements of stage 3 (will be sent to the Centre as MS Excel)

Instructions	
The tables have autosum function	
Table 8 Resources	This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source. Budget figures for year 8 (12 months) should be included. Outcome for year 8 should be for first six months (or other suitable period for year 8 - write date for outcome). Include all contributions that support the Centre activities.
Table 9 Expenditures	All expenses for the center at an aggregated level.
Table 10 Personel	List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report. Do only report person over 5 % FTE. The cash contribution refers to the cash contribution from partners and in-kind refers to the host University's contributions, if applicable.
Table 11 Projects	All projects should be listed here. Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size. Include all contributions that supports the Centre activities
Table 12 Related Grants	List of additional funding that explicitly strengthens the center activities without directly financing it. Only indicate granst that are bigger than € 70 000.

Berzelii Centre:	Fyll i denna ruta endast på denna sida, övriga fylls i automatiskt!
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome, budget figures should cover entire Stage 3!

Table T8: Overall resources available (cash and in kind)

Include all contributions that supports Centre activities

This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source.

Affiliation	**Year 6:**						**Year 7:**						**Year 8:**						**Summary Stage 3**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
VINNOVA																								
University																								
Industrial & Public Partners																								
Partner A																								
Partner B																								
Part…..																								
Sum																								

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Table 9: Overall Expenditures

Please indicate the actual time of year 8 that cover the outcome

List all expenses for the centre at an aggregated level.

	Year 6:						**Year 7:**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

	Year 8:						**Summary Stage 3**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome

Table 10: Research Personnel

Only indicate personel over 5 % FTE

List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report

					Year 6:						Year 7:						Year 8:					
					Budget			Outcome			Budget			Outcome			Budget			Outcome		
Name	Sex	Affiliation (financing source)	Highest degree, university	Category title, status / position	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.
	F / M	University / Partner		Prof / Postdoc / PhD-stud / Manager etc	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome

Table 11: Project expenditures Include all contributions that supports the Centre activities

Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size

	Year 6:						Year 7:						Year 8:						Summary Stage 3					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Management of center																								
Communication																								
Learning activities																								
Reserved for NEW PROJECTS																								
Projects (subprojects included)																								
Sum																								

Berzelii Centre:		
Dnr:		
Year 6:	200x-xx-xx - -	200x-xx-xx
Year 7:	200x-xx-xx - -	200x-xx-xx
Year 8:	200x-xx-xx - -	200x-xx-xx

Table 12: Related Research Grants

List grants granted, applied for and under preparation - project title, total amount applied for, duration of project, funding source, date of application and any comment you might have

Only indicate granst that are bigger than € 70 000 and explicitly strengthens the center activities without directly financing it.

Project Title	Status	Total amount applied for	Duration of project	Funding source	Date of application	Comments
	Granted / Applied / Under preparation/ Rejected	kSEK				

7 Guidelines for the third evaluation of Berzelii centres 2014-12-16

Background

The Programme background

This document constitutes the guidelines for the evaluation of one Centre with financing through the Berzelii Centres programme. The programme aim is to create and develop vigorous academic research milieus in which industrial and/or public partners actively participate in order to derive long-term benefits for society. The programme is also a link in the governmental effort to develop collaborative university-industry interaction.

The overall objective of the programme is to promote sustainable growth in Sweden. This means that the programme should create new, internationally competitive concentrations of highly qualified scientists with the task of conducting long term 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 Berzelii Centres programme deals with early stage industrial research closely related to basic research. The research activities involve increasing intense collaboration between the participating actors. Hence each of these Centres is a strong research milieu positioned in a strong innovative environment. Ideas outside the core activities of the participating actors can also potentially be utilised and further developed, e.g. by the set-up and development of new high-tech and/or research-based companies.

The Berzelii Centres programme requires a substantial engagement from industrial and/or public partners, especially after phase two. During phase 1 and 2 the focus has been to identify and perform research projects with special interest for the industrial parts and also leading to scientific results of high value. At phase 3 and 4 the effort should partly be focused in generating results exploitable by the industrial parts. In parallel, the continuation of more basic research, where the industrial parts sees future opportunities should be maintained. The financial conditions over the potential 10 year period for a Berzelii Centre shows a turnover of more than 170 MSEK where 100 MSEK is cash contribution from the Swedish Research Council, VR, (50%) and the Swedish Governmental Agency for Innovation Systems, Vinnova, (50%).

VR as well as Vinnova are both running other research programmes. For more information please visit the homepage for each organisation i.e. www.vr.se and www.vinnova.se.

Evaluation background

The Berzelii Centres programme is intended to run for up to 10 years. The building-up and development of the Centres is based on stepwise funding and follow-up and evaluation process. A number of industrial companies, research institutes and/or public services together with a university constitute the parties of a Centre. The parties contribute jointly to the Centre's research programme, financially or in the form of active work.

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

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

STAGE	YEAR	RESEARCH COUNCIL (VR)	VINNOVA	UNIVERSITY	INDUSTRIAL AND PUBLIC PARTNERS
1	1	5 MSEK	2 MSEK	> 7 MSEK	Ca ½-1 MSEK
	2	5 MSEK	4 MSEK	> 9 MSEK	(recommendation)
2	3	5 MSEK	5 MSEK	> 5 MSEK	2-4 MSEK
	4	5 MSEK	5 MSEK	> 5 MSEK	2-4 MSEK
	5	5 MSEK	5 MSEK	> 5 MSEK	2-4 MSEK (recommendation)
3	6-8	15 MSEK	15 MSEK	> 15 MSEK	> 15 MSEK
4	9-10	10 MSEK	10 MSEK	>10 MSEK	>10 MSEK
TO BE USED FOR COMMERCIALISATION (AVAILABLE DURING STAGE 3-4):			4 MSEK		

In order to fulfil the main purpose of the evaluation (to give an input to the decisions about Stage 4, the development of the Centres, or other specific actions), the evaluation has to be completed in good time before the expiration of Stage 3. One Centre will be evaluated in Oct 2015, see Appendix 1 and 2.

Main goals of the evaluation

The main intentions of the evaluation are to give input:

- to the development of each of the Centres during and after phase 4.
- to decisions for all parties about phase 4
- to other specific actions needed for phase 4
- to decisions and actions concerning each Centre after the termination of phase 4

The evaluation team

The Centre will be evaluated by a team of international experts. Two scientific experts in the team will have the competence and the task to evaluate the Centre from a scientific point of view. Two 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. It is important that the Centres can guarantee no conflict of interest with the proposed experts. Furthermore, Vinnova will take efforts to check potential conflicts of interest.

The task of the evaluators

This third evaluation of the Centres will be carried out during the eighth year of the Centre's operation.

Its primary purpose is to evaluate the output from the centres, in the form of scientific, societal and industrial results and the impact of these results on both end-users and, in particular, on the partners in the Centre, with special focus on what has been achieved in phase 3 compared to earlier phases.

The evaluators will also form an opinion concerning the approach and measures taken so far by individual Centres to judge the potential for their long-term development. This includes both the major results that the centre wishes to achieve and see in Stage 4, but also the Centre´s vision beyond Stage 4. Evaluators may offer suggestions for remedial action to enhance the prospects for long-term Centre success.

As a basis for the evaluations of the Berzelii Centres VR/Vinnova has formulated a number of success criteria (see Appendix 3). Centres are asked to prepare reports (prior to the evaluation) according to the guidelines in Appendix 4.

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

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

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

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

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

- Impact on partners, with special focus on phase 3 (in the light of the expected increased contribution from the partners during this stage)
- Financial Report for Stage 3
- Organisation and Management of the Centre
- Personnel of High Competence
- Centre Partners (from the point of view of organisational effectiveness)

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

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

Organisation of the evaluation

The composition of the evaluation team is decided by VR/Vinnova. The evaluation team itself decides on the distribution of work among its members.

The basic documentation, in principle:

- the Centre report to the evaluation team, from the Centre to Vinnova/VR[1]
- the operational plan for Stage 3

- the evaluation report of Stage 2
- the most recent report from the International Scientific Advisory Board

These documents will be distributed by VR/Vinnova to all members of the evaluation team not later than six weeks prior to the evaluation. The evaluation team will deliver its pre- evaluation report including queries (maximum 4 pages) to Vinnova four weeks prior to the evaluation interview. This draft report will then be sent to the Centre for comment. The Centre's comments should be delivered to Vinnova for transfer to the evaluation team not later than two weeks prior to evaluation interview.

Each evaluation session starts with the evaluation team introductory meeting the day (evening) before the evaluation interview and ends when the evaluation report is completed during the same day. The goal is that the first draft of the final evaluation report should be finished on the day of the interview.

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

During the interview session the evaluation team is interested in meeting:

- the Centre Director
- the Chairman of the Centre Board of Directors and several board members
- representatives from several of the industrial and public partners (both groups if relevant) including at least two from SMEs (if relevant)
- university staff incl. the Vice-Chancellor or a representative appointed by the VC to represent her or him
- as many as possible of the research leaders and/or program directors active within the Centre. If concerned research leaders and/or program directors are not able to attend the evaluation interview, the reason for this should be stated in each case.
- at least 6 doctoral students

VR/Vinnova staff will be present at the evaluation interviews. The staff will act as administrators and will not take active part in the evaluation, but may add information during work sessions.

Each evaluation interview will take place over one day between 9.00 – 12.30. The evaluation team will meet all main parties from the Centre (see above) as a group (with the exception of doctoral students, see below). The Centre should prepare a presentation focusing particularly on the Centre's results to date and the impact of these results on end-users, in particular the partners in the Centre. The focus of the presentation should be on achievements during phase 3. The presentation should be timed to take no longer than 30 minutes, leaving ample time for questions and discussion, noting that when the presentation is given, the members of the evaluation team will generally ask questions through the presentation. Thus the presentation is best thought of as the 'organizing thread' for the interview. At least 30 minutes of the interview will be devoted to a doctoral-students-only meeting with the evaluation team. See detailed schedule in Appendix 1.

Centre arrangements in connection with the evaluation

The Centres are asked to propose at least six scientific experts for the evaluation and send the suggestions to Vinnova upon request. It is important that the Centres can guarantee no conflict of interest with the proposed experts.

The basic documentation, including the Centre report and the financial report should be submitted electronically (pdf-files) to Vinnova and be available at Vinnova no later than September 19th 2014(see also Appendix 2). The template that should be used for the Centre report is presented in Appendix 4. Vinnova will take efforts to check that the financial report meets the requirements.

The Centre must be prepared to have dialogue with Vinnova concerning potential clarification and provision of additional information to the financial report before the interview.

In addition to the Centre report including the financial report, the Centre will provide to Vinnova the operational plan for Stage 3 and the last report of the International Scientific Advisory Board. These documents, along with the evaluation report of Stage 2, will be provided to the evaluation team by Vinnova. If the operational plan has been upgraded during Stage 3 the centre is responsible to send this as pdf-files to Vinnova no later September 19th 2014.

Vinnova requires, prior to the evaluation, copies of the IP agreements that each Centre's university has signed with each of the staff and students of the Centre (in accordance with the Centre Agreement). Those documents should be sent as a PDF file (s) to Vinnova not later than September 19th 2014.

Furthermore the Centres should:

- invite Centre representatives to the interview sessions
- provide paper copies of presentations at the start of evaluation interviews
- provide name cards for the table for all participants during the interviews
- arrange that the evaluation team can meet with at least 6 PhD students during the day before the second evaluation session, preferably in the evaluation location, or close to this location
- provide to Vinnova access arrangements for evaluators to password-protected parts of Centre web sites where project plans and reports should be available one month prior to the evaluation
- provide to Vinnova any comments on and respond to any queries in the pre-interview draft report at least two weeks before the evaluation interview
- note that travel/accommodations of Centre representatives should be covered by centre or partner
- send a list of Centre representatives that will attend the interview

Finally the Centre leader should confidentially review, with respect to facts, the first draft of the final evaluation report from the evaluation team and deliver any comments to Vinnova within one week of receiving the draft final report.

Report of the evaluation team

The work of the evaluation teams shall result in a report on the Berzelii Centres evaluated during autumn 2015. Each Centre evaluation report should be the consensus view of the evaluation team. The evaluation team shall be unanimous in its recommendations.

Each report should focus particularly on the output from the Centres in the form of scientific, societal and industrial results and the impact of these results on both end-users and, in particular, on the partners in the Centre, with special focus on what has been achieved in phase 3 compared to earlier phases.

Following the submission of the final report from the evaluators, VR/Vinnova will request a discussion with each Centre, represented by at least the Chairman of the Board and the Director, regarding the recommendations received from the evaluation team. This discussion should be completed before contracts are signed to ensure that the recommendations be implemented prior to and during Stage 4.

Handling and distribution of the evaluation report

The report from the evaluation team will be presented to VR/Vinnova. The report will also be openly circulated to all Centres and available at the Vinnova webpage.

Remuneration to the evaluators

Vinnova will pay for all costs for evaluation team members including travel, accommodation etc.

Appendix 1, Time schedule for evaluations

October 16, Uppsala Berzelii Technology Centre for Neurodiagnostics in Stockholm

Thursday October 15, 2015 at hotel
18:00 - 19:00 Introductory meeting for the Uppsala Berzelii Evaluation Team (Generalists and Experts)

Friday October 16, 2015 at Vinnova
09:00 - 10:30 Presentation of centre and discussion
10:30 - 10:45 Coffe break
10:30 - 11:15 Meeting with PhDs
11:15 – 12:30 Continuation of discussions
12:30 End of interview session
12:30 - 20:00 Uppsala Berzelii report writing including lunch and dinner

Appendix 2, Delivery dates for reporting

IPR AGREEMENTS (RESEARCHERS AGREEMENT)	August 31th 2015
FINANCIAL REPORT TO VINNOVA FROM CENTRES	August 31th 2015
EVALUATION REPORT TO VINNOVA FROM CENTRES	August 31th 2015
FINAL VERSION OF FINANCIAL REPORT TO VINNOVA FROM CENTRES	August 31th 2015
OPERATIONAL PLAN FOR STAGE 3 TO VINNOVA	August 31th 2015
MOST RECENT REPORT FROM THE INTERNATIONAL SCIENTIFIC ADVISORY BOARD	August 31th 2015
DELIVERY FROM VINNOVA OF PRE- EVALUATION REPORT TO EACH CENTRE	September 21th 2015
RESPONSE ON PRE- EVALUATION REPORT FROM CENTRES	September 28th 2015
EVALUATION REPORT TO CENTRES FROM VINNOVA	November 2th 2015
FACT FINDING REVIEW BY CENTRES OF EVALUATION REPORT	within 1 week after report is received
DISCUSSIONS OF RECOMMENDATIONS IN EVALUATION REPORT	November 2015 (before signing center agreement)

Appendix 3, Success Criteria for Berzelii Centres Programme

In brief, a successful Berzelii Centre is characterised by the following:

- Research programmes are set up and carried out in active collaboration between the various participants in order to solve key issues.
- Leading international research in different fields in collaboration between the private and public sectors, universities and colleges, research institutes and other organisations which conduct research.
- Ensuring that new science based knowledge generated lead to new products, processes and services or other added values for the partners.
- An equality opportunity environment with active promotions for an equal balance of gender.
- The majority of work is conducted at a university to achieve a critical size and interaction between research, post-graduate education and graduate education.
- Long-term implementation with comprehensive evaluations prior to new agreement periods to secure long-term effects and international excellence.
- Long-term collaborative finance from private and public sectors, the university/college and financing governmental agencies, to be able to recruit, develop and keep people with leading international competence.
- The activities are overseen by a board where the participants from the public and private sectors hold the majority in order to secure the direction of the Centres towards the requirements of the private and public sectors, i.e. needs-driven research.
- Established in innovation environments with effective innovation operations so that strong research and innovation milieus can be created (Centres of Excellence in Research and Innovation).
- A gender perspective in the research programme.

Appendix 4, Instructions and template for Centre Reports to the Evaluation Team

Each of the Centres to be evaluated has to submit a report to Vinnova electronically (pdf-files). The reports will be forwarded to the evaluation team by Vinnova. Guidelines for report contents and length follow. Facts about the Centre are to be compiled in section 11. It is recommended that other sections of the report refer to and emphasize these basic facts in order to put them in the relevant context. The Centre Report should be co-authored by all members of the management team of the centre, e.g. they are all signatories of the report, and the report should be approved by the board prior to release (to Vinnova).

Above all it is important for the Centre to "tell its story" especially, for this evaluation, with regard to the output from the Centre in the form of scientific, societal and industrial results and the impact of these results on end-users, in particular the partners in the Centre. If the recommended format is not conducive to this, judicious variation of the format is allowed.

The number of pages below is maximum!

Title page bearing the signatures of the co-authors and, indicating approval, the signature of the chair of the board

Summary (1 page)

- Progress and prospects of the Centre, important qualitative and quantitative scientific based results for Swedish society, highlights, breakthroughs, etc.
- Summarise the major outputs from the Centre in the form of scientific, societal and industrial results during phase 3.
- Provide a summary of how results have been utilized by the scientific society, by partners and, if relevant, by other users.

Long-term Vision, Mission and Strategy (0,5 page)

- Provide a ten-year perspective on the Vision, Mission and Strategy of the Centre in the context of the Success Criteria, see Appendix 3. Indicate if there have been any significant changes in the Vision, Mission and Strategy of the Centre during Stage 3.

Research Area, Competence Profile and Critical Size (2 pages)

- Briefly describe the core competency of the Centre's research team both in terms of research competency (e.g. we have strength in molecular biology, metabolomics and large scale computation) and personnel.
- Describe the facilities that the Centre has developed or plans to develop to support the program.
- Describe the personnel and facilities available to the Centre (through collaboration within or beyond the university) that contribute to establishing competence profile for the research of the Centre.
- State the position of the Centre when compared to internationally leading groups.
- Comment on new types of collaborations since establishing the Centre. Describe the value added by being a Berzelii Centre compared to other forms of research collaboration.
- Comment on the Centre with respect to "critical size".

Centre Partners - companies and public service partners (3 pages)

For each of the partners describe:

- their corporate profile (number of employees, main products, location of operations etc.).
- how their business interests are aligned with the Centre research efforts
- how they interact with the Centre (including planning, personnel and facilities).
- how many years they have been active partners of the Centre

Concerning the overall strategy and considering the Centre as a whole:

- describe and give examples of the potential way in which key issues could be identified by partners to stimulate needs-driven research for the the Centre´s future research activities.
- describe and give examples of the potential mechanisms to be used by the Centre for translation of science based knowledge to innovation and into new products, processes, and services.
- Give examples of measures taken or that will be taken by the Centre to achieve strong links and integration between the Centre and companies/public services, and among companies/public services.

Research Programme and results (8 pages)

- Provide an overview of the research program and its major scientific results during phase 3..
- Provide brief descriptions of the research projects of the Centre, led by either academic or industrial partners. In addition to basic science and methodology, describe the need the research addresses, the question to be answered and the industrial objectives.
- Provide a summary statement concerning research productivity during phase 3 (Particulars of research output are to be listed in the Appendices under Publications and Presentations Activity and International Activity.).
- Changes in research direction during phase 3.

Impact on partners (8 pages)

- Provide an overview of how results (if already available) have been utilized by partners to establish new products, processes and services during phase 3.
- Provide brief descriptions of the current plans for implementation of results.
- Provide a description of how the partners anticipate to use and implement the results from the Centre.
- Provide a detailed overview of the major industrial and societal results achieved by the Centre and describe how these results and the research results have been utilized by partners and others to establish new products, processes and services to date during phase 3.
- In particular, provide concrete evidence within the Centre theme of at least two cases (preferably 3-5 cases) of joint projects between the industry/public sector people and the academic researchers of the Centre and the plans forward for these projects.
- Also provide concrete evidence - via proof of technological/other breakthroughs, advancements, transition to industry/public sector, etc. - that competence for Sweden in the knowledge (technical) area of the Centre has been enhanced.

Financial Report for Phase 3 (2 pages)

- Discuss any concerns regarding financing matters.
- Describe existing sources of non-Centre funds supporting related research.
- Describe the nature and magnitude of in kind contributions, both personnel, equipment, testing, etc. It is important to be as complete as possible in reporting of in kind contributions

so that the evaluators can see the true magnitude and understand the nature of the in kind contributions.

Organisation and Management of the Centre (2 pages)

- Describe the role, relationship and activities of the organizational units in the Centre, e.g Board of Directors, Management team, International Scientific Advisory Board or other.
- Comment on the scientific/industrial leadership of the Centre.
- Describe and give examples for the development processes of the Centre, e.g. result implementation in industry/public sector, project selection, project review, project termination etc. What steps are taken to stimulate innovation processes from ideas/results to products and services? Give examples and indicate how often these processes have been employed during phase 3.
- Describe the status and role of the Centre vis-à-vis the:
  - partners
  - university organisational units.
  - central administration.
  - the faculty.
  - other centres.
- Comment on things that work well and things that don't in the management of the Centre. Give examples.
- Describe the communication procedures to both Centre participants and to partners? Describe measures taken to provide equality of opportunity, particularly but not only, from a gender perspective.

Personnel of High Competence (2 pages)

- Describe and give examples for measures taken to stimulate mutual personal mobility between the industrial/public services partners and the Centre.
- What measures have been taken to recruit, develop and keep people with leading international scientific/industrial competence? What is the percentage of PhD students engaged by the Centre whose first degree is from:
  - another Swedish University?
  - outside Sweden?
- What measures have been taken to provide opportunities for PhD students to travel or study abroad?

Plans for Development (3 pages)

- Describe the plan for development of the Centre over the next two years (Stage 4) in relation to the long-term objectives. Concentrate on scientific results and implementation of results in industry/public sector.
- Describe the plan for development of the Centre beyond stage 4.

Further information (1 page)

- Please provide information of particular interest to the evaluation team that has not been covered in any other section of the guidelines.

Response to the evaluation report before start of stage 3 (2 pages)

- Present the outcome (the implementation) of each recommendation given from the evaluation in end of stage 2 (before start of stage 3). You can refer to other chapters in this report, if appropriate.

Facts about the Centre

A *CV* in summary of the Centre Director (2 pages)

B *Centre Partners*

TABLE 1: List Centre Partners (Companies/public sector units), the name, position, and location of the key contact

C *Board of Directors*

TABLE 2: List the name, position, company, and location of the members of the Board of Directors

D *Management Team*

TABLE 3: List the name, position in the University, role on the team for the persons in the Management Team

E *International Scientific Advisory Board (ISAB)*

TABLE 4: List the name, position, university/company, location for the members of the formal ISAB. List the dates of all ISAB meetings in Stage 3.

F *Research Program*

TABLE 5: Research Projects and Staff (for each project: project title, project leader, staff and student names, start/end date, and person-years by year (include company and public sector personnel also)).

G *Publication and Presentation Activity*

TABLE 6: List publications (with citations and journal impact factors if appropriate): Categorise the publications under the numbered headings, in the following order:

1 Peer-reviewed articles
2 Peer-reviewed conference contributions (the results of which are not presented in other publications)
3 Review articles, book chapters, books
4 Patents (give date and registration)
5 Open access computer programs that you have developed
6 Popular science articles/presentations

Not: Include only articles (or equivalent) that have been published or accepted for publication. Include work funded by VR and Vinnova. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

H *International Activity*

TABLE 7: List collaborations with international researchers, visits outside Sweden (conferences, seminars, university visits, etc.), and foreign visitors to the Centre. Include work funded by VR and Vinnova. Also include other closely related work funded by other means, indicating that other funding was used by an asterisk*.

I *Financial Reports* (use the templates in Appendix 6 (in the attached Excel file "Financial Report for Stage 3"))

TABLE 8: Overall resources available

TABLE 9: Overall expenditures

TABLE 10: Research personnel
TABLE 11: Project expenditures
TABLE 12: Related research grants

J *Websites*

Provide relevant websites for the Centre, the University, research partners, research collaborators, etc.

- (If relevant, provide access to password-protected parts of centre web sites where project plans and reports should be available.)

Appendix 5, Templates for the Financial Statements of stage 3 (will be sent to the Centre as MS Excel)

Instructions	
The tables have autosum function	
Table 8 Resources	This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source. Budget figures for year 8 (12 months) should be included. Outcome for year 8 should be for first six months (or other suitable period for year 8 - write date for outcome). Include all contributions that support the Centre activities.
Table 9 Expenditures	All expenses for the center at an aggregated level.
Table 10 Personel	List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report. Do only report person over 5 % FTE. The cash contribution refers to the cash contribution from partners and in-kind refers to the host University's contributions, if applicable.
Table 11 Projects	All projects should be listed here. Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size. Include all contributions that supports the Centre activities
Table 12 Related Grants	List of additional funding that explicitly strengthens the center activities without directly financing it. Only indicate granst that are bigger than € 70 000.

Berzelii Centre:	Fyll i denna ruta endast på denna sida, övriga fylls i automatiskt!
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome, budget figures should cover entire Stage 3!

Table T8: Overall resources available (cash and in kind)

Include all contributions that supports Centre activities

This table should present the overall resources available (cash as well as in-kind) for center activities, one row for each financial source.

Affiliation	**Year 6:**						**Year 7:**						**Year 8:**						**Summary Stage 3**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
VINNOVA																								
University																								
Industrial & Public Partners																								
Partner A																								
Partner B																								
Part…..																								
Sum																								

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Table 9: Overall Expenditures

Please indicate the actual time of year 8 that cover the outcome

List all expenses for the centre at an aggregated level.

	Year 6:						**Year 7:**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

	Year 8:						**Summary Stage 3**					
	Budget (kSEK)			**Outcome (kSEK)**			**Budget (kSEK)**			**Outcome (kSEK)**		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Salaries (from "Staff sheet")												
External services												
Equipment												
Material, running costs etc.												
Travel												
Other												
Overhead costs												
Sum												

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome

Table 10: Research Personnel

Only indicate personel over 5 % FTE

List all personnel working in the centre. Preferably group them in order to use the information in other parts of the report

					Year 6:						Year 7:						Year 8:					
					Budget			Outcome			Budget			Outcome			Budget			Outcome		
Name	Sex	Affiliation (financing source)	Highest degree, university	Category title, status / position	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the centre	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.	Degree of activity in the center	Cash contr.	In kind contr.
	F / M	University / Partner		Prof / Postdoc / PhD-stud / Manager etc	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK	% of full time	kSEK	kSEK

Berzelii Centre:	
Dnr:	
Year 6:	200x-xx-xx - - 200x-xx-xx
Year 7:	200x-xx-xx - - 200x-xx-xx
Year 8:	200x-xx-xx - - 200x-xx-xx

Please indicate the actual time of year 8 that cover the outcome

Table 11: Project expenditures Include all contributions that supports the Centre activities

Follow up that resources have been used for learning activities and communication (5% of VINNOVA funding), list of projects and financial size

	Year 6:						Year 7:						Year 8:						Summary Stage 3					
	Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)			Budget (kSEK)			Outcome (kSEK)		
	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total	Cash	In kind	Total
Management of center																								
Communication																								
Learning activities																								
Reserved for NEW PROJECTS																								
Projects (subprojects included)																								
Sum																								

Berzelii Centre:		
Dnr:		
Year 6:	200x-xx-xx - -	200x-xx-xx
Year 7:	200x-xx-xx - -	200x-xx-xx
Year 8:	200x-xx-xx - -	200x-xx-xx

Table 12: Related Research Grants

List grants granted, applied for and under preparation - project title, total amount applied for, duration of project, funding source, date of application and any comment you might have

Only indicate granst that are bigger than € 70 000 and explicitly strengthens the center activities without directly financing it.

Project Title	Status	Total amount applied for	Duration of project	Funding source	Date of application	Comments
	Granted / Applied / Under preparation/ Rejected	kSEK				

Vinnova´s publications

January 2016

See vinnova.se for more information

Vinnova Analysis

VA 2015:

01 Årsbok 2014 - *Svenskt deltagande i europeiska program för forskning & innovation*

02 Samverkansuppgiften i ett historiskt och institutionellt perspektiv

03 Långsiktig utveckling av svenska lärosätens samverkan med det omgivande samhället - *Effekter av forsknings- och innovationsfinansiärers insatser*

04 Företag i Tåg- och järnvägsbranschen i Sverige - *2007-2013*

05 FoU-program för Små och Medelstora Företag - *Metodologiskt ramverk för effektanalyser*

06 Small and beautiful - *The ICT success of Finland & Sweden*

07 National Research and Innovation Councils as an Instrument of Innovation Governance - *Characteristics and challenges*

08 Kartläggning och behovsinventering av test- & demonstrationsinfrastruktur

VA 2014:

01 Resultat från 18 VINN Excellence Center redovisade 2012 - *Sammanställning av enkätresultaten. (For English version see VA 2014:02)*

02 Results from 18 VINN Excellence Centres reported in 2012 - *Compilation of the survey results. (For Swedish version see VA 2014:01)*

03 Global trends with local effects - *The Swedish Life Science Industry 1998-2012*

04 Årsbok 2013 - *Svenskt deltagande i europeiska program för forskning och innovation.*

05 Innovations and new technology - *what is the role of research? Implications for public policy. (For Swedish version see VA 2013:13)*

06 Hälsoekonomisk effektanalys - *av forskning inom programmet Innovationer för framtidens hälsa.*

07 Sino-Swedish Eco-Innovation Collaboration - *Towards a new pathway for shared green growth opportunity.*

08 Företag inom svensk massa- och pappersindustri - *2007-2012*

09 Universitets och högskolors samverkansmönster och dess effekter

VA 2013:

01 Chemical Industry Companies in Sweden

02 Metallindustrin i Sverige 2007 - 2011

03 Eco-innovative Measures in large Swedish Companies - *An inventory based on company reports*

04 Gamla möjligheter - *Tillväxten på den globala marknaden för hälso- och sjukvård till äldre*

05 Rörliga och kopplade - *Mobila produktionssystem integreras*

06 Företag inom miljötekniksektorn 2007-2011

07 Företag inom informations- och kommunikationsteknik i Sverige 2007 - 2011

08 Snabbare Cash - *Effektiv kontanthantering är en tillväxtmarknad*

09 Den svenska maritima näringen - *2007 - 2011*

10 Long Term Industrial Impacts of the Swedish Competence Centres

11 Summary - Long Term Industrial Impacts of the Swedish Competence Centres. *Brief version of VA 2013:10*

12 Företag inom svensk gruv- och mineralindustri 2007-2011

13 Innovationer och ny teknik - *Vilken roll spelar forskningen. (For English version see VA 2014:05)*

14 Företag i energibranschen i Sverige - *2007-2011*

15 Sveriges deltagande i sjunde ramprogrammet för forskning och teknisk utveckling (FP7) - *Lägesrapport 2007-2012*

16 FP7 and Horizon 2020

Vinnova Information

VI 2015:

01 Insatser för innovationer inomHälsa

02 FFI Årsrapport 2014 - *Samverkan för stark svensk fordonsindustri och miljöanpassade samt säkra transporter*

03 Social innovation - Exempel

04 Social innovation

05 Årsredovisning 2014

06 Sweden needs FFI *(for Swedish version see VI 2015:10)*

07 Innovation för ett attraktivare Sverige - *Underlag till regeringens politik för forskning, innovation och högre utbildning 2017-2020 - Huvudrapport*

08 Förutsättningar för innovationspolitik i Sverige - *Underlag till regeringens politik för forskning, innovation och högre utbildning 2017-2027 - Analysrapport*

09 Utmaningsdriven innovation - *Samhällsutmaningar som tillväxtmöjligheter (for English version see VI 2015:11)*

10 Sverige behöver FFI *(for English version see VI 2015:06)*

11 Challenge-Driven Innovation - *Societal challenges as opportunities for growth (for Swedish version see VI 2015:09)*

VI 2014:

01 Tjänsteinnovationer 2007

02 Innovationer som gör skillnad - *en tidning om innovationer inom offentliga verksamheter*

03 Årsredovisning 2013

04 VINNVÄXT - *A programme renewing and mowing Sweden ahead*

05 *Replaced by VI 2015:01*

06 Din kontakt i EU:s forsknings- och innovationsprogram

07 VINNOVA - *Sveriges innovationsmyndighet. (For English version see VI 2014:10)*

08 Visualisering - *inom akademi, näringsliv och offentlig sektor*

09 Projektkatalog Visualisering - *inom akademi, näringsliv och offentlig sektor*

10 VINNOVA - Sweden´s Innovation Agency *(For Swedish version see VI 2014:07)*

VI 2013:

01 Branschforskningsprogrammet för skogs- & träindustrin - *Projektkatalog 2013*

02 Destination Innovation- *Inspiration, fakta och tips från Ungas Innovationskraft*

03 Inspirationskatalog - Trygghetsbostäder för äldre

04 *Replaced by VI 2015:11*

05 *Replaced by VI 2013:14*

06 Årsredovisning 2012

07 Trygghetsbostader för äldre - *en kartläggning*

08 Äldre entreprenörer med sociala innovationer för äldre - *en pilotstudie kring en inkubatorverksamhet för äldre*

09 Fixartjänster i Sveriges kommuner - *Kartläggning och sanhällsekonomisk analys. (For brief version see VINNOVA Information VI 2013:10)*

10 Sammanfattning Fixartjänster i Sveriges kommuner - *Kartläggning. (Brief version of VINNOVA Information VI 2013:09)*

11 *Replaced by VI 2014:10*

12 *Replaced by VI 2013:19*

13 När företag och universitet forskar tillsammans - *Långsiktiga industriella effekter av svenska kompetenscentrum*

14 *No longer available*

15 Handledning - *för insatser riktade mot tjänsteverksamheter och tjänsteinnovation*

16 *Replaced by VI 2013:22*

17 Innovationer på beställning - *tidning om att efterfråga innovationer i offentlig sektor*

18 *Replaced by VI 2014:06*

19 Arbetar du inom offentlig sektor och brinner för innovationsfrågor? - *VINNOVA är Sveriges innovationsmyndigthet och arbetar för att offentlig sektor ska vara drivkraft för utveckling och användning av innovationer*

20 Programöversikt 2014 - *Stöd till forskning och innovation*

21 OECDs utvärdering av Sveriges innovationspolitik - *En sammanställning av OECDs analys och rekommendationer.*

22 Att efterfråga innovation - *Tankesätt och processer*

Vinnova Report

VR 2016:

01 Third Evaluation of VINN Excellence Centres - *AFC, BiMaC Innovation, BIOMATCELL, CESC, CHASE, ECO2, Faste, FUNMAT, GHz, HELIX, Hero-m, iPack, Mobile Life, ProNova, SAMOT, SuMo & WINGQUIST*

02 Third Evaluation of Berzelii Centres - *Exselent, UPSC & Uppsala Berzelii*

VR 2015:

01 Bumpy flying at high altitude? - *International evaluation of Smart Textiles, The Biorefinery of the Future and Peak Innovation*

02 From green forest to green commodity chemicals - *Evaluating the potential for large-scale production in Sweden for three value chains*

03 Innovationstävlingar i Sverige - *insikter och lärdomar*

04 Future Smart Industry - *perspektiv på industriomvandling*

05 Det handlar om förändring - *Tio år som följeforskare i Triple Steelix*

06 Evaluation of the Programme Multidisciplinary BIO - *The strategic Japanese-Swedish cooperation programme 2005 - 2014*

07 Nätverksstyrning av transportinnovation

08 Ersättningssystem för innovation i vård och omsorg – *En studie av åtta projekt som utvecklar nya ersättningsmodeller*

VR 2014:

01 Vägar till välfärdsinnovation - *Hur ersättningsmodeller och impact bonds kan stimulera nytänkande och innovation i offentlig verksamhet*

02 Jämställdhet på köpet? - *Marknadsfeminism, innovation och normkritik*

03 Googlemodellen - *Företagsledning för kontinuerlig innovation i en föränderlig värld*

04 Öppna data 2014 - *Nulägesanalys*

05 Institute Excellence Centres - IEC *-En utvärdering av programmet*

06 The many Faces of Implementation

07 Slututvärdering Innovationsslussar inom hälso- och sjukvården

VR 2013:

01 Från eldsjälsdrivna innovationer till innovativa organisationer - *Hur utvecklar vi innovationskraften i offentlig verksamhet?*

02 Second Internationel Evaluation of the Berzeli Centra Programme

03 Uppfinningars betydelse för Sverige - *Hur kan den svenska innovationskraften utvecklas och tas tillvara bättre?*

04 Innovationsslussar inom hälso- och sjukvården - *Halvtidsutvärdering*

05 Utvärdering av branschforskningsprogrammen för läkemedel, bioteknik och medicinteknik

06 Vad ska man ha ett land till? - *Matchning av bosättning, arbete och produktion för tillväxt*

07 Diffusion of Organisational Innovations - *Learning from selected programmes*

08 Second Evaluation of VINN Excellence Centres - *BiMaC Innovation, BIOMATCELL, CESC, Chase, ECO2, Faste, FunMat, GigaHertz, HELIX, Hero-m, iPACK, Mobile Life, ProNova, SAMOT, SuMo & Wingquist*

09 Förkommersiell upphandling - *En handbok för att genomföra FoU-upphandlingar*

10 Innovativa kommuner - *Sammanfattning av lärdomar från åtta kommuner och relevant forskning*

11 Design av offentliga tjänster - *En förstudie av designbaserade ansatser*

12 Erfarenheter av EU:s samarbetsprogram - *JTI-IKT (ARTEMIS och ENIAC)*

VR 2012:

01 Utvärdering av Strategiskt gruvforskningsprogram - *Evaluation of the Swedish National Research Programme for the Mining Industry*

02 Innovationsledning och kreativitet i svenska företag

03 Utvärdering av Strategiskt stålforskningsprogram för Sverige - *Evaluation of the Swedish National Research Programme for the Steel Industry*

04 Utvärdering av Branschforskningsprogram för IT & Telekom - *Evaluation of the Swedish National Research Programme for IT and Telecom*

05 Metautvärdering av svenska branschforskningsprogram - *Meta-evaluation of Swedish Sectoral Research Programme*

06 Utvärdering av kollektivtrafikens kunskapslyft

07 Mobilisering för innovation - *Studie baserad på diskussioner med 10 koncernledare i ledande svenska företag*

08 Promoting Innovation - *Policies, Practices and Procedures*

09 Bygginnovationers förutsättningar och effekter

10 Den innovativa vården

11. Framtidens personresor - *Slutrapport. Dokumentation från slutkonferens hösten 2011 för programmet Framtidens personresor*

12 Den kompetenta arbetsplatsen

13 Effektutvärdering av Produktionslyftet - *Fas 1: 2007-2010*

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Vinnova - strengthening Sweden´s innovativeness

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