



Vetenskapsrådet

# MAX IV PROJECT PROCESS REVIEW



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VETENSKAPSRÅDET

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101 38 Stockholm

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# PREFACE

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The Swedish Research Council is a governmental agency with the responsibility to support basic research of the highest scientific quality in all academic disciplines. It is also part of the authority's remit to evaluate research and assess its academic quality and success. The Council for Research Infrastructures (RFI) at the Swedish Research Council has the overall responsibility to provide Swedish scientists with access to research infrastructures of the highest quality. Specifically, RFI assesses the needs for research infrastructures in a regularly updated roadmap, launches calls and evaluates applications, participates in international collaborations and works on monitoring and assessments.

In July, 2010, an agreement was signed between four stakeholders, the Swedish Research Council, the Swedish Governmental Agency for Innovation Systems (Vinnova), Lund University and Region Skåne, defining the start of the MAX IV project.

The Natural Science Research Council (NFR) decided in 1987 to support the build-up of the first generation of the MAX Laboratory, MAX I, with subsequent decisions on further expansions in 1992 (MAX II) and in 1997 (MAX III). Discussions of a new laboratory were initiated after the turn of the millennium. A workshop in Lund in 2004 resulted in a proposal of a new synchrotron radiation facility, the MAX IV (Report: Our future light source). A conceptual design of the accelerator was presented in 2006 and was favourably evaluated both technically and scientifically by international expertise. The technical design was revised in 2008 and evaluated positively. The project is now under way and no major delays to the final delivery in 2016 have been reported up to now.

In the agreement between the stakeholders a clause defining an audit committee was introduced, in order to help and review the project and its roles within the national laboratory as well as within the host university.

An international expert panel was appointed and performed the evaluation during the spring of 2013.

The members of the expert panel were Professor Britt Hedman, SSRL/Stanford University, USA, Dr. Lyndon ("Lyn") Evans, CERN, Switzerland, Mr. Lars Lustig, University Director of Administrations, Umeå University and, as the Chair, Professor Jan-Otto Carlsson, Uppsala University.

The Swedish Research Council would like to express its sincere gratitude to the panel for devoting their time and expertise to this important task. The Swedish Research Council would also like to thank the representatives of the MAX IV Laboratory, the user community and Lund University for providing the necessary background material and giving informative presentations at the meeting with the panel.

Stockholm 15th of September 2013



Juni Palmgren  
*Secretary General*  
The Council for Research Infrastructures  
The Swedish Research Council

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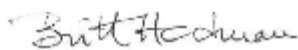
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# TO THE SWEDISH RESEARCH COUNCIL

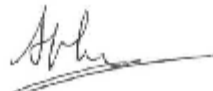
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The present document presents the views and assessments of the panel members. By signing they take full responsibility for the report. The chairman and Secretary confirm that the work was conducted in accordance with the statutes of the Swedish Research Council and that it was performed in an impartial manner.

March, 2013



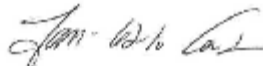
Prof. Britt Hedman



Prof. Lyndon Evans



Mr Lars Lustig



Prof. Jan-Otto Carlsson  
Chairman



Mr Johan Holmberg  
Secretary

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# EXECUTIVE SUMMARY

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According to the agreement from 2010 between the funding parties (Lund University, the Swedish Research Council, Vinnova and Region Skåne), an audit committee was established with the task of evaluating and auditing the MAX IV project and the operations at the MAX IV Laboratory. The Council for Research Infrastructure decided in November 2012 the terms of reference for the audit. Important processes associated with the MAX IV project are to be reviewed and in cases when needed recommend changes and improvements in current processes or advice alternative processes to reach the goals of the facility. The main observations and recommendations are summarised below.

The panel was very pleased to see that the MAX IV project has made significant progress during the last half-a-year and is on schedule to deliver light within three years. The extensive recent work on the organisation and management structure as well as on instructions, work regulations and mandates was impressive. However, in every new organisation it takes time to fully implement such structures but conditions for a smoothly working and effective organisation have been created. The project is now on track and both the building work and the construction of the accelerator continue as scheduled. The plans for the first seven beamlines are now decided on and the development of the next beamline package is under way.

The visions of the MAX IV facility are quite general and could apply to any other synchrotron facility in the world. MAX IV is based on a revolutionary accelerator design and specific goals for the facility along the unique design should be elaborated.

The MAX IV facility requires new users. The laboratory management is encouraged to take early and continued steps to communicate the capabilities of the new beamlines to the national and international communities in widening circles. The current MAX I-III users consist of a significant core of soft x-ray users, but also hard x-ray users. With the new 3 GeV ring, an expansion of the latter community is important, as well as introducing the soft x-ray community to the new capabilities. To enable this expansion, the science community needs to be aware of the capabilities and be engaged early. Such processes may also open for international partnerships and contribute to funding. It is also recommended to create a forum or a platform for interactions with industry.

There are quite a few existing and planned synchrotron radiation facilities in the world, which may result in competition between them. It is important in the planning of new beamlines at MAX IV to benchmark each beamline towards what is and/or will be available at other facilities. Moreover, initiation of processes to strengthen the scientific cases as well as a more continuous involvement of the user communities in the beamline planning is recommended.

Upon the transition from the “old” laboratory (MAX I-III) to the new MAX IV an estimated darkness period of about half-a-year has been reported. It is recommended that early, and as definitive as possible, information is provided to the user community about this downtime, through many channels, such as with the user organisation, at user meetings, and via direct information channels. It is furthermore suggested that the MAX IV management seek interactions and collaborations with other synchrotron laboratories to explore the possibility of short-term access and support for MAX I-III users to these facilities during the transition process.

There have been uncertainties within the organisation of the laboratory regarding roles, responsibilities and mandates for a long time. The laboratory has recently been restructured in a way that it should be capable of managing the project. A much more suitable organisation, a project organisation, with a steering group and a Project Coordination Office (PCO) has been



introduced. The organisation is transparent and has clear instructions, delegations and work regulations formulated for different levels. A project coordination system has been created within the PCO unit. It includes budget monitoring, risk management, schedule and resource planning, and a formal change control of the project.

For reasons of efficiency and optimal use of funding it is necessary to further sharpen and strengthen the organisation and management structure at the laboratory by giving full responsibilities and mandates to the newly formed project organisation at the laboratory and at the same time closing the gap between the university level and the laboratory level even more. The Max IV Laboratory is since January 2012 fully integrated in the university's organisational structure and has an organisational structure equivalent to the faculty level – directly reporting to the vice-chancellor level.

The organisation of the MAX IV Laboratory now seems to be adequate and well-structured from the directory level and downwards but the role of the board, and its place within the university structure seems to be unclear and puzzling, whether it is advisory or part of the management line or perhaps a combination of both. It is recommended to refine and redefine the role of the board and to establish that the board is advisory, not responsible for budget issues or other issues that should belong to the management structure.

The Government Ordinance (SFS 2011:1567) is confusing and should be revised by taking into account that both Lund University and the Swedish Research Council are authorities.

The risk management processes are judged to be effective and adequate. However, the steering group of the laboratory is recommended to also include the competition from other facilities in the risk assessment.

The main agreement from 2010 includes funding of the building and the accelerator. The first seven beamlines is funded by Knut and Alice Wallenberg's Foundation as well as by Swedish universities. Additional funding of the project is required (due to more beamlines, increasing operational costs, decommissioning of the "old" laboratory etcetera). The relatively short-termed and scattered funding of the project may result in both ineffectiveness and rising costs. Processes for a more coherent and long-term funding scheme is recommended to be initiated.

In comparison with other corresponding synchrotron radiation facilities, the manning of the MAX IV Laboratory was judged to be insufficient; this should be seriously looked into in the future strategic planning of the facility.

The procurement in the project is substantial and the procurement processes are complicated. The university is recommended to monitor the procurement process in detail and the internal audit office of the university should regularly control routines.

The laboratory has a distinct bottom-up reporting and communication process and a standard has been developed for information management. The laboratory has to prepare many different reports to the stakeholders and standardisation of the reporting as well as synchronising the reporting dates are recommended. Routines for the reporting should be developed in a dialogue between the stakeholders and the laboratories.

Reporting and communication with scientific communities and users were not regarded to be enough. Strategies and schedules for more frequent interactions with relevant communities and users should be outlined.

The feedback structures within the laboratory are functioning well. However, as far as the panel understood the feedback from the stakeholders, on the reports to the laboratory, is relatively weak. The need of external feedback to the laboratory has to be defined in a dialogue between the laboratory and stakeholders.

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# 1. VISIONS AND OVERALL PLANNING

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## 1.1 Visions

According to the strategic plan 2012-2020, the visions of the MAX IV Laboratory are as follows:

- The MAX IV Laboratory shall serve all research fields that may benefit from access to a cutting-edge synchrotron light facility.
- The MAX IV Laboratory shall become a synchrotron light facility at the international forefront.
- The MAX IV Laboratory shall provide a high level of service for the users, particularly for new areas and new users.
- The MAX IV Laboratory shall be an international facility serving Sweden, the Baltic region, Scandinavia, Northern Europe and the rest of the world.
- The MAX IV Laboratory shall actively seek and welcome new ideas and partnerships.
- The MAX IV Laboratory shall be a powerhouse for research intensive innovation.

### 1.1.1 Observations

MAX IV is based on a revolutionary accelerator design, which parameters will ensure delivery of a world-leading and unique facility with exceptional admittance, coupled to high operating current, exceeding the performance of any current and in-construction facility in the world today. It is expected that MAX IV, with its beamlines providing access to a large energy range and targeting new and existing techniques, will rapidly attract an international user community. The current MAX I-III users consist of a significant core of soft x-ray users, but also hard x-ray users. With the new 3 GeV ring, an expansion of the latter community is important, as well as introducing the soft x-ray community to the new capabilities. To enable this expansion, the science community needs to be aware of the capabilities and be engaged early.

The visions are quite general for a new synchrotron radiation facility like the MAX IV Laboratory, which should be a cutting-edge synchrotron light facility and a facility at the international forefront. At the present development stage of the project, elaborations of more specific visions of the MAX IV project, also taking into account research opportunities at other existing or planned synchrotron radiation facilities, should be outlined as an overall guide of the project. As far as the panel could observe, the unique characteristics of the facility has not yet been fully exploited in the visions.

According to the visions, the MAX IV Laboratory shall be a powerhouse for research intensive innovation. As far as the panel understood, the innovations will come as a result of the in-house research. This is, however, too limited and cooperation with industry at different levels has to be established. The panel observed that the industry was not involved in the planning of the laboratory at all. Many high-tech companies of different sizes are now demanding access to advanced infrastructures and the MAX IV Laboratory has a unique opportunity to be a creative oasis and driving force for meetings and collaborations with companies.

### 1.1.2 Recommendations

- Building new user communities: The laboratory management is encouraged to take early and continued steps to communicate the capabilities of the new beamlines to the national scientific audience, as well as to the international community, in widening circles. This could be accomplished, for example, through a series of targeted workshops in specific areas, in addition to using typical media. Workshops could also be used by the management in the planning process for new beamlines and contribute to on-going processes of benchmarking against other facilities, that could be incorporated in the design processes of the future beamlines, beyond the initial seven. The process could also provide the foundation for the creation of international partnerships, which could contribute to the funding of the construction and operation of new beamlines or instruments, providing another opportunity to increase the user community.
- Revision of the general visions of the facility: Revise the visions of the laboratory taking into consideration the unique features of the facility and to the more general visions and goals, also adding more specific ones.
- Innovations and industry: Create a forum or a platform for interaction with the industry during the planning and construction of the facility.

## 1.2 Beamline planning

There are, at the time of the review, seven funded beamlines that are in the design stage. The planning for a phase two of beamlines has started. The MAX IV management is driving the process, following the principles of the overall strategic plan, which is updated regularly. During the process a “Strawman’s Suite” of beamlines has been proposed, interaction between management and users to further define and refine the plan is an on-going process. The MAX IV board is working on the final selection and receives advice from its Scientific Advisory Committee. The MAX IV board plans to submit a funding request of two to three beamlines per year until the targeted build-out level, of about 25 beamlines, in 2026 has been reached.

### 1.2.1 Observations

- It is envisioned to divide this plan into two overall phased segments that allow for a staged prioritisation. The overall planning principles have been defined and were clearly described. Despite the fact that there are several existing and planned synchrotron radiation facilities worldwide, documented benchmarking towards other existing or planned beamline programs was not observed. To fully exploit the unique technology of the facility as well as to attract top-scientists and new users, the scientific cases of the beamlines should be scrutinised and, in some cases, be sharpened.
- A concern is the lean level of staff, both for the first seven beamlines, but also for the future extension. The new MAX IV beamlines will be much more demanding to operate and a model where staff both provides user support and at the same time drive the development of new beamlines will not be sustainable in the future.

### 1.2.2 Recommendations

- Initiate benchmarking processes, including the specific beamline programs, towards other synchrotron facilities in the world and prepare a position document.
- Initiate processes to strengthen the science cases in the beamline programs.

- The panel recommends that the users are continually engaged in the beamline planning process. It is also important that the management closely follows developments elsewhere to ensure that the evolving plans provide state-of-the-art beamlines, and that a process is created through which efficient modifications to the plans can be enabled quickly, if so desired, for beamlines that are planned in the future years. The beamline strategic plan needs to be updated regularly.
- The low staffing of the MAX IV Laboratory has to be considered seriously in the future strategic planning of the facility.

## 1.3 Transition from MAX I-III to MAX IV operations

The MAX I-III Laboratory is operated parallel to the construction of the MAX IV facility. For capacity reasons the MAX I-III has to close down before the MAX IV is in operations in mid-2016.

### 1.3.1 Observation

It was presented to the panel that the user operation of MAX I-III will be terminated about six months before MAX IV is in operation, which means that there will be a gap in access for the user community to experimental beam time (a “dark period”) of this length. This decision is motivated by the need to have MAX I-III beamlines and other support staff to focus fully on the new facility, and by the potential that some of the MAX I-III beamline components might be relocated to MAX IV. Although limited access is a common and expected effect during transitions between facilities (or during upgrades) at this type of large research infrastructures, it will still cause hardship for the user community.

### 1.3.2 Recommendation

It is recommended that early, and as definitive as possible, information is provided to the user community about this downtime, through many channels, for example with the user organisation, at user meetings, and via direct information channels. Creating a path for clear, transparent and continuous updates is also important. It is furthermore suggested that the MAX IV management seek interactions and collaborations with other synchrotron laboratories to explore the possibility of short-term access and support for MAX I-III users to these facilities during the transition process. If successful, the management would then assist the users in mapping their experimental needs to the capabilities elsewhere.

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## 2. ORGANISATION, MANAGEMENT, BOARD ISSUES, OVERALL AGREEMENTS AND CONTRACTS

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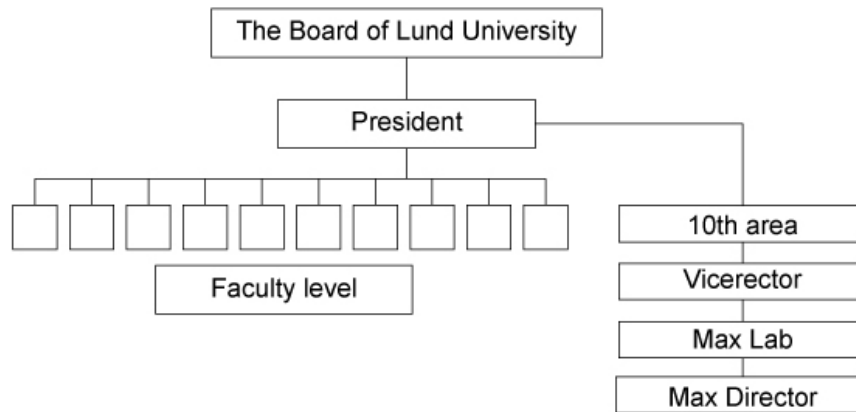
### 2.1 Introduction

The development of the MAX Laboratory has since the start in the early 1980's been driven by enthusiasm and dedicated and skilled researchers. Without these impressive efforts MAX IV Laboratory would not have existed today. The organisation and management have basically been of a relatively informal character and very much resembling that of a bigger research group. However, with the introduction of the MAX IV project in 2004 a much bigger project in terms of goals, budgets and personnel was initiated and the older small scale organisation was no longer applicable. Instead needs of more solid and formal organisational and management structures became evident. However, the transition from the small scale to the large scale structure was slow - probably reducing the risk of losing enthusiasm, motivation and dedication from the personnel - but probably increasing the risks of ineffectiveness, decreased budget control, and unclear roles within the organisation.

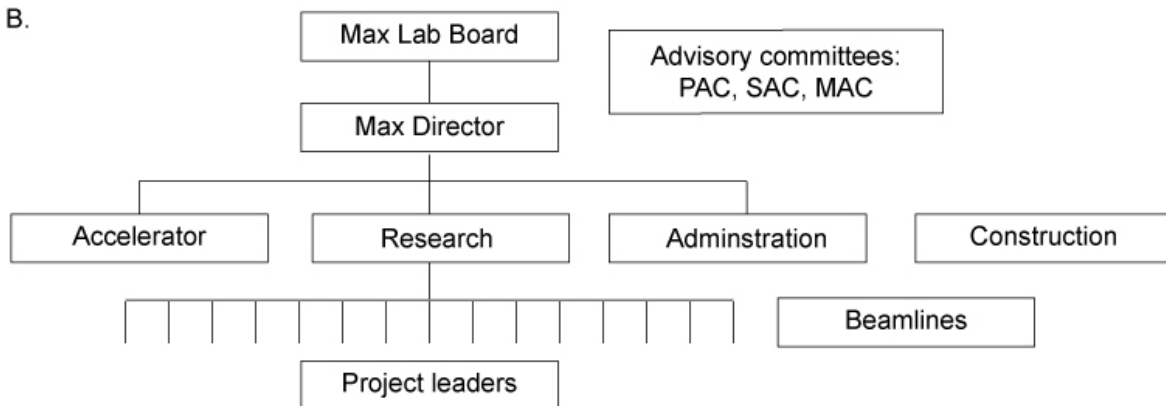
In 2010, the organisation and management structure was set in the main agreement between the parties as well as in the ordinance of the laboratory from the Ministry of Education and Research. According to the main agreement, the MAX IV Laboratory will constitute a unit of Lund University. Lund University will operate and administer the laboratory as the legally responsible entity and will pay part of the costs of the MAX IV Laboratory. The three parties Lund University, the Swedish Research Council and Vinnova have a separate agreement with Region Skåne regarding financing of the capital investments of stage one of the MAX IV project. The Swedish Research Council will decide on grants made through a separate authority decision in which it shall be entitled to impose those conditions for the payment of the grant that the Council finds appropriate based on the purposes of the MAX IV Laboratory. Finally, Vinnova will decide on grants through a separate authority decision in which it shall be entitled to impose those conditions for the payment of the grant that it find appropriate based on the purposes of the MAX IV Laboratory.

According to the main agreement, the MAX IV Laboratory became a part of Lund University and was placed into the so called 10th area of Lund University. The organisation chart is shown in figure 1.

A.



B.



**Figure 1. Organisation of the MAX IV Laboratory when the main agreement became effective in 2010.**  
**A. Organisation of Lund University with the MAX IV Laboratory.**  
**B. Organisation of the MAX IV Laboratory.**

In charge of the 10th area is the deputy vice-chancellor on delegation from the vice-chancellor. The appointment of the board is regulated by a government ordinance (SFS 2011:1567, building on an earlier version from 1994), instructions to the board is given by the government ordinance from 2011 as well as from the agreement in 2010 between the stakeholders of the laboratory. Since the “older” laboratory still is in operation, the board and the director of the laboratory have to handle an operational unit as well as a unit under construction simultaneously, which is not ideal.

The organisation within the laboratory at the beginning, when the agreement became effective in 2010, is shown above. The laboratory is led by the director together with the board of three directors (accelerator, science and management, respectively). The construction of a specific beamline is led by a project leader. There are three advisory committees; Machine Advisory Committee (MAC), Science Advisory Committee (SAC) and Program Advisory Committee (PAC). The construction is treated as a separate project.

The Swedish National Audit Office criticised the organisation and the management of the laboratory in its report in May 2012. From the report the following is cited:

“As the MAX IV Laboratory is part of the university, Lund University’s administration (i.e. the university board and the vice chancellor) bears the ultimate responsibility for the conduct of these operations. In our opinion, the extent of the project now being conducted justifies an active management and monitoring of these operations by the university administration. Currently, there is a lack of formal routines for the reporting from the project upwards in the organisation. A certain amount of financial reporting to the section takes place in conjunction with the annual accounts, but this does not include information about how operations in the project are proceeding. The project states that it primarily reports to the financiers’ forum in which Lund University is a member.

The audit that we (The Swedish National Audit Office) conducted in December 2011 indicated a number of weaknesses in the project. It is important that Lund University, as owner of the project, ensure that these are dealt with.

- There are inadequacies in the project organisation that impair conditions for good internal management and inspection of the project. These inadequacies are partially due to the fact that the organisation is still under construction. The project organisation is extensive and Phase I of the MAX IV project consists of partial and sub-projects. It is not always clear what delineates the various parts of the project, and how coordination is to take place with the other parts. There is no comprehensive document that governs powers and duties. There is a lack of work descriptions for the project managers and co-ordinators, who play central roles for the implementation of the project. The division of responsibility among various project managers is unclear, which creates a risk that certain tasks fall between the cracks. In addition, there is a lack, to a certain extent, of adopted routines for reporting between the various levels of the project hierarchy.
- The budget work needs improvement. When the audit was conducted, the budgetary responsibility for the various components of the project was not clear, and there was no defined structure for systematic budgetary monitoring in the project’s various components. The MAX IV laboratory itself reports that it is difficult to estimate the costs of the project, and even now, they are aware of large budgetary discrepancies.
- The project does not work in a structured manner with risk analyses and risk management. There is an overarching risk analysis, but there is a lack of routines for continuously analysing and handling risks on various levels of the project.”

The function of the board of the laboratory is defined in a Government Ordinance (SFS 2011:1567) from 2011 and in the agreement between the stakeholders (Lund University, Region Skåne, Vinnova and the Swedish Research Council). From the agreement the following is cited:

- “The MAX IV Laboratory is to be administered by a board. The board is responsible for ensuring that measures are taken that are required in order to fulfil the objectives of this agreement and the MAX IV Laboratory.”
- “The board should appoint a managing director and an executive committee.”
- “The board shall decide on issues that relate to the MAX IV Lab.”
- “The board shall use its best efforts to raise funds for the Lab (From the ordinance of 2011 (SFS 2011:1567): ”The board is to make decisions on financing and operations and work to obtain funding”).”
- “The board shall adopt a working program for its work, as well as for the director and executive committee (working program and adopt other governing documents as are necessary for the operation.”
- “The board will act so that the construction of the Lab takes place efficient with high quality and good coordination.”
- “The board shall adopt annual budget for the organisation.”

### 2.1.1 Observations

Uncertainties within the organisation regarding roles, responsibilities and mandates have existed in the project for different reasons for a long time, as observed. Overlapping instructions, historical legacy, absence of work regulations and delegations within the laboratory, a somewhat tottery behaviour of the Swedish Research Council, an unclear ordinance from the Ministry of Education and a gap between the university level and laboratory level have all contributed to the observed confusion. The panel was impressed by the systematic work carried out at all levels during the last six months to obtain a more smoothly working organisation. The MAX IV Laboratory is now its own unit at the faculty level in the university organisation and directly under the vice-chancellor, which means that it no longer belongs to the so called 10th area. The MAX IV Laboratory has and will have a substantial part of the total annual budget of Lund University, making creation of a separate unit under the vice-chancellor motivated.

The MAX IV Laboratory has recently been restructured in a way that it is capable of building this challenging facility with a clear definition of responsibilities and modern project management tools. A steering group, consisting of five directors, has been formed and steers the project with its decisions. The tasks of the steering group are defined in a steering document. A Project Coordination Office (PCO) has been formed which is responsible for implementing decisions by the steering group and coordinating the allocation of the resources between different sub-projects. The construction of the beamlines is driven individually by project managers with clear instructions and mandates and with signed agreements. The working procedures were also judged to be appropriate.

The Project Coordination Office includes seven coordinators and two line managers and is responsible for the following activities:

*Change control:* A formal change control procedure is in place. Before any change is authorised, all consequences concerning cost, schedule and impact on other systems is fully documented and presented to the management for approval.



*Budget monitoring:* Procurement of all major hardware components for phase one is now complete. Any changes to the cost estimate are captured by the change control mechanism following an update of estimate that is communicated to the management.

*Risk management:* A formal risk register for both machines and beamlines has been implemented and is regularly kept up to date. The register records probability and severity of the consequence of each risk together with mitigating actions and most importantly clearly defines who is the owner of the risk in question.

*Schedule and resource planning:* The overall project planning is closely followed and updated by the Project Coordination Office. Resource allocations between the different sub-projects are monitored and if necessary, adjustments are proposed to the management.

*Administration and document management:* All project documents are kept in a central document handling system so that a full record of actions and decisions can be retrieved.

Further details in the overall observations are summarized below:

- The organisation of the MAX IV Laboratory was judged to be transparent and had clear instructions, delegations and work regulations at the various levels. Effectiveness in the organisation and at management level is evaluated on a regular basis. The technical, economical and administrative support to the management level was judged to be adequate.
- The organisation of the MAX IV Laboratory seems to be adequate and well-structured from the directory level and downwards but the role of the board, and its place within the university structure, seems to be unclear and puzzling, whether it is advisory or part of the management line or perhaps a combination of both. This issue must be clarified. Two crucial questions must also be given adequate answers. Those questions are “who owns the project?” and “who is the director’s boss?” Finally, the line between the vice-chancellor’s office at Lund University and the laboratory must also be clarified.
- The Government Ordinance (SFS 2011:1567) is confusing when it places the MAX IV Laboratory at one authority (Lund University) and at the same time put it upon another authority (the Swedish Research Council) to submit documentation for the budget and annual report to the government. This ordinance must be clarified – and the Lund University management is planning to contact the Ministry of Education regarding this issue. Both Lund University and the Swedish Research Council are Swedish authorities and there are no reasons for the Swedish Research Council to review the budget proposals and annual reports from Lund University. The first Government ordinance for the laboratory was from 1994, involving the Swedish Natural Science Research Council (NFR). The Swedish Research Council was formed in 2000.
- Also the agreement between the funders must be revised in order to clarify the role of the board.
- When it comes to the role of the board the panel suggests certain changes in order to strengthen both the management and the director’s mandate as well as the role of the university itself. Lund University is the owner of the project and must therefore be given the full responsibility and mandate to manage the project.
- The MAX IV Laboratory is now, since January 2012, fully integrated in the university’s organisational structure and has an organisational structure equivalent to the faculty level – directly reporting to the vice-chancellor level or his deputy. The budget of the laboratory is a substantial part of the university’s budget and a closer connection to the university level is motivated.

- Concerning the instructions and work regulations, this report find that steering documents such as instructions and work regulations have been revised and now fills its functions in an adequate way.
- The organisation is set recently and probably need minor adjustments with time to become optimal.

### 2.1.2 Recommendations

- Sharpen the organisation and management structure at the laboratory in the direction initiated by giving full responsibilities and mandate to the newly formed project organisation in the laboratory and closing the gap between the university and the laboratory level even more.
- Make it clear that Lund University is the owner of the project, with the full responsibility and full mandate to manage the project.
- Continue the integration of the laboratory in the university's organisational structure (see figure 1) with a position equivalent to a faculty (and the director's position equivalent to that of a dean's) reporting directly to the vice-chancellor (or his/her deputy)
- Refine and redefine the role of the board of the laboratory. Make a statement that the board is advisory and not responsible for budget issues or other issues that should belong to the management structure.
- Contact the Ministry of Education in order to have the ordinance of the laboratory revised (SFS 2011:1567).
- Regular internal reviews of the organisation and management structures are recommended.
- Instructions and work regulations should be revised on a regular basis as the needs of the project changes with time.

## 2.2 Legal entity of an infrastructure

In the background material to this audit, as well as at the presentations during the site visit, the question regarding the legal entity of an infrastructure was raised. It is too early to have an opinion about this question but the following can be said.

The legal entity of a national infrastructure like MAX IV Laboratory is not a simple issue. The model used during the last 20 years has been to find a host university and then allow the national infrastructure to obtain a particular status within the host university. This usually means that the facility becomes a piece of a puzzle that is difficult to place in the university structure. Thus, the facility, with time, becomes more hidden within the university structure and the national usage decreases – it becomes more a university business. As a consequence, other universities may find the possibility of co-funding the facility less attractive.

The landscape of research changes quickly with time. Researchers wishes to utilise the most high-qualitative infrastructure and techniques available in the world. Infrastructures are of very different types representing both disciplinary and interdisciplinary needs. For focused disciplinary research within a university it is usually an advantage to host a national infrastructure except when it is time to close it. At a typical Swedish university many research directions are represented and more and more interdisciplinary research is carried out. This means that access to different national infrastructures facilities are needed. In such a perspective, hosting a national facility may not always be an advantage. Besides the risk with different responsibilities, including funding, there is also a risk of not being able to fully engage in other, perhaps with time more adequate, infrastructures.

Another aspect regarding national infrastructures is the needs from the industry sector. The Swedish industry expands into technically and scientifically demanding areas, which also means an increased need of access to national infrastructure. The present organisation with hosting universities has probably come to an end and solutions have to be found. Today, there is today no obvious solution to this problem. The Swedish Research Council cannot at present, and for various reasons, be operational in an infrastructure like MAX IV. The Swedish Research Council's main task is to respond to applications as it is a funding agency. An alternative legal status that has been discussed for the MAX IV Laboratory is a European Research Infrastructure Consortium (ERIC). Another more national alternative that should be discussed is to create institutes or foundations based on advanced infrastructures and closely linked to research universities. The university linked advanced infrastructures may together form an umbrella structure which may be operational at a certain level. There may be several advantages with such a structure:

- Identity not hidden in a university structure
- Independence
- Easier funding from different sources and not directly associated with a particular university
- Easy interaction with industry making it possible to include industry in planning, steering etcetera.

## 2.3 Risk management

The MAX IV project is built up around nine risk areas: Integration, communication, quality management, risk management, scope control, cost control, time control, human resources, and procurement. From the MAX IV Project Management Plan the following is cited: "Each forum (PCO, steering group, project groups) should have a structure for regular risk management. Depending on need, the level of risk attention can be altered. As a minimum, risk handling should regularly be addressed as an agenda item." It is the responsibility of each project manager to carry out the risk analysis and keep an updated record of risks.

There are four levels of risk identifications and reporting at the laboratory. At the first level the progress of the various sub-projects is reported on a regular basis. The reports always include risk identification and are addressed to the accelerator coordinator and the Beamline Project Office (BPO). At the second level, reported risks are judged and if the risks are of more general character, affecting the project in one way or the other or cannot be handled on this level, the reported risks are to be handled at the third level – the Project Coordination Office (PCO). At the monthly PCO meetings the reported risks are handled and, if needed, submitted to the steering group for decision. A risk list is compiled, updated and reported at each board meeting.

### 2.3.1 Observations

- The risk management processes are judged to be effective and adequate. However, risks associated with competition from other existing and/or planned synchrotron radiation facilities regarding manning, quality, performance etcetera have not been considered.

### 2.3.2 Recommendation

- The steering group of the laboratory is recommended to include competition from other facilities in the risk assessments.

## 2.4 Economy, budget and procurement processes

In the main agreement from 2010 it was stated that Lund University (135 million SEK), the Swedish Research Council (676 million SEK), Vinnova (109 million SEK), and Region Skåne (135 million SEK) will fund the MAX IV project, stage one, to a total amount of 1 055 million SEK. Knut and Alice Wallenberg's foundation and some Swedish universities have since then decided to support the construction of the beamline program by 400 million SEK and 160 million SEK, respectively. This means that seven beamlines are now funded and planned in detail. In the strategic plan for 2012-2020 26 beamlines in total were included in the list. The continued planning of the beamline program started in September 2012 with a user's meeting and the laboratory management being responsible for the future process. It is divided into two parts with applications in 2013 and 2014, respectively. For the 2013 application, nine beamlines are included.

### 2.4.1 Observations

The panel has observed that the funding of the construction, the main part of the accelerator as well as that of seven beamlines is basically in place. However, solutions for funding remains unclear in many other aspects; additional cost of the accelerator, an expanded beamline program, contingency cost, service laboratory premises, increased operational cost and decommissioning costs of the "old" MAX Laboratory. The panel also concluded that it is important that the new facility, which has such an outstanding potential given the revolutionary accelerator, is adequately funded in order to deliver at the targeted level. In addition to the "standard" operations budget, there are needs of annual funding for accelerator upgrades and beamline adjustments and improvements, despite the fact that the facility is new. This is to ensure continued high reliability of the accelerator, capitalisation on exploitation of enhanced accelerator performance, addressing unforeseen challenges for beamline optics with an ultra-bright beam, and the development of new techniques once experience is gained from the unique source.

The funding structure of the laboratory is fragmented and relatively short-termed which may result in both ineffectiveness and rising costs. The panel also noticed that there is a poor coordination with the planning of the ESS facility even though the latter had another time perspective. Some co-planning with the ESS facility regarding various premises would be beneficial for both parties.

The laboratory reported on extensive work on budget structures and budget monitoring since the report by the Swedish National Audit Office in May last year. Any changes to the cost estimate are now captured by the introduced change control mechanism following which the cost estimate is updated and communicated to the management. The budget monitoring processes were judged to be reliable and effective.

Procurement of all major hardware components is now complete. A modest cost over-run of around six percent, mainly due to a tightening of the tolerance on magnetic components has been recognised. Approximately two thirds of the budget is now committed. The remaining one third is mainly for installation and staff costs which should not result in any major surprises. Improvements in the negotiation and procurement processes were reported and they were judged to meet the requirements. There is now a procurement group with detailed instructions. The administrative support was judged to be satisfactory regarding the monitoring of the budget and the procurement process.

## 2.4.2 Recommendations

- According to the ordinance 2011:1567 (section six) the Swedish Research Council is to submit documentation for the budget, annual report and similar documents to the government. This means that one authority (the Swedish Research Council, co-founder of the facility) should work on behalf of another authority (Lund University, the host university) which is confusing and make responsibilities unclear. Since Lund University is the host university and has the overall responsibility of the facility, the panel recommends that Lund University and the Swedish Research Council initiate processes to clarify the meaning in section six of the ordinance and eventually initiate processes for change.
- A relatively short-termed and scattered funding of the project may result in both ineffectiveness and increasing costs. Processes for a more coherent and long-term funding scheme are recommended to be initiated.
- The MAX IV project is a large development project which also means that additional costs may occur. Coverage of such costs by new applications will only delay the project and a relevant contingency budget should be directed. A process for reviewing the contingency budget from the laboratory is recommended to be initiated as well as a process to audit the laboratory's budget by Lund University on a regular basis.
- The beamline program needs additional funding and the laboratory is working actively to find new funders from, for example, abroad. In cases of insufficient funding of a beamline, and with an obvious risk of losing the basic funding, solid interaction processes between funders and the laboratory should be launched in order to effectively make use of new upcoming funding initiatives.
- The operational cost of the facility will increase considerably approaching the year 2016. The laboratory is recommended to make a careful analysis of the increased operational cost and take the necessary initiatives for funding.
- "Old" equipment from the present facility will be moved to the new MAX IV Laboratory with new costs not only for the move but also for the adaptation to the new facility. Funding processes for this part of the project has to be initiated.
- In addition to the accelerator and the beamlines there is a need for other premises like preparation laboratories. Without these premises the facility cannot serve the researchers in the way planned. The on-going planning and coordination processes with ESS, are recommended to be intensified.
- Even if the laboratory recently has improved considerably regarding responsibilities, structures and monitoring in the budget process there is a need to introduce regular review processes within the laboratory to follow up and make the required changes as the project progresses.
- Lund University is recommended to monitor the procurement process in detail and the internal audit office at the university should regularly check the routines.

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## 3. REPORTING, FOLLOW-UP, COMMUNICATION AND FEEDBACK

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The MAX IV is a technically very complicated and demanding project with many stakeholders and involvement of many people inside and outside the laboratory. Open, clear and easy access structures for reporting, communication, follow-ups and feedback are needed.

### 3.1 Observations

- A clear reporting and communication structure as described in the laboratory's management plan has been established within the laboratory, meeting all requirements. The reporting structure is bottom-up and reporting templates help with a standardisation of the reports. A standard has also been developed for information management. All documents are kept in a central document handling system so that a full record of actions and decisions can be retrieved. A feedback structure is also well established and follows the organisation and management structures.
- A variety of different reports have to be produced to external stakeholders. There was no defined or standardised report structure towards the various stakeholders and the reporting was judged to be too extensive and too time-consuming.
- As far as the panel understood, the reporting to the university was more informal in character with a communication that has steadily increased during the last year.
- Reporting and communication with the scientific communities and users were not regarded to be enough.
- The feedback from external stakeholders was in general judged to be meagre.

### 3.2 Recommendations

- There is a need to standardise the reporting from the laboratory to various stakeholders but still fulfilling the requirements from them. Requirements, expectations and feedback should be defined in a dialogue between the laboratory and the stakeholders.
- Strengthen both reporting and communication efforts towards users and scientific communities nationally and internationally.

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# APPENDIX 1. TERMS OF REFERENCE

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ToR for Project audit for MAX IV project  
*Decision by Director General/Swedish Research Council, 2013 no 8*

## *Terms of Reference*

### **Introduction**

The MAX IV laboratory formally comprises two activities; the Max-lab (a laboratory in so called "User Service Mode", comprising 3 storage rings), and the MAX IV project in construction phase. The MAX IV project aims for a next generation synchrotron source, that according to plan shall be ready to deliver first light 2016.

Today, there are four different agencies funding the MAX IV project, Region Skåne, Lund University, VINNOVA and the Swedish Research Council (SRC). SRC is the main funding agency for the project. In the agreement between the funding agencies an "Audit Committee" is specified, with a task to review the MAX IV project. The funding agencies have agreed that this Audit should be interpreted as a standing review of the processes within the MAX IV project. Results and conclusions of the review will be made public in a written report. The SRC is, for administrative reasons, handling the review, for all the funders. This is the first time for such a review process is launched by SRC, it is therefore also a learning process which in the future may be applied to other large SRC funded projects.

### **The Standing Review Procedure**

A standing review is a repeat review process where the Terms of Reference will be dependent on earlier reviews and earlier actions/activities, forward look and successive recommendation.

The review panel makes recommendations to the project (and other stakeholders). These recommendations are expected to result in actions/activities, which subsequently will be scrutinized by the review panel before finalizing the review report. The funding agencies' own and supervise the process. The reporting to the funding agencies will be conducted by the Chair of the Panel.

### **Review Panel**

The review will be conducted by a "Review Panel". The members will be experts with broad views and expertise. None of the members shall be personally and actively engaged in the MAX-lab or in the MAX IV project.

The chairperson of the Review Panel will be Professor Jan-Otto Carlsson. The chairperson will also be the rapporteur of the panel to the stakeholders. A research officer from the SRC, or someone assigned by the SRC, will act as the co-ordinator of the review. The funding agencies may also send one observer. However, this should be co-ordinated and agreed with the research officer and the chairperson of the panel.

### **Review schedule**

The review shall be made during TBD.

1. A preliminary report including preliminary recommendations shall be presented to the Board of the MAX IV laboratory no later than TBD, a copy may be sent to the stakeholders.
2. The Board shall comment on the recommendations and describe actions are plans to take/implement, as a result of the recommendations.
3. The panel will give written comments to the actions/comments by the board. The final document shall be finished no later than the TBD and shall be sent to the Board of the Laboratory and the stakeholders.

### **The Review**

This initial review should mainly be focused on top-level processes and their implementation. The main goal of this review, is to provide an independent analysis of the status and progress of the processes within the project and ensure the founders that the project has the necessary processes in place so that the project will be able to deliver a functioning new synchrotron laboratory (i.e. "first light" 2015/16), in accordance with the project goals. The panel is also asked to look at relevant interfaces within the host university and other stakeholders. It should give recommendations and status to the funding agencies as well as give recommendations to the project management and board. More specifically the areas that will be scrutinized by the Review Panel more in detail are defined below.

### **Areas to be looked into:**

- A. Visions and overall planning
  - How the overall visions are used for detailed planning, for initiation of processes to change strategies and for renewal of plans (initiation level, science cases, preparations, evaluations, prioritization and economy, final decisions, reports).
  - How the visions are used in contact with the research community.
  - How the visions/strategies are used in contact with industry and other stakeholders
  - How the visions/strategies are updated and communicated.
  - How the visions, strategies and research community are used in the guidance to decisions within the project
  - How the relations to other research infrastructures (of the same type) and other (new) research communities are handled



- B. Overall agreements and contracts  
Overall agreements and "contracts" and how they are used for guidance, project steering, in future funding processes and for communication with other stakeholders.
- C. Organization and Management
- How the organization of the MAX IV Lab is defined.
  - Are the instructions and delegations to the various levels within the organization clear.
  - How is the transparency of organization perceived.
  - Are there routines available in the Laboratory to regularly evaluate effectiveness in the organization and management.
  - Is the support to the management level judged to be satisfactory (technical, economical, administrative, procurement, reporting).
  - What are the work regulations at different levels (authorization, responsibility and reporting)
  - What are the processes for handling, up-grading, communication and follow up of risks at different levels (economy, administrative, time and technical).
  - Are the budget processes within the Laboratory adequate, transparent and relevant for steering in both the overall project and in the various subprojects.
- D. Report and follow-ups – are the levels of reporting adequate?
- How are the report and follow-up structures (economy and progress at different levels) organized?
  - What are the expectations from the reports by the different stakeholders, (reasons, demands, levels, feedback)
  - How to organize the reporting structure to fulfill the requirements for as many stakeholders as possible at the same time (typically the funding agencies, the host university, other stakeholders)
- E. Feedback issues – are the levels of feedback adequate?
- How is the feedback on the reporting conducted/expected in general (internally and externally)
  - How is the feedback on reports regarding activities/progress, risks and budget organized and implemented in the project?
- F. MAX IV Lab project summary  
Summary of overall status of the MAX IV project (planning status by MAX IV lab, funding, achievements, milestones, time schedules, special risks)

**Documentation that will be supplied to the review committee:**

- Reports from MAX IV laboratory
- Notes/minutes from board meetings
- Strategy docs
- Internal regulations and delegations, i.e. "arbetsordningen"
- Other reviews and reports leading up to the project (CDR etc..)
- ToR for adjacent groups
- Överenskommelsen mellan finansörerna – "translated"
- Organigram
- Organisation between "phase 1" beamlines and MAX IV lab

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## APPENDIX 2. PANEL MEMBERS

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### Dr. Lyn Evans, CERN

Accelerator physicist, design of proton-antiproton collider (1977), participated in the commissioning of the superconducting Proton-Antiproton collider, the Tevatron, at Fermi National Accelerator Laboratory, 1984. Project leader for the upgrade of the SPS computer control system. Project leader for the conversion of the SPS into an electron synchrotron to be used as injector into the Large Electron Positron collider (LEP) then under construction at CERN, 1987-1989. CERN Management as Deputy Division Leader of the SPS Division, (1988-1991). Member of the HERA Machine Committee, 1989-1993. Member of the Superconducting Super Collider Machine Advisory Committee, 1990-1993. Division Leader of the newly formed SPS-LEP (SL) Division, responsible for the operation of the SPS machine and for the commissioning and development of the LEP machine, 1994. Appointed Associate Director of Future Accelerators. Responsible for the design of the Large Hadron Collider. Leader of the Large Hadron Collider Project. Medals and honours: Wilson prize for achievements in the physics of particle accelerators: "For sustained career of technical innovation and leadership in the proton-antiproton collider, culminating in the construction and commissioning of the LHC."

### Professor Britt Hedman, SLAC/Stanford University

Research Associate (equivalent), University of Umeå, Sweden, 1978-1982. Assistant Professor, University of Umeå, Sweden, 1982-1985. Senior Research Associate, SSRL, 1985-2001. Adjunct Professor, University of Umeå, Sweden, 1996-2002. Assistant Director, SSRL, 2001-2007. Professor (Research), SSRL, 2002-2007. Deputy Director, SSRL, 2005-2010. Professor, Photon Science, 2007-present. Vice Chair, Photon Science Faculty, 2007-2010; SSRL Science Director, 2010 present. Swedish Natural Science Research Council Visitor Scholarship 1983. Medals and honours: Farrel W. Lytle Award 2001. IXAS (International X-ray Absorption Society) Award for Outstanding Achievement in the Field of XAS 2009.

### Lars Lustig, University Director Umeå University

Expert in "Expert RUT-93 utredningen 94/95", Swedish Department of Education and Research 1995-1996 (Legislative and budgetary processes for universities), The Swedish Agency for Higher Education Services 96-00, planning responsible at "Kanslerns kansli", unit manager at Umeå University (2000-2006), deputy university director 2006-2008 Umeå University and University Director from 2008.

### Professor Jan-Otto Carlsson, Professor Emeritus Uppsala University

Professor in surface chemistry (1987) and in inorganic chemistry (1993) at Uppsala University (350 publications). Different committees at the Swedish National Research Council, NFR 1986-1998. Member of the Board of NFR 1989-1998. Member of the Committee of National Research Facilities, KONFA 92-98. Initiator of the Ångström Lab (with professors J- Å. Schweitz and S. Berg). Chair of the steering group of the Ångström lab, Vice-rector for the scientific domain Science and Technology at Uppsala University, 1997-2008. Member and Chair of many research review committees (for example); National Laboratories in US, re-

view of strategic research program for TU Delft, Schwerpunktprogram (DFG), Finlands Akademi, TEKES, Helsingfors University, Chemistry review at NFR 1995. Organizer and chair of the Swedish promotion committees for professorships in science and technology, 1999-2002.

Medals and honours: Member of several academies: The Royal Swedish Academy of Sciences (KVA), the Royal Academy of Arts and Sciences, the Royal Swedish Academy of Engineering Sciences (IVA). Bjurzon's Award, Th. Nordström's Award, the Arrhenius' Medal, the Gustaf Adolf Medal, and been appointed Hund-Klemm lecturer. "Jan-Otto" was proposed and approved name of a planet in recognition of his work for the Science and Technology Faculty at Uppsala University.

## APPENDIX 3. DISTRIBUTED MATERIAL

| <b>Distributed material / Presentations</b>            | <b>Who presented</b>   | <b>Reference<br/>(The Swedish Research Council act number)</b> |
|--|--|--|
| Presentation – MAX IV project                          | Prof. Lars Börjesson,<br>Chairman MAX IV board   | 827-2013-7168  |
| Presentation – Beamlines                               | Prof. Jesper Andersen,<br>Scientific director  | 827-2013-7169  |
| Presentation – Machine project                         | Prof. Mikael Eriksson,<br>Machine director<br><br>Prof. Sven Strömqvist,<br>Dean 10th area | 827-2013-7170  |
| Presentation – Risk                                    | Legal responsible<br>Lu S. Kristenssen   | 827-2013-7172  |
| Presentation – Audit comments                          |  | 827-2013-7173  |
| Presentation – Chair of Panel                          | Prof. Jan-Otto Carlsson / UU   | 827-2013-7174  |
| Presentation – Project management                      | Allan Lidforsen,<br>General project coordinator  | 827-2013-7175  |
| v 3.0 Project management plan<br>MAX IV Project 130218 | Allan Lidforsen,<br>General project coordinator  | 827-2013-7176  |
| Template_status report phase 1<br>project              | Allan Lidforsen,<br>General project coordinator  | 827-2013-7177  |
| 121021 Change request<br>Teamplate-AL                  | Allan Lidforsen,<br>General project coordinator  | 827-2013-7178  |
| Schedule for presentations                             | JOC/JH   | 827-2013-7179  |

# APPENDIX 4. SCHEDULE FOR THE PROCESS REVIEW OF THE MAX IV PROJECT

## Wednesday 13<sup>th</sup> of March 2013, at MAXlab site: Ole Römers väg 1, Lund

| Time          | Area                         | Who   |   |
|---------------|------------------------------|---|---|
| 10 - 12       | General Introduction         | Jan-Otto Carlsson   | Prof. em at UU, ex vice President of Uppsala University   |
| 11h30 -12h00  | LU being a host to MAXIV lab | Sven Strömqvist/vice President LU   | Prof. Strömqvist is also vice President, and Dean for the 10th area where the MAX IV laboratory was organized |
| 12 - 13       | Lunch                        |   |   |
| 13 – 13h40    | LU - organization            | Susanne Kristensen – Lund university the host university  | Director of Administration for Lund university  |
| 13h40 -14h10  | LU/Sijus – MAXIV             | Sverker Werin Prof at LU active at the Max IV lab – How is interface LU – MAX lab working at institutional level? | Head of the MAX Science faculty Department, Head of Accelerator Physics dept: Prof. at LU                     |
| 14h10-14h40   | MAX IV lab                   | Peter Andersson, – MAX IV laboratory visavi the host university   | Director of Administration MAX IV laboratory, employed by LU  |
| 14h40 – 15h10 | MAX IV board                 | Anne l’Huillier, Prof at LU and Max IV board member – Being part of the MAX IV board                              | Prof at LU and Max IV board member,   |
| 15h10 – 15h40 | MAX IV board                 | Gunter Schneider, Prof at KI and Max IV board member – Being part of the MAX IV board                             | Prof at KI and Max IV board member  |
| 15h40 -16h00  | Coffee                       |   |   |
| 16h00 – 16h55 | MAX IV laboratory            | Lars Börjesson, Prof at Chalmers and Chairman of the MAX IV board – Visions, financing and the project            | vice President at Chalmers and Chairman of the MAX IV board   |
| 17h00 – 17h55 | MAX IV laboratory            | Christoph Quitmann, Director of MAX IV laboratory – The organization of the project at MAX IV laboratory          | Assistant Prof at LU., Director of MAX IV laboratory,   |
| 18h00 – 18h55 | MAX IV project               | Allan Lidforsen, Project coordinator MAX IV project – the planning of the project –                               | Consultant, Project coordinator MAX IV project  |
| 19h00 – 19h30 | Panels’ own time             | Panel   |   |
| 19h30         | Transport to hotell          | Check in and dinner   | Panel only internal discussion  |

## Thursday 14<sup>th</sup> of March 2013

| Time          | Area  | Who  |   |
|---------------|---|--|---|
| 08h20 – 09h00 | MAX IV laboratoriet                                       | Peter Andersson, – Administration of MAXlab and MAX IV project   | Administrative director at MAX IV laboratory                            |
| 09h00 – 09h30 | MAX IV project planning                                   | Mikael Eriksson – planning of the accelerator and interfaces to other parts of the project   | Prof. at LU, Machine Director at MAX IV laboratory                      |
| 09h30 – 10h30 | MAX IV project planning                                   | Jesper Andersen, Director of Science   | Prof. at LU, Science Director at MAX IV laboratory                      |
| 10h30 -11h00  | Coffee  |  |   |
| 11h00 – 11h30 | BL project planning                                       | Tomas Ursby, project manager BioMax  | LU  |
| 11h30 – 12h00 | BL project planning                                       | Marcus Agåker, project manager VERITAS   | UU  |
| 12h00 – 12h15 | Panels own discussion                                     | Panel members  |   |
| 12h15 – 13h15 | Lunch   |  |   |
| 13h15 – 15h00 | Follow up questions                                       | Lars Börjesson/Christoph Quitmann/Peter Andersson  | the reporting structure to funding agencies as well as feedback issues. |
| 15h00 – 15h30 | Funding Agency – Swedish Research Council, funding agency | Juni Palmgren, Secretary General for the Reseach Infrastructure Committee at Swedish Research Council – funders view on roles and future | Prof at KI  |
| 15h30 – 16h00 | Lund Univ. as a funding agency                            | Sven Strömqvist, funders view on roles and future  | Prof at LU and vice President of Lund University                        |
| 16h00 18h45   | Panels’ own times   |  |   |
| 19h00         | Transport hotell  | Panel  |   |
| 19h45         |   | Dinner with Juni Palmgren and Sven Strömqvist  |   |

## Friday 15<sup>th</sup> of March 2013


| Time          | Area                | Who   |
|---------------|---------------------|---|
| 08h30 – 12h00 | Panels’ own time    |   |
| 12h00 – 13h00 | Lunch               |   |
| 13h00 – 13h30 | General conclusions | Lars Börjesson/Christoph Quitmann/Peter Andersson |
| 13h45 – 15h00 | Panels’ own time    | Finalizing of report                              |
|               | End of site visit   |   |

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# APPENDIX 5. STAKEHOLDERS COMMENTS TO THE REPORT

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## Comments from the Council for Research Infrastructures

|  |                                |                              |
|--|--------------------------------|------------------------------|
| <br>Vetenskapsrådet | Datum<br>2013-06-11/2013-10-22 | Diarienummer<br>829-2010-189 |
|  | Handläggare<br>Johan Holmberg  |                              |

VETENSKAPSRÅDET

Ink 2013 -10- 23

Dnr: 827-2010-189

Handl: Johan Holmberg

**Comments on “MAX IV project process review” from the Council for Research Infrastructures**

The Council for Research Infrastructures (RFI in Swedish) at the Swedish Research Council heard Professor Jan-Otto Carlsson’s presentation of “MAX IV project process review” on 30 May, and read the draft version of the evaluation report dated 2013-05-15.

The RFI thanks the chair of the review panel, Jan-Otto Carlsson, and panel members Lyn Evans, Britt Hedman, and Lars Lustig for a very well-executed review which has had a major positive impact on the organisation of the MAX IV Project even before its release.

The RFI agrees with the conclusions of the evaluation report and aims, in collaboration with other interested parties, to contribute to the implementation of the recommendations involving the Swedish Research Council. As a consequence of the current need to clarify the allocation of responsibility within the MAX IV Project, the RFI recommends that the Swedish Research Council, in cooperation with Lund University and other financiers, endeavour to reformulate the mandate of the MAX IV Governing Board in order to delineate more clearly, in harmony with the recommendation of the evaluation report, the role of Lund University as owner of the infrastructure. Furthermore, the RFI recommends that the Swedish Research Council revisit, and, if necessary, renegotiate, the terms regarding the MAX IV Laboratory so that Lund University’s role as host university is clarified. This includes the agreement about MAX IV between Lund University, the Swedish Research Council, Vinnova, and Region Skåne. In connection with this, the long-term funding of MAX IV needs to be re-examined. The RFI is also in favour of the Government undertaking a reconsideration of the statute regarding MAX IV, SFS 2011:1567, for the purpose of more clearly establishing the distribution of responsibilities.

The RFI recommends that the Swedish Research Council, together with other financiers, decide on forms for the continuing review of MAX IV. A long-term plan for this review work should be set up.

The RFI recommends that Lund University pay special attention to the following conclusions from the evaluation process. The advantages of the MAX IV facility in comparison with other similar facilities in the world should be scrupulously analysed, documented, and communicated. The MAX IV Project should also actively work to ensure that its unique

1 (2)



Vetenskapsrådet

advantages, in particular in the field of hard X-rays, are put to use in advanced research projects. The balance between international excellence and high research productivity should also be borne in mind.

MAX IV has the potential to serve researchers in many scientific areas, especially in the Nordic countries and the Baltic countries. To achieve this potential, communication with the research community must be enhanced. Moreover, full use of the facility's potential would entail considerable cost. Work to bring in further financiers for MAX IV should therefore continue. More international co-funding is desirable in the long term, which may also lead to a need for new organisational forms for governing the facility.

Kerstin Eliasson  
*Chair*  
*The Council for Research Infrastructures*  
*The Swedish Research Council*



# Comments from Lund University



**LUNDS**  
UNIVERSITET

## **Comments on the report “Process review of the MAX IV project” by Lund University**

Lund University welcomes and applauds this report. It addresses a number of important issues and suggests measures for the enhanced management and development of MAX IV.

We are in full agreement with the leadership of MAX IV laboratory (see separate response to the Process review by MAX IV lab) that key issues include efficient governance and accountability of MAX IV, securing stakeholders’ interests, furthering the development of MAX IV as a national facility for the benefit of the user community, as well as important aspects of internationalization. We also see an ERIC as an adequate form for the long-term development of MAX IV.

LU is fully prepared to continue its management responsibilities for the national facility until there is an agreement on a more adequate form for the long-term governance and development of MAX IV. The board of Lund University extends its unanimous support of this proposition.

Lund, June 15, 2013

A handwritten signature in black ink, appearing to read 'Per Eriksson'.

Per Eriksson  
Vice-Chancellor, Lund University

# Comments from the Max IV Laboratory

## Comments on the report “Process review of the MAX IV project” by the MAX IV Laboratory

We thank the reviewers for their work and for a constructive report. It is very useful for the further development of the MAX IV Laboratory.

The report and the recommendations of the panel was discussed by the Board and the Management at the MAX IV Laboratory’s Board meeting 22 May 2013.

We summarise here first our general response as well as actions related to the panel’s recommendation. Later we comment on issues in the report in the same sequence as they appear.

### 1 General comments

- We appreciate very much the many positive comments on the status of the MAX IV project and the organization of the laboratory. It is the result of the dedicated work for a long time by many people either directly within or in various ways related to the organization.
- The report states that substantial progress of the organisation has been made since the last 6 months. We would like to point out that the reform of the laboratory has been on-going since the new MAX IV Laboratory was established in 2010. This has involved enormous efforts by all involved parties: the management, the employees, the board, the LU management, etc.
- The governance structure is discussed at some length in the panel report. The MAX IV Laboratory agrees that this is an important issue and that there are needs for clear governing principles and responsibilities, particularly at the owner or main stakeholder level and for the role of the board. We agree that the general governance principles for National Research infrastructures should be looked over. The present divided responsibility between funders and a host university may introduce unclear roles at the top governance level. We agree with the panel that there are some clear advantages in a more independent organization, possibly an umbrella organisation for national research infrastructures, e.g. a clear national mission, national research infrastructure identity not hidden in a university structure, not directly controlled by a particular university, and easier funding from different sources.  
This issue is also dealt with in a recent review by Kåre Bremer.
- The Laboratory considers it to be a clear advantage in becoming an international (Nordic-Baltic, North-European) facility (i.e. partnership with other countries possibly within the frame of an ERIC, (European Research Infrastructure Consortium), with partners at least from the neighbouring countries, for a successful development of the laboratory in terms of resources, international competitiveness, long term stability and involvement of scientific and funding partners. There should also be particular advantages for the Swedish scientific community in terms of more available beamlines for a wider community, better services, and closer and longer-term interactions with an international scientific and technical community. There should also be advantages for the main stakeholders in terms of shared responsibilities for the allocation of resources for new beamlines and not the least for operations.
- The panel also proposes that MAX IV should be completely embedded in the line structure of Lund University, with a status as a faculty and with the MAX IV board

turning into an advisory body. Whereas this may be an advantage in terms of a more clearly defined responsibility within a line-organization of the university, the credibility of the laboratory as a National Research Facility with a clearly defined national strategy and responsibility will to a substantial extent be lost. We find the credibility as a national facility (or possibly an international) to be of major importance for the MAX IV Laboratory's long term development and are therefore concerned about adopting this recommendation without taking on other actions to strongly secure the national character of the Laboratory.

- The MAX IV Laboratory would like to point out that the interaction with Lund University works generally very well and that a close interaction with LU is highly advantageous for aspects such as long-term development of accelerator physics and technology, synchrotron radiation science and technology development, administrative support services and capital resources. If there would be a larger formal independence from LU in the future, some of this co-operation should be secured in separate co-operation agreements.
- The MAX IV Laboratory would also like to point out that the user community has always been and continues to be actively involved in the development of most aspects of the laboratory. Testimony to this is given for instance by the fact that ~300 persons (i.e. 1/3 of the annual number of users) attend the Annual Users Meeting.
- A fairly large part of the report deals with criticism and recommendations from Riksrevisionsverket (RRV) in their 2011 audit report. Both Lund University and the MAX IV Laboratory have taken this criticism seriously and have taken actions with regard to it and also to the criticism and recommendations of the report from the LU internal audit. This year's report from RRV is free from any comments or criticism on MAX IV or LU's handling of MAX IV, an important sign that necessary relevant and appropriate measures have been taken.

## **2. Recommendation by the panel - MAX IV comments and actions**

Here we list the direct recommendations by the panel, using the same headings, and indicate the corresponding actions we have taken or are planning, according to the instructions from VR.

### *VISION AND OVERALL PLANNING*

- *Building New User Communities: The laboratory Management is encouraged to take early and continued steps to communicate the capabilities of the new beam lines to the national scientific audience, as well as to the international community, in widening circles. This could be accomplished, for example, through a series of targeted workshops in specific areas, in addition to using typical media. Workshops could also be used by the management in the planning process for new beam lines, and contribute to ongoing processes of benchmarking vs. other facilities, that could be incorporated in the design processes of the beam lines to be built beyond the initial 7. The process could also provide the foundation for the creation of international partnerships, which could contribute to funding for the construction and operation of new beam lines or instruments, providing another avenue to grow the user community.*

Actions are ongoing since previously. In addition to the ongoing information and parallel sessions at the MAX IV Annual User Meeting (~300 participants), MAX IV is running a series of workshops in specific areas during 2013 targeted towards both new as well as more established user communities and with significant international participation, see <https://www.maxlab.lu.se/node/1450>. The meeting and the workshops are important parts of the

planning process for further beamlines and are also open for international participation.

A specific [workshop on internationalization](#) is organized together with the Ministry of Education and Research, Nordic Council of Ministers and Vetenskapsrådet in June.

- *Revision of the general visions of the facility: Revise the visions of the Laboratory taking into consideration the unique features of the facility and add to the more general visions and goals also more specific ones.*

Action is ongoing with the new strategy document that will be submitted to Vetenskapsrådet after summer 2013. Execution of long-term vision requires long-term funding. Thus the MAX IV Laboratory is looking forward to a decision on the operations budget it has submitted to VR (2013-03-26).

- *Innovations and industry: Create a forum or a platform for interaction with industry during the planning and built-up of the facility.*

The MAX IV Board and the SAC each have a member from industry, Maria Åstrand (Sandvik AB) and Alfons Molenbroek (Haldor Topsøe) respectively. A workshop "Industrial use of MAX IV and innovation" <https://www.maxlab.lu.se/node/1450> is organized by these two. Recently Axel Steuwer joined the industrial liaison team (Andreas Lassesson, Yngve Cerenius), which is reaching out to industry by speaking at relevant events and by directly contacting potential users. The Laboratory also takes part in several regional and other projects aiming at increasing innovation and business development around MAX IV, e.g. the recently concluded [TITA project](#).

The management suggests strengthening the relation to industry by appointing an industrial advisory board: MIRAM MAX IV Industrial Research Advisory Committee. This should include representatives of interested industrial sectors in Sweden and the Nordic region. It should discuss access policies, future beamlines and instrumentation.

#### **BEAM-LINE PLANNING**

- *Initiate bench-marking processes, including the specific beam line programs, towards other synchrotron facilities in the world and prepare a position document.*

This will be part of the updated MAX IV strategy document to be submitted to Vetenskapsrådet summer 2013. Also, the Scientific Advisory Committee (SAC) is currently being reformed and in its new configuration it will even more actively than previously participate in such a benchmarking process.

- *Initiate processes to strengthen the science cases in the beam line programs.*

This is ongoing, for instance as natural parts of the series of targeted workshops in specific areas being run during 2013 as well as of several parallel sessions at the Annual Users Meetings.

- *The panel recommends that the users are engaged continually in the beam line planning process. It is also important that the management follows closely developments elsewhere to ensure that the evolving plans provide state-of-the-art beam lines, and that a process is created through which efficient modifications to the plans can be quickly enabled, if so desired, for beam lines that are planned in the outer years. The beam line strategic plan needs to be updated regularly.*

Actions are already ongoing. The user community was heavily involved in the process leading

up to the funding of the first 7 beamlines and user communities for these beamlines continue to be involved in the planning and construction of these. MAX IV is running a series of targeted workshops in specific areas during 2013 in order to provide input to the planning process for further beamlines <https://www.maxlab.lu.se/node/1450>. Discussions of further beamlines are also important parts of the MAX IV Annual Users Meeting (~300 participants)

Members of the MAX IV management participate in Scientific Advisory Committees at other synchrotron sources which gives a good overview of the development elsewhere.

- *The low manning of the MAX IV Laboratory has to be considered seriously in the future strategic planning for the facility.*

Similar statements have been issued by previous review committees (SAC, MAC, [Interim Evaluation of 11 National Research Infrastructures 2012](#)). This low manning is considered in the planning (see e.g. the [MAX IV Strategic Plan 2012-2020](#), submitted to Vetenskapsrådet, May 2, 2012) and also in the applications for operational funding 2014-2018 submitted to Vetenskapsrådet March 26, 2013. It is also considered in the plans for internationalization. Additional beamlines can only be built if there is additional funding for operating them.

In this context we also pick-up the statement from the executive summary:

- *“The MAX IV facility requires new users.”*

This is true. With an expected final capacity of about 26 beamlines and 2500 users/year in 2026 MAX IV has the potential of attracting many more users from both traditional (surface science, spectroscopy, MX, ... ) and non-traditional communities.

The present Phase II workshops (<https://www.maxlab.lu.se/node/1450>) are a first step in this direction. The SoftiMAX (coherent imaging and STXM) beamline in the Phase IIa application will provide novel facilities at MAX IV of major importance for user communities that have not used the laboratory previously.

Internationalizing MAX IV is another such activity, which is being pushed on many levels (scientific community, VR, ministry). It has the potential to not only add users, but also resources.

#### **TRANSITION FROM MAX I-III TO MAX IV OPERATIONS**

- *It is recommended that early, and as definitive as possible, information is provided to the user community about this downtime, through many channels, such as with the user organization, at user meetings, and via direct information avenues. Creating a path to clear, transparent and continuous updates is also important. It is furthermore suggested that the MAX IV management seek interactions/collaborations with other synchrotron laboratories to explore the possibility of short-term access/support for MAX I-III users to these facilities during the transition process. If successful, the management would then assist the users in mapping their experimental needs to the capabilities elsewhere.*

In the best cases the “dark period” will be 6 months, but some communities (SAXS, non-MX diffraction, PEEM, XMCD,...) at present do not have any approved project at MAX IV. That was the reason to push forward with the Phase IIa application in spring 2013.

The users are being informed about the forthcoming dark period. An official statement will be made at the users meeting (Sep 2013). MAX IV Laboratory will support the users in identifying matching beamlines at other facilities. But the users will have to submit applications. Reserving time for MAX-lab users at other facilities does not seem a realistic option. It would defeat the principle of access based on scientific merit.

## ORGANIZATION, MANAGEMENT, BOARD ISSUES, OVERALL AGREEMENTS AND CONTRACTS

- *Sharpen the organization and management structure at the Laboratory in the direction initiated by giving full responsibilities and mandates to the newly formed project organization in the Laboratory and at the same time close the gap between the university and the Laboratory level even more.*
- *Make clear that LU is the owner of the project, with the full responsibility and the full mandate to manage the project.*
- *Continue the integration of the Laboratory in the LU organizational structure (see figure above) with a position equivalent to a faculty (and the director's position equivalent to a dean's) reporting directly to the vice-chancellor (or his deputy, the "vice-rector").*
- *Refine and redefine the role of the board of the Laboratory. Make a statement that the board is advisory, not responsible for budget issues or other issues that should belong to the management structure. Contact the Ministry of Education in order to have the Ordinance of the Laboratory revised (SFS 2011:1567).*

The general governance is to be discussed and agreed upon among the main stakeholders and owners of the project. Whereas these recommendations may lead to a more clearly defined delegation and responsibility between the a line-organization of the University and the MAX IV Laboratory, the credibility of the laboratory as a National Research Facility, with a clearly defined national strategy and responsibility, will to a substantial extent be lost. We find the credibility as a national facility (or possibly an international) to be of major importance for the MAX IV Laboratory's long term development and are therefore concerned about adopting this recommendation without taking on other actions to strongly secure the national character of the Laboratory.

- *Regular internal reviews of the organization and management structures are recommended.*

We note that the organization and management structure of the laboratory has been evaluated at least 6 times during the last 2 years (LU internal audit, VR Self evaluation, Riksrevisionsverket 2012 and 2013, VR standing review, VR Kåre Bremer review), The last audit by Riksrevisionsverket resulted in no single criticism of MAX IV being found in their report!

- *Instructions and work regulations should be revised on a regular basis after changing needs in the project.*

We agree. Revision of the instructions and working regulations will be done on an annual basis. The needs in the construction and operations phase are different and will be accounted for.

## RISK MANAGEMENT

- *The Steering group of the Laboratory is recommended to include competition from other facilities in the risk assessments.*

We are pleased that the panel finds that the risk management processes are effective and adequate. The risk of competition from other facilities will be included in the risk considerations. We consider the competition by other facilities also an opportunity, not only a risk.

## ECONOMY, BUDGET AND PROCUREMENT PROCESSES

- *According to the ordinance 2011:1567 (section 6) the Swedish research council is to submit documentation for the budget, annual report and similar documents to the Government. This means that one authority (VR, cofunder of the facility) should work on behalf of another authority (Lund University, the host university) which is confusing and make responsibilities unclear. Since Lund University (LU) is the host university and has the overall responsibility of the facility, the Panel recommends that LU and VR initiate processes to make clear the meaning in section 6 in the ordinance and eventually initiate processes for change.*

The recommendation directed towards LU and VR. No comments from the MAX IV Laboratory.

- *A relatively short-termed and scattered funding of the project may result in both ineffectiveness and rising costs. Processes for a more coherent and long-term funding scheme are recommended to be initiated.*

The recommendation is directed towards the funders. MAX IV fully agrees with the recommendation.

- *The MAX IV project is a large development project which also means that additional costs may occur. Coverage of such costs by new applications will only delay the project and a relevant contingency budget should be directed. Processes to revise the contingency budget from the lab should be initiated as well as to audit this budget by LU on a regular basis is recommended.*

The recommendation directed towards the funders. MAX IV fully agrees with the recommendation.

- *The beam line program needs additional funding and the laboratory is working actively to find new funders from for instance abroad. In cases of not fully funding of a beam line, and with an obvious risk of loosing the basic funding, solid interaction processes between funders and the Laboratory should be launched in order to effectively make use of new upcoming funding initiatives.*

We agree. The MAX IV laboratory finds this to be most important and it has been and will continue to be on the agenda in our contacts with funders.

- *The operational cost of the facility will increase considerably when approaching the year 2016. The laboratory is recommended to make a careful analysis of the increased operational cost and take the necessary initiatives for funding.*

An application has been submitted to VR in March 2013 which covers these aspects and includes a careful analysis of the factor influencing the operational costs

- *“Old” equipment from the present facility will be moved to the new MAX IV Laboratory with new costs not only for the move but also for the adaptation to the new facility. Funding processes for this part of the project has to be initiated.*

Applications for funding of this have been submitted to Vetenskapsrådet and to the Wallenberg foundation. The latter has already been granted 15 MSEK ([press release](#))

- *In addition to the accelerator and the beam lines there is a need for other premises like preparation laboratories. Without these premises the facility can not serve the researchers in the way as planned and planning processes, in cases coordinated with ESS, are recommended to be intensified.*

We agree. Costs for such necessary laboratory facilities were part of the cost overrun reported to

VR during 2012. Currently the deficit is still uncovered, but an application for securing the needed additional funding (~68 MSEK) will be submitted early 2014. Intensified contacts and coordination with ESS and also universities and institutes have started and will continue.

- *Even if the laboratory recently has improved considerably regarding responsibilities, structures and monitoring in the budget process there is a need to introduce regular review processes in the Laboratory to follow up and make the required changes with the progress of the project.*

Today the laboratory is already being advised and reviewed by its board, the Scientific Advisory Committee (SAC), the Machine Advisory Committee (MAC), Riksrevisionsverket (RRV), the LU Internrevisionen, several review teams by Vetenskapsrådet (standing review, self-evaluation, Kåre Bremer), the LU Board.

Connected to the implementation of a line organization the management is implementing annual goal negotiations and performance reviews. The distribution of the budget deeper into the organization is accompanied by internal application and review processes.

We consider this to be sufficient.

- *Lund University is recommended to monitor the procurement process in detail and the internal audit office at the university should regularly check the routines.*

There are continuous discussions between LU and the MAX IV Laboratory. Procurement is being regularly audited by Riksrevisionsverket.

#### *REPORTING, FOLLOW-UP, COMMUNICATION AND FEEDBACK*

- *There is a need to standardize the reporting from the Laboratory to various stakeholders but still fulfilling the requirements from them. In a dialogue between the Laboratory and the stakeholders requirements, expectations and feedbacks should be defined from both sides.*

We agree. This process has started and it is important for the MAX IV Laboratory that it will continue as this will significantly reduce the workload on the laboratory concerning reporting.

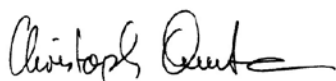
- *Strengthen both reporting and communication with users and scientific communities nationally and internationally.*

In the present status of the project most energy of the management has been focused on the communication with the funders. The communication with the scientists has largely been handled on a lower “working floor” level. While this is deplorable it is a necessity.

In addition the lab has strengthened its communications part to better cope with the needs of the scientific communities and will continue doing so.

Lund, 15 June 2013

For the MAX IV Laboratory



Christoph Quitmann  
Director



Lars Börjesson  
Chair of the Board



# Comments from Region Skåne

## Regionstyrelsen



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Datum 2013-06-10  
Dnr 0801405

1 (2)

Swedish Research Council

### Comments to the "Process review of the MAX IV project report"

As a stakeholder in the MAX IV project, Region Skåne (The Region) has been invited to comment on the draft report from a special panel that has conducted a process review of the MAX IV project.

The Region shares the visions for the MAX IV project as expressed in the 2012-2020 strategic plan. The Region agrees with the panel's recommendations, especially regarding "Building new user communities" and "Innovations and industry".

MAX IV is situated beside Science Village Scandinavia, neighbouring the European Spallation Source – ESS – which entered the construction phase this year. It is highly important that MAX IV, ESS AB and Science Village Scandinavia AB collaborate in order to achieve maximum synergy and together create a world-leading research infrastructure for materials science.

The vision for Science Village Scandinavia is to form a world-leading research and innovation hub that can serve as a showroom for sustainability planning and act to provide added value to the researchers coming to ESS and MAX IV. Therefore, Science Village Scandinavia AB has produced a master plan for the whole area around MAX IV and ESS.

According to the panel's observations and recommendations, there is a need for premises such as preparation laboratories. Without these premises the two facilities cannot serve the researchers as effectively as planned. Planning processes, in certain cases coordinated with ESS, are recommended to be intensified.

Other premises that can serve both MAX IV and ESS are shared conference and meeting facilities, engineering workshops, housing for the scientists, restaurants etc. There are also plans for an information and visiting centre for the public and a business centre. In the near future the planning for the

[http://pacidia.reg.skane.se/Arbetsdokument/Ytrande\\_RS\\_0801405-U4.docx](http://pacidia.reg.skane.se/Arbetsdokument/Ytrande_RS_0801405-U4.docx)

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Science centre will start. All these service functions are a necessary consequence of the establishment of two world-leading research facilities adjacent to Science Village Scandinavia.

From Region Skåne's point of view, as part owner of Science Village Scandinavia which disposes of the land between MAX IV and ESS where these premises will be built, it seems most natural and cost effective that this planning is coordinated between MAX IV, ESS and Science Village Scandinavia. The mutual interest to participate in comprehensive planning for the area should therefore be expressed in a joint statement of intent.

It is very important that the MAX IV facility can attract new users from different scientific disciplines and from abroad. For that reason it is essential that the seven beamlines already funded will be supplemented by medical beamlines.

According to the panel, the continued expansion of the number of beamlines requires increased and more specialized staffing. It follows that the whole staff must be fully focused on MAX IV, as well as the personnel involved in the current MAX I-III. In such a perspective, we judge that a "dark period" of six months is acceptable, provided that early information is given to the user community.

The Region supports the recommendations for beamline planning.

MAX IV will be a world-leading synchrotron research facility. It is a national facility financed by the Swedish State (Swedish Research Council, VINNOVA and Lund University) and by Region Skåne. In that respect it would be natural that the whole facility, including the property, the accelerator and the beamlines, was owned by a State company. It is also on this basis that Region Skåne founds its commitment to finance part of the accelerator. Under current conditions, the Region cannot fulfill its commitment because there is no company in which the Region can be a partner and implement its investment. For the Region, it is unthinkable – and also illegal – that the funding is regarded as a gift to Lund University.

Thus, under these conditions, the only way for the Region to meet its commitments is through an amendment to the Law on Local Authority Accounting in accordance with the Region's request to the Government.

REGION SKÅNE



Pia Kinhult  
First Governor



Jonas Rastad  
Chief Executive

Region Skåne

## Comments from Vinnova

VINNOVA

2013-06-10

### **MAX IV Audit Committee draft report dated 2013-05-15 Comments from VINNOVA**

VINNOVA has taken note of the draft report and finds it important. The findings and recommendations are useful for immediate actions by the MAX IV board.

For VINNOVA as financing partner of the MAX IV project, the Audit Report is valuable as it indicates the importance of the MAX IV project. Furthermore, it gives information concerning the general advancement of the MAXIV project and on how the project is managed.

The findings and recommendations will serve as a base for the Terms Of Reference for next audit committee which will find it natural to follow up the measures taken by the MAX IV board in relation to the findings and recommendations presented in the report.

A for VINNOVA very important finding by the audit committee concerns the fact that industry is not at all involved in the planning of the MAXIV laboratory. This finding contradicts information given during discussions in Finansiärsforum. We therefore request elaboration and clarification on this issue from the audit committee. We will certainly require actions from MAX IV board in order to involve relevant industries in the planning process.

On page 7 a correction is needed as the report says; "The three parties LU, VR and VINNOVA has a separate agreement with Region Skåne regarding financing of capital investment in stage 1 of the MAX IV project." It is only LU that has this separate agreement with Region Skåne, not VR and VINNOVA.