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Swedish Foundation for Strategic Research

The Swedish Foundation for Strategic Research (SSF) announces Framework Grants for Research on Generic Methods and Tools for Future Production

The Swedish Foundation for Strategic Research announces the availability of a total of SEK 250 million in grants in a national call for proposals for Research on "Generic Methods and Tools for Future Production".

The purpose of this call is to inspire research projects of the highest international scientific standards, which cater to present or enable future industry with activity in Sweden, in the manufacturing sector as well as in the production-related service sector.

By choosing a generic approach and focusing on methods and tools, SSF intends with this call to contribute to the development of future production processes. This should also reinforce strong research environments, encouraging them to seek strategic collaborations, and attract young scientists.

Selected research projects will be supported by framework grants in the range of SEK 4-7 million per year (incl. overheads) to be used for salaries (senior researchers, postdocs, PhD students, etc.) and research tools according to the needs of the projects for a period of five years. Funding for the last two years will be contingent upon a successful midterm evaluation.

Background

In a modern society the manufacturing sector is a driving force for international trade, R&D, and productivity growth. This is also the case in Sweden, where exports of goods and services provides a surplus in the trade balance. It is, however, cumbersome that employment in the Swedish manufacturing industry overall has decreased in later years, indicating the importance to address this target area.

Industrial actors in a global competitive climate and in a high wage economy such as Sweden must aim for inventive and flexible solutions with the potential to exploit and create new business opportunities. This requires a capacity to build and implement research with the highest international standard, which lay the ground for new products/services, processes, and business models that contribute added value to the Swedish economy.

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Below are found non-exhaustive examples of present research needs in connection with production processes and related development activities.

- Sustainable production processes with focus on productivity and competitiveness
- New ways to integrate product and production development, e.g., for new materials and/or Additive Manufacturing
- New production logics, e.g., business models and logistics
- Communication of data throughout the value chain from utilisation of raw material to end users/recovery
- The complexity of requirements management, e.g., to enable flexibility and information flows in all kinds of product and value chains including the service sector
- Big data and analytics for several sectors
- Internet of Things, Cyberphysical systems

Scope of the call

The call aims to stimulate collaborative research intended to promote innovation and sustainably increase the knowledge content in production processes. In this way the Foundation wants to contribute to the renewal of existing production processes and to spur the development of new such processes, by capitalising on new R&D and thereby enabling new products, services, solutions, and systems.

The call addresses generic methods and tools for future production. This is because generic technologies are often closely related to fundamental scientific knowledge and – through combinations with other technologies – expected to generate a broad spectrum of applications that could benefit several sectors. Thereby, a high degree of pre-competitiveness in the portfolio of projects may be expected.

The research effort should be carried out in scientific collaboration between individuals or groups with complementary expertise and experience of relevance to the industrial activities in question.

Proposals representing knowledge cooperation and transfer between different production traditions in, e.g., continuous and discrete production are welcome; so are projects that combine topics from both the manufacturing and the service sector (including ICT). Complementary contributions from other science areas may be considered (e.g., from industrial economics) to meet project aims and collaboration logic, as long as overall intentions are fulfilled.

SSF expects to receive proposals that are both scientifically and technologically challenging and yet application-oriented, with a time frame for exploitation up to 10 years after the completion of the project. Thus, to meet SSF's intentions the proposals should be represented in the span of "Technology Readiness Levels (TRL)" 1 to 4, see Appendix. Given the generic nature of the call, the centre of gravity of the sub-projects in a proposal is expected to be found in early TRL stages.

In accordance with its statutes, the Foundation shall support research in the natural sciences, engineering, and medicine, and promote the development of strong research environments of the highest international standards with a view to enhancing Sweden's future competitiveness. The Foundation prioritises research within the following areas: Materials Sciences & Technologies; Bioengineering;
Information, Communication & Systems Technologies (ICT); Life Sciences; and Computational Sciences & Applied Mathematics.

Eligibility

All projects should be based on a credible collaboration between, typically, two to four applicants with relevant complementary scientific expertise, from one or more research group(s) - not necessarily co-localised. All applicants should take active part in the project and their activities should be at least partly financed by the project budget.

The proposal must be submitted by a Main applicant who should be a prominent researcher prepared to assume the scientific responsibility for the project during the entire grant period. All applicants must be employed by a Swedish university, university college/university hospital, or by a public or private non-profit research institute. At least one of the applicants must be employed by a university or university college.

Project participation from industry, public authorities or other relevant organisations will be considered a merit. However, such participants must not be funded by the SSF grant, but will have to participate on their own budget. The same goes for international scientists working outside Sweden unless the project plan itself includes, e.g., visits by foreign-based scientists to an applicant working in Sweden.

A maximum of 25% of the overall grant may be used for salaries for the Main applicant and/or for the Co-applicants (i.e. these individuals) taken together. However, no more than 25% of the salary of each applicant (i.e. the same individuals) may be covered from the SSF grant.

The proposal budget should be in the interval of SEK 4 to 7 million per year for five years.

Please note:

- each applicant is allowed to be represented in one application as a main applicant;
- each applicant is allowed to be represented in one application as a co-applicant.

Applications that fail to comply with these conditions will not be considered. It is the responsibility of the main applicant to check the proposal for compliance with the rules before submission.

Proposal and submission

A complete application must contain, including other data specified in the portal:

- Project description, including description of the international state-of-the-art of the problems and areas addressed
- Description of the relevant expertise of the participating applicants/groups
- Clear demonstration of a high (quantifiable) degree of generic value
- Identification of known and potential end users of the knowledge
- Illustration of the importance of the industrial sectors addressed, including potential new and emerging areas
- Exemplification of the expected impacts in the target sectors
- Explain the proposal's added value with regard to relevant ongoing activities at the international and national level. This is particularly important for proposals emanating from existing production-oriented research environments – e.g. SIO, SFO, KIC, and EU projects. All proposals must be "self-contained" from intellectual as well as practical perspectives
- Description of IPR situation and plans for securing such rights from the project.

A Letter of Intent from the Head of the Main applicant's department is compulsory.

The proposal must be written in English and submitted via the web portal of the Foundation at: http://apply.stratresearch.se. Note that it is necessary to consult the portal in order to get a complete picture of all particulars required for submission. Please log on to the portal well in advance of the deadline. Please also submit the application in good time before the deadline. When the application has been submitted, the system will indicate whether any

data fields are missing. As long as this is done before the application deadline, it is possible to submit and re-submit as many times as necessary.

All applications must be submitted by **14:00 hours (2:00 pm CET) on 22 January 2015**. No additional material will be considered after this deadline.

Please note that the Foundation is subject to the Principle of Public Access to Official Records (Offentlighetsprincipen). Thus, applicants should avoid submitting material that they do not wish to be made public, for example information that could prevent patenting.

Evaluation

Applications will be assessed by an evaluation committee including experts from industry and academia. In a first selection the applications will be judged primarily with regard to scope and eligibility (as described above) and relevance. Furthermore, applications that are judged to be unable to compete in the final step of the evaluation, or that are considered too incomplete to be meaningfully assessed, will not pass this first step. The selected applications will be reviewed by international experts. The results of the external expert review will be taken into account by the evaluation committee in order to produce a final recommendation on which the board of SSF will base its decision.

The applications will be reviewed using the following criteria:

- Conformity to the scope and eligibility as outlined above including synergy and added value of collaborating research teams
- Scientific and technological quality; originality, strengths, weaknesses, degree of interdisciplinarity and feasibility of the research plan
- Strategic relevance to present and future Swedish production and/or society, and impact of the proposed research project
- Qualifications of the applicants, previous scientific and engineering achievements, international experience and networks, and leadership/management of research teams.

Time schedule

October 2014	Programme announcement
22 January 2015, 2:00 pm CET	Deadline for submission of full proposal
November 2015	Final decision by Governing Board
Late 2015	Project start

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Appendix

Technology Readiness Levels [1]

<table>
<tr><th>TRL</th><th>Description</th><th>Activity</th><th colspan="3">Funding</th></tr>
<tr><td>1</td><td>Basic principles observed and reported</td><td rowspan="2">Discovery & Research</td><td rowspan="3">Universities & Research councils</td><td rowspan="4">Present SSF Call</td><td></td></tr>
<tr><td>2</td><td>Technology concept and or application formulated</td><td></td></tr>
<tr><td>3</td><td>Analytical and experimental critical function and/or characteristic proof-of-concept</td><td rowspan="5">Innovation</td><td rowspan="6">"Vinnova-type" national funding bodies</td></tr>
<tr><td>4</td><td>Concept /Process /Technology validated in laboratory environment</td><td rowspan="3"></td></tr>
<tr><td>5</td><td>System /Component /Technology validated in a relevant environment</td><td rowspan="4"></td></tr>
<tr><td>6</td><td>System model or Technology demonstrator in a relevant environment</td></tr>
<tr><td>7</td><td>System /Technology prototyping demonstrator in an operational environment</td><td rowspan="3">Industry</td></tr>
<tr><td>8</td><td>Actual technology system completed and qualified through test and demo in operational environment</td><td rowspan="2">Commercialisation</td><td></td></tr>
<tr><td>9</td><td>Actual technology system qualified through successful mission operations.</td><td></td></tr>
</table>

[1] TRL, referenced from: High Value Manufacturing Strategy, 2012-2015, Technology Strategy Board. https://www.innovateuk.org/documents/1524978/2139688/High+Value+Manufacturing+Strategy+2012-15/9b7e55f0-ed9a-4efe-89e5-59d13b2e47f7.