Swedish Foundation for Strategic Research

2025-09-12

SSF Call for Proposals

SSF Strategic Research Center

Autonomous Drone Swarm Technologies (SRC DRONES)

The Swedish Foundation for Strategic Research (SSF) announces 60 million SEK in a national call for proposals for a Strategic Research Centre (SRC) that meets the highest international scientific standards. The Call aims to stimulate truly strategic research collaboration between academia, research institutes, industry, and society.

SSF seeks to fund one (1) SRC in the field of Autonomous Drone Swarm Technologies (SRC DRONES). The SRC will be granted up to 40+20 million SEK in total including overhead costs for a period of six years. Full funding will be contingent upon a successful midterm evaluation.

SSF Strategic Research Centers (SRC)

Strategic research is defined here as coordinated research efforts in which several scientific competences, presumably not all from the same department or faculty, each outstanding in their field, work together to solve a major societal problem through research and innovation.

A Strategic Research Center (SRC) should be characterized by high scientific quality as well as long-term industrial/societal impact. The potential for an SRC to find new solutions through synergistic approaches is a key evaluation criterion.

The research by the SRC should be based on clear scientific questions centered on gaps in knowledge related to important problems for opportunities. Moreover, the SRC should have explicit plans for the implementation and/or knowledge transfer of research results into industry and society in a long-term perspective.

Another SRC characteristic should be its strong presence in international research initiatives (*e.g.*, *EU Horizon Europe*), leveraging the SSF-funding with international funding for increased thrust. The potential for an SRC to constitute an internationally leading research center is a key evaluation criterion.

Aims and Scope

Unmanned autonomous vehicles, in this text collectively referred to as “drones”, are becoming of large importance for research, surveillance and delivery in air, in/on water, on ground, and in space. The pace of technical development, innovation, and new market opportunities in this field is intense. The future potential for swarms of many collaborating drones, together solving sophisticated global missions, is believed to be great, with excellent opportunities for Swedish industry, society with civil and military applications. However, research and innovation are required for achieving useful and robust autonomous drone swarms.

This call supports excellent long-term research in how swarms of many drones compose, communicate, sense, and collaborate. Special research focus is on global drone swarm behavior, where proof of research excellence is demonstrated through mission-driven use-cases of strategic relevance to Sweden. Great value might come from forming a multidisciplinary and socio-technical research approach to future autonomous drone swarm technologies.

The Call has “dual use” potential, *i.e.,* where the research to be funded by SSF has a clearly civilian approach, but where the general results might also be of future defense use after the project has ended. Strategic research and selected industrial and/or societal partners (government agencies, civil organisations, etc.). further increases DRONES’ potential impact.

The successful SSF SRC DRONES has the following characteristics:

- The research focus is on internationally excellent research on advanced autonomous swarm behaviour for cyber-physical systems (*e.g.*, multi-unit vehicles, drones, robots, satellites, *etc*. A key feature of DRONES is thus its excellent research on systems collaboration and behaviour*,* how they autonomously compose, communicate, sense, and behave to together form drone swarms solving sophisticated missions.
- Innovative design of drones as for light-weight constructions, endurance to climate in zones of operation, propulsion (incl. battery and engine efficiency), sensors, communication systems, and stealth. The purpose should be to help optimize the intended mission with drone swarm formation.
- Sustainability for future drone swarm systems is a key aspect. DRONES has a clear vision on multi-purpose drones, reuseable modular drone construction, *etc*., for enhanced sustainability.
- Advanced research on autonomous drone swarm behaviour might be strongly enhanced by knowledge outside traditional technical research, thus forming a truly multidisciplinary and socio-technical consortium.
- Scalability and positive spillover-effects are quantifiably addressed by DRONES use cases.
- DRONES is fully compliant with, and supportive of, key relevant Swedish and EU strategies and regulations such as The Swedish AI Commission’s roadmap and the EU’s AI Act.
- Addressing ethical, legal, and societal implications is integral to all research and applications, ensuring responsible development and use of drone swarm technologies.

Examples of potential research questions in this Call are:

- Secure-by-Design systems based on swarm features
- Continuous AI-driven software development based on swarm features, *e.g.,* collective knowledge and interlinked activities where the swarm can carry out tasks autonomously.

- Swarm robustness independent of individual unit presence/absence
- Autonomous threat prediction, detection, including built-in self-defense and recovery to ensure the (inherent) safety of swarms and their use cases
- Pervasive AI for swarm resource allocation, interoperability, heterogeneity, scalability, context-awareness, *etc.*
- Innovative autonomous drone swarm technologies through integrating behavioral/cognitive/ other science knowledge with deterministic engineering design and machine learning algorithms based on simulated and/or real data
- Innovative autonomous drone swarm technologies through AI-edge context-awareness from integrating multiple distributed autonomous and heterogeneous sensors
- First-person view (remote radio/video control) systems.

Use-cases of great strategic relevance to Sweden, can be:

- Space, Air, Earth, Sea Observation for Climate, Biodiversity and Positioning
- Precision Agriculture, Forestry and Waste Management/Engineering
- Monitoring of critical assets and infrastructure, wildlife, *etc*.
- Search and Rescue, Law Enforcement, Public Safety*, etc.*

Proposals without strong partnerships that demonstrate real applications of autonomous drone swarm systems of great strategic relevance to Sweden will not be funded.

The above research questions are examples for stimulating research and innovation. They are not to be considered as mandatory SSF research directions. SSF encourages innovative, strategic collaborations to propose novel research.

Eligibility

An SRC consists of applicants from one hosting Higher Educational Institution (HEI) and applicants from one to three other HEIs or research institutes (RI), supported by at least two industrial and/or societal partners. The partners should complement each other and compensate for relative shortages.

Each HEI may be represented by its employees in maximum of one (1) application as main applicant in this call. There is no limit to the number of applications in which the given HEI or RI is represented by an employee as co-applicant. The HEIs and RIs are expected to be selective and make strategic framing of their centers.

The main applicant (Center Director) must have international standing as a research leader in her/his field, must be actively employed by the hosting Swedish HEI to at least fifty percent of full time and must be prepared to assume operative responsibility for the SRC during the entire grant period.

The co-applicants are the researchers employed to at least fifty percent of full time by the collaborating HEI/RIs, including the hosting HEI. The total number of co-applicants should not exceed seven (7) persons, and gender equality must be considered in the team.

Each industrial and/or societal partner may be represented in maximum of two (2) applications in this call. Applications with industrial and/or societal partners registered in Sweden are prioritized.

International research organizations may participate only by their own means, apart from international researchers that becomes employed by the SRC through the participating Swedish HEIs/RIs.

The SRC must have a Governing Board, approved by SSF, having a majority of industrial/societal representatives. The Board, with a chair from industry/society, shall have the mandate to recommend SSF to terminate the funding, in whole or in parts, or to change the management of the SRC. A tentative Board should be stated in the application.

The SRC must assign an international Scientific Advisory Committee (SAC), proposed in the application.

A provisional Center Agreement signed by all partners will be required from the consortium behind the application, if and when it is selected for a hearing. The period for this contract is recommended to be at least three years, *i.e.,* until the mid-term evaluation.

Successful applicants should be connected internationally, for example to European Commission initiatives. For a strong impact, the proposed SRC should also be connected to research branches that are complementary to natural science and engineering sciences through collaborations.

Applications not conforming to the above eligibility criteria will not be considered by SSF. It is the responsibility of the main applicant to inform all co-applicants and industrial/ societal partners, and to check the proposal for compliance before submission.

Grant

SSF-funding is available only to Swedish universities or research institutes, where one HEI is the administrative organization for the grant. The industrial/societal partners and international partners must support the SRC by their own means.

The proposed budget from SSF shall be up to 60 million SEK in total during six years.

The budget allocation from SSF will be a decision of 40 million SEK in conjunction with the SRC's start. Up to 20 million SEK will be decided and distributed by SSF after a mid-term evaluation. Three percent (3%) of the grant will be reserved by SSF for supporting utilization/exploitation efforts of the research results proposed by the Center Director.

The universities/research institutes can use the grant for salaries (senior researchers, postdocs, PhD students, *etc.*), research tools/infrastructure, and running costs according to the needs of the SRC. The application must demonstrate how the SSF grant will be adequately distributed among the HEIs/RIs*, i.e.,* with adequate budget for each organization. It must also clearly display any co-funding (in-kind, cash, lab usage, research infrastructure, *etc.*) from the industrial/societal partners.

A maximum of twenty-five percent (25%) of the overall grant may be used for salaries for the Main applicant (Center Director) and/or for the Co-applicants (*i.e.,* these individuals) taken together. However, no more than twenty-five percent (25%) of the salary of each applicant (*i.e.,* the same individuals) may be covered by the SSF grant. A maximum overhead cost of twenty-five percent (25%) is allowed.

Proposal and submission

A complete application must contain, among other data specified in SSF's online application portal, a full description of the SRC research plan and details of the relevant and complementary expertise of each of the participants.

Each proposal must clearly describe the international state of the art within the research area(s) addressed, and present how the SRC would be scientifically competitive and relevant to a sustainable development. In addition, the proposal should clearly state the resources available and to demonstrate that the proposed participating organizations will be effective to reach the SRC goals. The plan and potential for international cooperation and leverage should be clearly described, within the boundaries of national security.

The application should contain a clear account of the strategic significance of the research, including an IPR plan and a plan for utilization/exploitation of the results in Sweden during the SRC's research operations as well as after completion of the SRC.

The application should contain a declaration for how the SRC will operate within the framework of Trusted Research, incl. for integrity, transparency, and security.

The SRC participants must themselves propose a concise set of long/short term Key Performance Indicators (KPI) upon which the SRC can be evaluated in the mid-term evaluation. These indicators must cover scientific, managerial, and business qualities and substance as well as strategic relevance impact. Each of the KPIs should be elaborated in the research plan and tightly connected to the SRC goals.

The following KPIs are mandatory for all SRCs:

- the volume of co-authored papers by the collaborating research groups and partners
- mobility in person-years between the collaborating research groups and partners
- international presence, *e.g.,* grants from EU and/or other international initiatives (state also the starting values of these for base line).

Include a sustainability assessment and also a risk analysis of the devised technology, innovation or other output.

The application should contain a clear account of how the applicants currently and onward use Artificial Intelligence (AI) as a tool in their research.

The application should be elaborated jointly by all the SRC participating organizations and must be submitted by the Centre Director (main applicant). All participating organizations must attach Letters of Intent (LoI) signed by the highest management level in the organizations (head of research, or equivalent). The vice-chancellor of the hosting HEI must also sign the application.

The proposal must be written in English and submitted via the SSF online application portal at: https://strategiska.se/apply. Note that in order to get a complete view of all data required for submission it is necessary to consult the portal. Please log on to the portal well in advance of the deadline. Please also submit the application in due time before the deadline. When the application is submitted, the system will reject it if some data fields are missing. It is possible to submit and re-submit as needed before deadline. **Applications must be submitted by January 28, 2026, 14:00 hours CET**. No additional material will be considered after this deadline, unless explicitly asked for by SSF.

Evaluation

Applications will be assessed by an evaluation committee and a hearing committee consisting of national and international experts from industry, academia, and research institutes as well as by international peer reviews.

The applications will be evaluated using the following criteria:

- Conformity to scope and eligibility as outlined above.

- Scientific quality; originality, strengths, weaknesses, and feasibility of research plan.
- Degree of internationalization and constituting an internationally leading research constellation.
- Strategic relevance to Swedish industry and/or society as well as explicit long-term impact of the proposed research.
- Qualifications of the applicants and composition of the research team, including previous achievements (science, innovation, and entrepreneurship), international experience and networks, gender balance and leadership/management.
- Added value of synergistic approaches and level of engagement from all participating organizations, including *bona fide* Letters of Intent, LoI:s.

Timetable

Call announced: September 15, 2025

Last date for applications: January 28, 2026, 14:00 hours CET

The applications will be evaluated in stages:

- Selection of maximum three applications for hearings **February, 2026**
- Hearings March**, 2026**
- Selection of one application for funding.
- Decision by the SSF Board April 14**, 2026**
- Centre start: From May 1**, 2026** and no later than **October 31, 2026**

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, *e.g.,* information that could prevent patenting.

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