Defence capability and defence-industrial capability

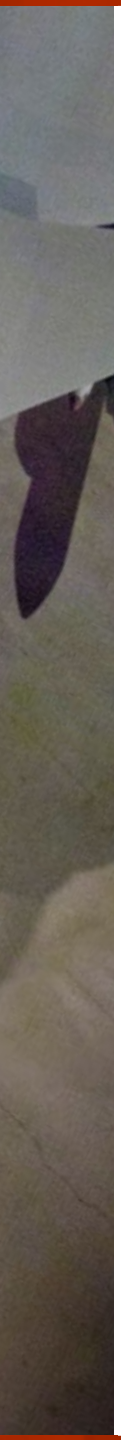
An excerpt from

NRIA Flyg 2020

innovair

Perspective:
Defence capability and defence-industrial capability

Security and defence requirements impose specific challenges on innovation. This is how it affects us, and this is what we have achieved.



INNOVATION NEEDS

Sweden has a long tradition of developing military aeronautics systems. Our unique capability – for such a small and sparsely populated country – of national development of fighter-aircraft systems has meant a great deal to the evolution of the Swedish Air Force and is an essential and important part of the Swedish defence capability. The Swedish Armed Forces believe that the national development capability will be of the utmost importance for future fighter-aircraft systems, whether they are developed by ourselves with international partners or by others. The Government has moreover identified the fighter-aircraft capability as an essential security interest (see fact box). 12

Developed fighter-aircraft capability requires parallel development of air-base and command-and-control capabilities to ensure the required system balance. Research as a basis for innovation capability in these areas, as well as those of helicopters, transport and special aircraft, logistics and cost rationality, is also of key importance to the Swedish Armed Forces.

In order for Sweden to be able to maintain national competence and capability for future development and to be a relevant international partner, the Swedish Armed Forces see a need for a significant increase in innovation initiatives compared to today. The business models that form the basis of the state's defence-materiel procurement have changed: the scope of research funded by the Swedish Armed Forces has been greatly reduced and the responsibility for research and technological development within fundamental areas such as aerodynamics, structures and materials technology, fluid dynamics, electromagnetics and engine technology, now lies with universities and industry. 11 F 1

ESSENTIAL SECURITY INTEREST

The EU regulates procurements in the defence and security area. However, there are exceptions that allow member states to deviate from the Union's regulatory framework if required by the protection of essential security interests. The Swedish Government has decided that the fighter-aircraft capability is one such essential security interest. The exemption from public procurement provides the Swedish state with the opportunity to develop and procure fighter aircraft optimised for Swedish defence needs in close collaboration with industry, research institutes, colleges and universities.

In the report on the Swedish Armed Forces' long-term equipment needs (Försvarsmaktens Långsiktiga materielbehov, SOU 2018:7) a study is proposed to clarify the meaning and cost of essential security interests.

RTD AND INNOVAIR

The Swedish Armed Forces gather their own innovation initiatives in various so-called research-and-technological-development (RTD) areas with the aim of creating conditions for technological development within the subareas where the market's driving forces, in whole or in part, do not meet the needs of the Swedish Armed Forces. The Swedish Armed Forces gear up their RTD activities through the Swedish Defence Materiel Administration (FMV), which provides increased opportunity to fund research that can be carried out by, for example, industry.

Activities within the subarea RTD Aviation Systems are aimed at securing the state's competence for long-term alignment and requirements for military aeronautics systems. It is of the utmost importance for national capability development in the field of defence to maintain strategic RTD activity within those areas where other actors do not have natural drivers.

At the highest system level, the RTD

F **CHALLENGE: MILITARY CAPABILITY REQUIREMENT** The security-policy development increases the Swedish Armed Forces' need for innovation initiatives for the development of national competence and capability.

RESULTS AND CHALLENGES DESCRIBED IN SUMMARY ON PAGES 38–41

initiatives aim to simulate which future technological development will have the greatest impact on the operational capability, with the aim of directing future national research to the most relevant technology areas to optimise the overall outcome of the activities. A similar model could advantageously be developed in the civil area, preferably at a lower TRL in order to gather as many areas of competence as possible. G

Within the basic aeronautical areas, the Swedish Armed Forces are now completely dependent on the research conducted by universities, research institutes, and industry. For the Swedish Armed Forces, Innovair is an important instrument for co-ordinating, directing, focusing and supporting national aeronautics research in order to maintain and develop expertise within the complete technical field, to facilitate future fighter-aircraft development. Military and civil-motivated RTD complement and depend on each other. The Swedish Armed Forces are therefore co-funding Innovair and participate together with the Swedish Defence Materiel Administration (FMV) and Swedish Defence Research Agency (FOI) in Innovair's work. 2 3 6 10

CHALLENGE: NEED FOR CIVIL SYSTEM-EVALUATION CAPABILITY The military ambition to build a system-evaluation capability needs to be reflected in the civil area, for effective prioritisation of research areas of the future. G

CHALLENGE: NEED FOR POSITIONING IN EDF Military research and development will soon be able to seek additional funding via EU programmes, where Sweden needs to position and co-ordinate itself in order to facilitate collaboration and create benefits for the Swedish Armed Forces and Swedish industry. H

INTERNATIONAL CONTEXT AND EDF

Within several RTD projects, the Swedish Armed Forces participate in international bilateral and multilateral collaborations, with the support of FMV and FOI. Such multilateral collaborations take place within the EU, Group for Aeronautical Research and Technology in Europe (Garteur), Nato, and Nordic Defence Cooperation (Nordefco). Opportunities and resources for international collaborations have been lessened in line with reduced research initiatives for RTD. The loss of certain infrastructures means that we are completely reliant on international projects to gain access to certain types of data. In order to be a relevant partner, we must conduct in-depth research activities. It is therefore important to maintain and develop in-depth RTD within prioritised areas in order to gain access to future international collaborations.

In the long-term budget that is now under negotiation at EU level, where the EU is to determine its budget for the period 2021–2027, funding for a

military research and development programme, called European Defence Fund (EDF), is included for the first time. In future collaborations within the framework for EDF and prioritised bilateral collaborations, the Swedish Armed Forces see opportunities through participation in major projects to strengthen our national competence across the entire TRL scale. A prerequisite for this is developed governance, new funding and co-ordination with priorities and time frames in international programmes. It is therefore extremely important that Swedish actors position and co-ordinate themselves within this initiative.

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SYNCRETE INNOVATION

It is worth mentioning here that industrial issues and military security interests are not always jointly considered in Sweden. Innovair believes that this is unfortunate as this means that Sweden does not make optimal use of the resources invested in aeronautics, since interdepartmental aspects are completely disregarded. Today, Sweden is too small to afford to continue to separate the defence-policy aspects from the defence-industrial ones. The governmental part of the triple-helix system should restore the previously existing consensus in this matter by ensuring collaboration between the Ministry of Defence, the Ministry of Enterprise and Innovation and the Ministry of Education and Research in order to create the best possible conditions for the Swedish aeronautics community. The Department of Foreign Affairs, the Ministry of Environment, the Ministry of Infrastructure and the Ministry of Finance also need to participate in the process.

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The aforementioned is a clear implementation of what Innovair calls *syncrete innovation*, which involves co-ordination of the public realm's side of Swedish innovation. Innovair believes that a strong future Swedish defence, especially if Sweden is to remain alliance-free, needs access to a national defence industry in order to meet essential Swedish security needs and, in the same way, a successful defence industry needs support from the country's expertise for the procurement of future systems to emerge as a credible international actor. Such mutual dependence also provides the joint opportunity to export defence materiel in order to be able to share the development costs and thereby reduce the state's expenditure to maintain freedom of action and industrial capability.

I **CHALLENGE: NEED FOR PUBLIC-SECTOR CONSENSUS** Aeronautics issues are handled by several different ministries, lacking the interdepartmental collaboration needed to bring the aeronautics area in a nationally desired direction.

RESULTS AND CHALLENGES DESCRIBED IN SUMMARY ON PAGES 38–41

EXCERPT FROM NRIA FLYG 2020

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