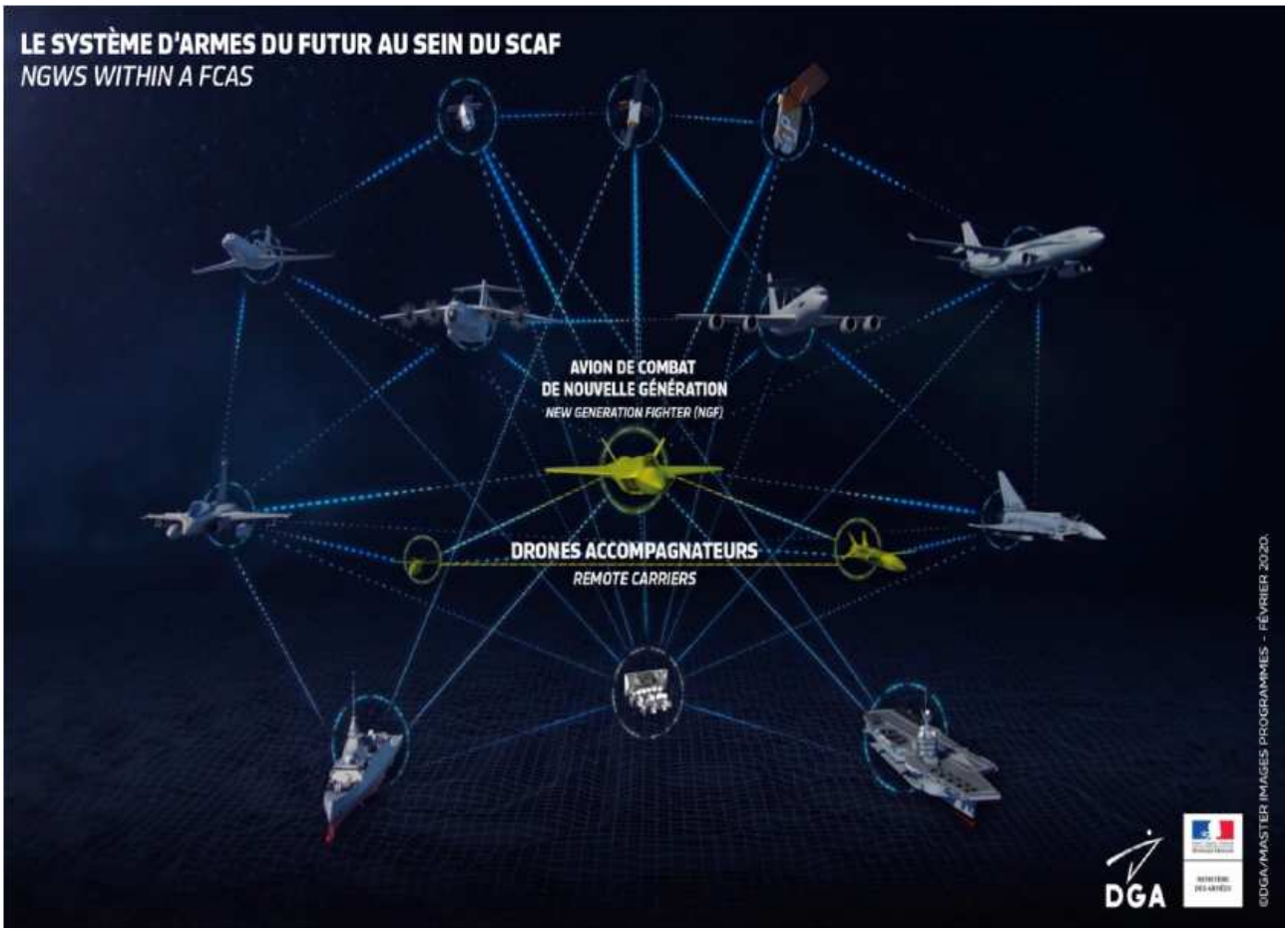
FRENCH REPUBLIC Senate - 15, rue de Vaugirard - 75291 Paris Cedex 06 - www.senat.fr
SUMMARY NOTICE No. 176 (2019-2020) JULY 2020 2040,

2040 THE FCAS ODYSSEY
THE FUTURE COMBAT AIR SYSTEM

Information report by M. Ronan Le Gleut and Mme Hélène Conway-Mouret, on behalf of the Committee on Foreign Affairs, Defence and Armed Forces

Information report n °642 (2019-2020)

The Future Combat Air System (FCAS) programme is key to the renewal of the combat aviation of France, Germany and Spain by 2040 (date of the end of service of the Rafale and the Eurofighter Typhoon). It is also essential to the preservation of the European defence strategic autonomy and industrial and technological base.
Building a new generation air combat system, with our German and Spanish partners will make it possible to own the best technologies and to cope with all threats in the coming decades.
At the end of its work, the mission identified four main challenges for the FCAS programme: taking a new step in early 2021 to make the programme irreversible; meet the challenges of 2040-2080 (probable FCAS lifespan); make industrial cooperation as effective as possible by avoiding the pitfalls encountered by some of the previous cooperation programmes; take into account the European dimension as well as the existence of a competing program, Tempest. For each of these issues, the mission presents concrete proposals.



1. MAKE THE FCAS PROGRAM IRREVERSIBLE BEFORE MID-2021

The FCAS is essential and structuring for the coming decades. The current financial commitment, with a first contract worth 65 million euros for the Study of a common concept followed by a second contract worth 155 million euros for phase 1A of the development of the demonstrator, remains however too limited to prevent any backward return. The negotiations, which culminated in the Franco-German agreement on the first

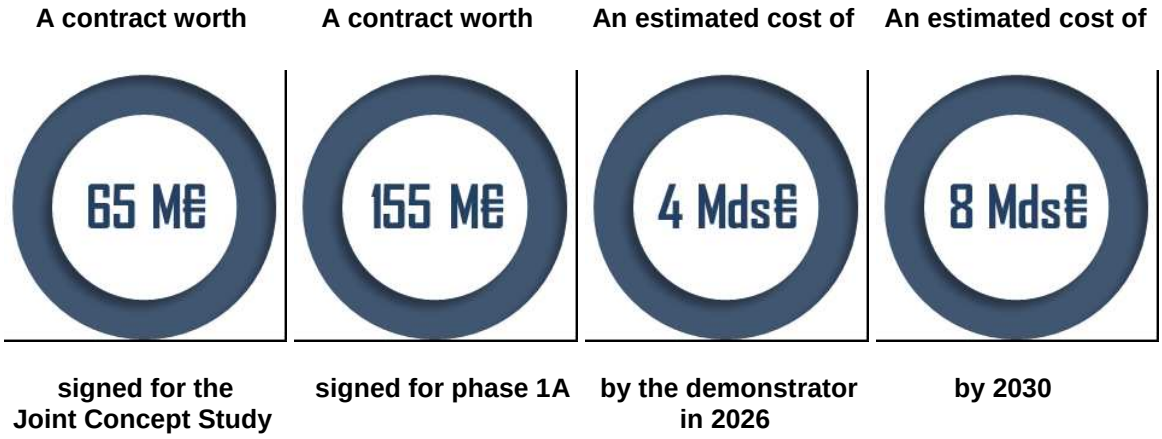
phase of the programme, were laborious. Vigilance remains essential so that the programme does not experience a final blockage or too long a delay. In this context, the next twelve months will be crucial to find a new agreement, in particular on the question of industrial property and on the "stealth" issue, and to accelerate the implementation of the programme.

Proposal 1: Favor the signing in early 2021 of a global framework contract to continue the development of the FCAS demonstrator until 2025/2026, rather than a succession of contracts requiring repeated political validation.

Proposal 2: Improve mutual understanding between the three partners; define and publish a "joint defence industrial strategy" including forward planning of joint projects.

Proposal 3: Encourage the three partners to accelerate the FCAS calendar, so that it is part of the recovery plans for post-coronavirus economic activity. Plan to complete the programme before 2040.

Proposal 4: Invite the German partner to sign, with the Spanish partner, an agreement on arms exports similar to that signed with France.



2. DEVELOP THE RELEVANT TECHNOLOGIES TO MAKE THE FCAS REALLY REVOLUTIONARY IN 2040

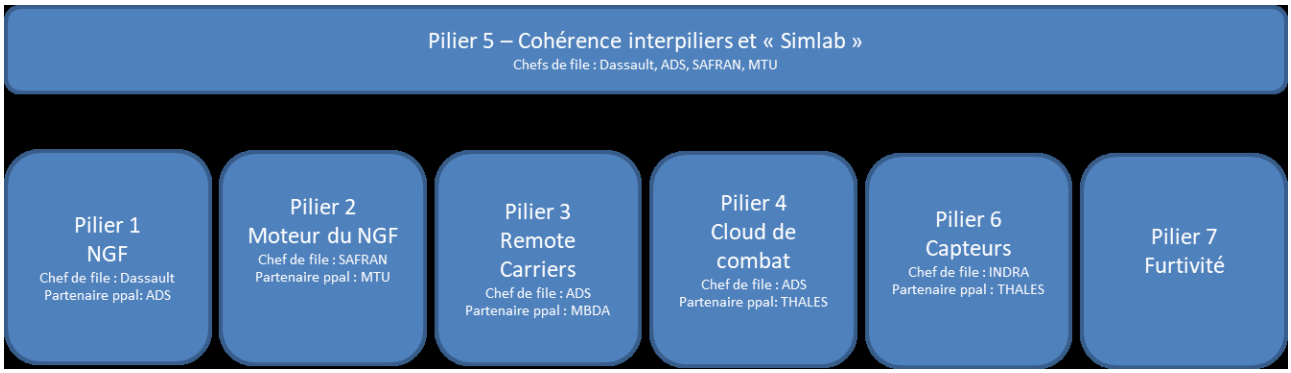
The FCAS is to replace existing air combat systems (Rafale and Eurofighter) by 2040 and remain in service until 2080 or later. The rapid evolution of technologies in combat aviation, but also artificial intelligence, data exchange, combat cloud, electronic warfare or even hypersonic missiles, as well as the efforts made by our main adversaries and allies to develop ever more efficient systems, force us to project ourselves after 2040. The challenge is to avoid developing a combat system that would be obsolete as soon as it enters service. The ethical and legal dimension of artificial intelligence should also be taken into account within the framework of the programme.

Proposal 5: Consider artificial intelligence as a "transverse issue" of the FCAS, which must be developed develop aiming at exploiting it in the widest possible scope. Relaunch international discussions on lethal autonomous weapons systems (LAWS) to achieve a clear legal framework, consistent with ethics and the principles of international humanitarian law.

Proposal 6: Consider the "combat cloud" issue as a priority at the same level as the plane and the engine. Prepare now for the integration of the FCAS combat cloud with the Scorpion Information and Command System (CIS).

Proposal 7: Make the necessary investments in order to equip the demonstrator, planned for 2026, with the M88 engine (Rafale engine) or an evolution of it.

Proposal 8: While aiming for the highest possible performance, integrate environmental concerns from the beginning of the FCAS programme.



3. FOR AN EFFICIENT AND BALANCED INDUSTRIAL COOPERATION

The experience of certain international defence cooperation programmes, such as the A400M, led to the establishment of a highly structured industrial organization for FCAS. It is thus organized into seven pillars: aircraft, engine, remote carriers (remote or connected effectors), combat cloud, simulation / coherence, and soon stealth and sensors. A lead partner and a main partner have been designated for each of these pillars. If France can count on its top defence industrialists, who have already demonstrated their know-how in the main areas concerned by the programme, the positioning of subcontractors should not be neglected, for the sake of overall industrial balance. It is also necessary to settle the question of industrial property in accordance with the main principles already validated by the December 2019Franco-German agreement.

Proposal 9: Support throughout the duration of the FCAS programme the principle of the Best Athlete (the one who has already demonstrated that he has the competence as a leader) in order to avoid the errors of the A400M programme, all by remaining vigilant on the participation of French defence SMEs / ETIs in the programme.

Proposal 10: Strengthen the position of the Spanish partner on the "sensors" pillar.

Proposal 11: In terms of intellectual property, protect the "background" of industrialists. Provide for a balanced use of the "foreground" (technologies that emerge during development): guarantee each of the participating countries the possibility of maintaining and developing the FCAS after it enters service; ensure adequate protection of innovations.

Proposal 12: Integrate the ONERA into the FCAS programme, at the appropriate level given the eminent skills of this organization in the field of combat aviation. Encourage manufacturers to use the ONERA for subcontracting.

4. GIVE THE FCAS PROGRAMME A EUROPEAN DIMENSION

If the FCAS programme is for the moment a Franco-German-Spanish project, the opportunity to find synergies with European defence instruments as well as the objective of exportability should lead to consider, when the time comes, widening the cooperation. Moreover, it would be unwise not to take into account the Tempest programme.

Proposal 13: Endeavor to expand the FCAS programme, in its next stages (post 2026), to new European countries. Develop synergies with European defence instruments (EDIDP, PESCO, EDF), in particular with a view to setting up European interoperability standards.

Proposal 14: Take into account the parallel existence of Tempest as a competitor of FCAS, the coexistence of two programmes making it more difficult to build the European defence industrial and technological base (EDITB).