

The Russian Su-57 and the ‘Fifth-Generation’ Challenge

Moscow’s new ‘fifth-generation’ fighter project is an over-priced and under-competitive counterpart to US and Chinese designs, but it raises policy questions for Europe.

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Fifth-generation aircraft – characterised by being stealthy, manoeuvrable, and multi-role and possessing advanced avionics and data processing capacities – are both expensive and difficult to build, but promise massive operational advantages over previous versions. The US Air Force has been the only one with such capabilities until recently. Its F-22 Raptor is about to be replaced by the F-35, while numerous competitors are appearing, such as the Chinese Chengdu J-20 and the Russian Su-57 (known as the T-50 Su-57). None of the three main European aircraft companies (Eurofighter, Sweden’s Saab and France’s Dassault) are currently able to match the theoretical capabilities of the US, Chinese, and Russian jets, and arguably there is no immediate demand to do so – but at the same time, there is the risk that European defence capabilities may be degraded and that European defence industries may lose out.

Analysis: The Su-57 as a defensive ‘catch-up’ aircraft

Work on developing Russia’s fifth-generation T-50 (Su-57) began in the 1990s after the break-up of the Soviet Union, with the specific requirements of the PAK FA fighter project outlined in 2001. In 2002, the Sukhoi Design Bureau won the tender for the project with an original approach and the ambition to produce a Russian-made equivalent to the F-22. The project, however, proceeded slowly but the Su-57 prototype made its first public appearance at the 2011 MAKS Airshow. In the meantime, the Russians have emphasized the interim fourth-generation Su-35, which was originally envisaged as having an export design, as a more reliable and affordable option based on the Su-27 fighter.

On paper, the Su-57 appears similar to the F-22 Raptor and the F-35, but to be considered a true fifth-generation fighter, it needs to have a small radar cross-section (RCS). Even according to the Russians, it has an RCS of 0.4m², which is much better than the Su-27’s 10m² but still much greater than that of its competitors. It is also inferior in its capacity to spot and track enemy aircraft. That said, though, Russia is unlikely to engage with NATO, but instead it will probably engage in the Middle East or in the post-Soviet space, where its forces are unlikely to be fighting enemies with the most modern aircraft.

Overall, the Su-57 is as much as anything else a defensive project to catch up with not only the US, but also the rapidly-modernising China, given that Russia is unlikely to need fifth-generation aircraft for operations against smaller

neighbours. It is not even certain if it will be exported, given the sensitivities about the technology involved, and the questions about its relative capacities and cost-effectiveness.

Outlook: Should Europe respond?

Does Europe need an extensive fifth-generation capability? The risks of a full-scale conflict with Russia seem limited, the costs would be great (especially if an arms race ensued) and at present that would mean relying on the F-35 and its successors. As it stands, Denmark, Italy, the Netherlands, Norway and the UK operate or have ordered variants of the F-35, and none of the European countries operate the larger and heavier F-22.

The key questions are two. One is that of strategic relevance. Given Europe's likely needs – defence of its airspace as part of an integrated network, and intervention missions in its neighbourhood – in the main, affordable fourth-generation airframes such as the Saab Gripen are entirely adequate. For many countries, the costs of fifth-generation airframes are simply prohibitive. Even just the costs of operations suggest this: an F-22 costs €40,000–50,000 per every hour it is in the air, while for the Gripen, it is merely €4,000.

However, in the longer term, the Eurofighter and the Rafale will not be able to compete against the next generation of Russian and Chinese aircraft. Furthermore, it may behoove Europe to maintain its commitment to leading-edge domestic technological and industrial capacities and establish a consortium to create a European fifth-generation aircraft both for economic reasons and as a symbol of continental independence and cohesion. This would allow countries which lack either the strategic reason or resources to field such aircraft themselves, to at least take part in the industrial operations.

Recommendations: Practicality and Politics

- ◆ **EU member states** should rethink the way they deal with their respective air fleets and focus on the concept of strategic relevance by using affordable fourth-generation airframes for defence and interventions. However, in the longer term, it might be valuable to create a consortium with the aim to create a European fifth-generation aircraft.
- ◆ **The Czech Ministry of Defence** must equip itself according to the most likely potential threat. Fifth-generation aircraft will be too expensive for the Czech Republic, and in any case they are of limited utility for it considering that a hypothetical conflict with Russia is unlikely. For the moment, cheaper and more versatile aircraft are both the most affordable and also the most relevant option for it.
- ◆ **The Czech Republic** should, however, ensure that it becomes a member of any consortium that is formed to build a future airframe for economic but also political reasons. More specifically this should be done to leverage the country's technological and industrial base in order to strengthen its position within both NATO and the European Union.

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