Australian Government
Department of Defence
Science and Technology

DST contributions to the F-35 Joint Strike Fighter program

The F-35A Joint Strike Fighter will deliver to Australia the world's most advanced and capable multi-role fighter; a fifth-generation aircraft that offers an unparalleled mix of situational awareness, stealth and mission capabilities.

DST has provided critical scientific and technical advice to support the acquisition of the JSF, particularly in the System Development and Demonstration phase of the project.

From its initial selection, DST has conducted extensive research into the new technologies being developed, assessing their impact on the F-35A and how the aircraft would fit into the capability mix of the Australian Defence Force (ADF).

In supporting the F-35A, DST's key drivers have been to:

- Provide advice to Government to inform and support decisions throughout the life of the aircraft.
- Promote the insertion of Australian technology to improve capability and better address Australian-specific requirements.
- Ensure an appropriate S&T technology base is developed and maintained to support the F-35A acquisition and in-service capability.
- Support and position Australian industry to support the aircraft.

DST's contributions to the F-35A will help to minimise the cost of ownership of the aircraft and will ensure that it can safely and effectively withstand the rigours of Australian military operations.

The first F-35A aircraft will enter service in Australia in 2018, with the first operational squadron established by 2020.

For further information:

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Data fusion 1

DST is researching data fusion techniques to provide advice to the Royal Australian Air Force.

Low observables 2

DST is working to ensure that the low observable features of the F-35 are not compromised by maintenance, repair, overhaul or exposure to Australian environmental conditions.

Airframe 3

DST is providing expert technical advice on the structural integrity of the F-35 and developing innovative solutions for monitoring airframe testing.

Weapons 4

DST is advising Defence on the acquisition of various air-to-air, land strike and maritime strike weapons for the F-35A; and researching future weapons.

Air vehicle performance 5

DST researchers are applying extensive aircraft modelling and simulation expertise to explore the aerodynamics, aircraft flight dynamics and flight performance of the F-35A.

Electromagnetic environmental effects 6

DST is investigating rapid and cost-effective methods for assessing and monitoring the ability of the F-35 to withstand electromagnetic exposure and minimise any impact on its systems and capabilities.

Vibration diagnostics 7

DST is adapting vibration-based prognostics and health monitoring technologies to enable the early identification and isolation of faults in critical engine components and provide a capability for consistently tracking fault progressions.

Materials and processes 8

DST is working with Lockheed Martin to improve the accuracy of fatigue life predictions for the F-35.

Radar sensors 9

DST is involved in collaborative trials to assess the functionality, capability and performance of the F-35 radar sensor suite.