A few days ago the E-7A Wedgetail, Australia’s Airborne Early Warning and Control (AEW&C) system, achieved its Initial Operational Capability (IOC). With this milestone, Australia for the first time has a single platform capable of controlling the battlespace, providing direction for fighter aircraft, surface combatants and land based elements, as well as coordinating the operations of aircraft such as tankers and other force multipliers. Wedgetail significantly enhances the effectiveness of the on-going Navy, Army, Air Force and Coastwatch operations, and will help Australia maintain a capability edge well into the future.

Wedgetail gathers information from a wide variety of sources, analyses it and distributes it to all friendly air and surface assets, greatly increasing the overall ‘situational awareness’ of the force. The AEW&C mission is to conduct surveillance, and coordinate air defence, fleet support and surface operations in defence of Australian sovereignty and other national interests. When required, the AEW&C capability will also support civil or military operations aimed at law enforcement, regional cooperation and peacekeeping.

The sixth and final Wedgetail was accepted by Australia in June 2012. Based on the 737-700 commercial airliner airframe, this highly-modified aircraft features an advanced multi-role electronically scanned radar and 10 state-of-the-art mission crew consoles that are able to track multiple airborne and maritime targets simultaneously. Extensive testing and evaluation has overcome many challenges, and has enabled the AEW&C to be certified to a level where it has achieved IOC. Wedgetail required the development and integration of technologies that remain at the leading-edge of science and engineering.

Air Force’s maturity in the AEW&C mission has grown with its increasing participation in complex air defence exercises, especially Exercise Red Flag in June 2012. Through this and other exercises, the Air Force was able to grow the capability of its people, train and integrate with coalition forces, and employ Wedgetail in a realistic operational environment. While the Air Force has proven its ability to achieve IOC, this is only one more milestone in achieving its goal of Final Operational Capability (FOC).

Wedgetail is one of several significant capabilities that Air Force, along with Capability Development Group (CDG) and Defence Materiel Organisation (DMO), is in the process of bringing to IOC and FOC, with several more to be realised by 2020.

So what are IOC and FOC? And why are they important to Air Force’s ability to deliver air power for the security of Australia?

Both IOC and FOC are capability states that achieve outcomes endorsed by the Capability Manager, which for Aerospace capabilities of the ADF is the Chief of Air Force (CAF). These capability states are major milestones in the Australian Defence Organisation’s Acceptance into Operational Service process that extends from the statement of requirements phase through to the acquisition and in-service induction phase. CAF, as the Aerospace Capability Manager, has the responsibility to raise, train and sustain forces that generate air power effects to contribute to Australia’s national security. For all aerospace capabilities, such as Wedgetail or Super Hornet, CAF is responsible to Government, through the Chief of Defence Force and Secretary of Defence, for delivering the agreed capability, by the means of the Fundamentals Inputs to Capability (FIC).
**But what is capability?** In the military context, **Capability** is the power to achieve a desired operational effect in a nominated environment within a specified time, and to sustain that effect for a designated period. It is generated by the FIC comprising: organisation, personnel, collective training, major systems, supplies, facilities and training areas, support, and command and management. Capability is not just an aircraft, a piece of equipment, system or a team of trained specialists. Capability is a collective term that describes the optimum combination of all the elements that deliver a required effect. Since CAF is responsible for generating air power effects for the security of Australia, he also holds the responsibility for reporting and declaring when a capability reaches a level suitable to provide an operational air power effect.

**Initial Operational Capability** is the point when one or more subsets of the entire capability system can be operationally employed. Because different capabilities produce different effects and draw on varying aspects of FIC, time to achieve IOC and the required operational effects will differ for each phase of the project. IOC is endorsed by the Capability Manager, CDG and DMO at Second Pass project approval. However, operational, technical and FIC requirements are responsive to real-world influences, thus it is common for the level of operational effect and dates for achievement of IOC to change.

**Final Operational Capability** is the point when the final subset of the system achieves IOC and the complete capability system can be operationally employed. Achieving FOC will result in the full capability effect to be generated through delivery of the entire range of the fundamental inputs to capability. Capability development and the acquisition process is complex, so for projects with many subsystems IOC and FOC is normally achieved in a phased manner. Operational acceptance of a capability acknowledges that a system, or subset, has proven effective and suitable for the intended role and is ready for operational service. In most cases such suitability is demonstrated through Operational Test and Evaluation.

Because capabilities are directly linked to operational effects, a project can deliver its capabilities in an incremental manner. This is common practice, as rarely will a project deliver the entire range of a capability at one time and is the reason for a project to be broken into phases, with different phases having independent initial and final operational capabilities. An example of this approach is visible in Air 7000, the Future Maritime Patrol and Response project. Phase 1B will deliver a Multi-Mission Unmanned Aircraft System, while Phase 2B will see the delivery of the P-8 Poseidon. Each will have separate IOC and FOC milestones.

All projects, especially leading-edge technology ones such as the Wedgetail, contain risks and challenges associated with the inherent uncertainty regarding technology choices and the processes needed to achieve desired outcomes. Risk is the possibility or potential that an expected outcome is not achieved, or is replaced by another. Understanding the risk and its potential impacts is critical in appreciating why the requirements, project cost and delivery timeframe of milestones such as IOC and FOC change over the duration of the project. Risk management of Air Force capabilities is not discretionary, and is considered an essential component of management and sound corporate governance. In determining if a particular aerospace capability has achieved IOC or FOC, CAF takes into account the possible risk involved in the generation of the capability through each FIC.

For Australia, the achievement of IOC for Wedgetail represents a significant and defining step forward in assuring its future security. It is one more step in a path to generating the air power that Australia requires to protect its national security imperatives.

**Key Points**

- The achievement of IOC for the Wedgetail places Australia at the leading edge of battlespace management capabilities.
- Capability is a collective term that describes all the FIC that enable delivery of a specific effect for the designated time.
- IOC and FOC are capability states that signify when either a subset, or the entire capability system, can be operationally employed.