

Software Development

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A Digital Jet for the Modern Battlespace

Underpinning the F-35's unrivaled capabilities is more than 8 million lines of software code – more than four times the amount of the world's first 5th generation fighter, the F-22 Raptor. From flight controls to fusing together the F-35's sensor data to form a clear and comprehensive picture of the battlespace, software is essential.



F-35 software enables:

- Flight controls
- Radar functionality
- Communications, navigation and identification
- Electronic attack
- Sensor fusion
- Weapons deployment

A Block Development Approach

From the program's outset, the software team has focused on developing six key software releases known as Blocks:

- **Block 1A/1B** – Block 1 comprises 78 percent of the more than 8.3 million source lines of code required for the F-35's full warfighting capability. Block 1A was the ready for training configuration while Block 1B provided initial multi-level security.
- **Block 2A** – Block 2A is currently released to the F-35 fleet. It provides enhanced training including functionality for off-board fusion, initial data links, electronic attack and mission debrief. With Block 2A, nearly 86 percent of the required code for full warfighting capability is flying.
- **Block 2B** – Block 2B provides initial warfighting capabilities, including but not limited to expanded data links, multi-ship fusion and initial live weapons. The U.S. Marines declared IOC in July 2015 with Block 2B. With Block 2B, more than 87 percent of the required code for full warfighting capability is flying.
- **Block 3i** – Block 3i provides the same tactical capabilities as Block 2B. The principal difference between 2B and 3i is the implementation of new hardware, specifically the updated Integrated Core Processor. The Air Force declared IOC with Block 3i in August 2016. With Block 3i, 89 percent of code required for full warfighting capability is flying.
- **Block 3F** – Block 3F provides 100 percent of the software required for full warfighting capability, including but not limited to data link imagery, full weapons and embedded training. Mission Systems Block 3F software development is 98 percent complete.

Current Software Development Status

As of October 2016, 100 percent of the required F-35 airborne software is written and being tested in 3F Flight Test. Additional ground based software, such as ALIS and Training Systems, is 95 percent complete.