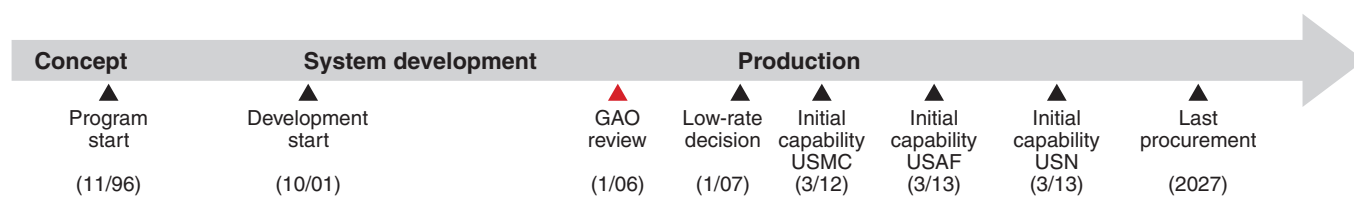


## Joint Strike Fighter (JSF)

The JSF program goals are to develop and field a family of stealthy, strike fighter aircraft for the Navy, Air Force, Marine Corps, and U.S. allies, with maximum commonality to minimize costs. The carrier suitable version will complement the Navy's F/A-18 E/F. The conventional take-off and landing version will primarily be an air-to-ground replacement for the Air Force's F-16 and the A-10 aircraft, and will complement the F-22A. The short take-off and vertical landing version will replace the Marine Corps' F/A-18 and AV-8B aircraft.



Source: JSF Program Office.



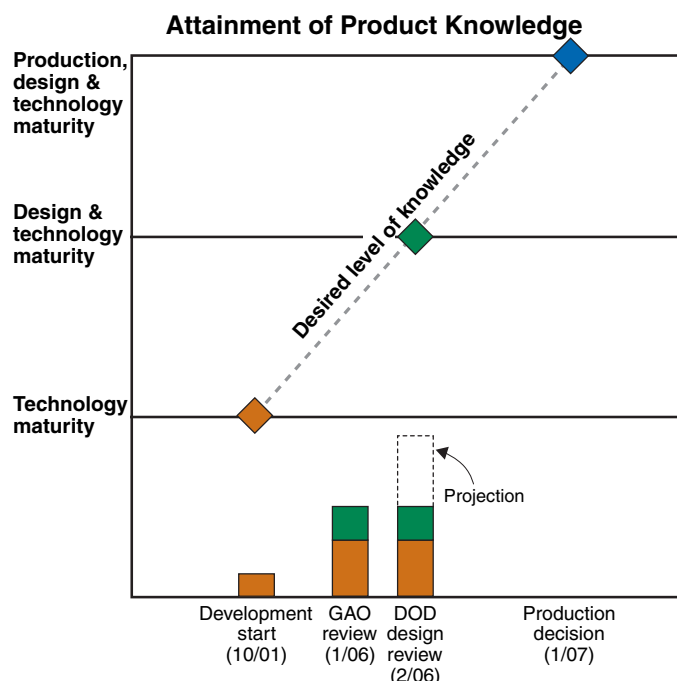
### Program Essentials

Prime contractor: Lockheed Martin  
 Program office: Arlington, Va.  
 Funding needed to complete:  
 R&D: \$24,717.5 million  
 Procurement: \$161,111.5 million  
 Total funding: \$185,980.0 million  
 Procurement quantity: 2,443

### Program Performance (fiscal year 2006 dollars in millions)

	As of 10/2001	Latest 12/2004	Percent change
Research and development cost	\$34,615.8	\$45,021.2	30.1
Procurement cost	\$153,590.6	\$161,111.5	4.9
Total program cost	\$189,814.1	\$206,339.2	8.7
Program unit cost	\$66.230	\$83.946	26.7
Total quantities	2,866	2,458	-14.2
Acquisition cycle time (months)	185	196	6.0

JSF program data indicates that 7 of the system's 8 critical technologies will not be fully mature until after the first design reviews in 2006. Not only is design stability not projected by the time of those reviews, one of the two variants to be reviewed in 2006 is expected to have released significantly fewer drawings than suggested by best practices. Furthermore, the demonstration of a production representative aircraft that includes design changes to reduce weight will not occur until late 2007, after the start of production. Less than a year after the design review, the program plans to enter production with little demonstrated knowledge about performance and producibility. Software also poses a risk as the program plans to develop nearly 19 million lines of code. At the production decision, the program will have released about 35 percent of the software needed for the system.



## **JSF Program**

### **Technology Maturity**

The JSF entered development without its eight critical technologies being mature. Recent data provided by the program office indicates that maturity has progressed; however, seven technologies are still not fully mature and are not expected to be until after the design review.

### **Design Stability**

Currently, 26 percent of the short take-off and vertical landing variant and less than 3 percent of the conventional variant drawings have been released. Design reviews for these variants are scheduled for February 2006. Program data indicates that 75 percent of the drawings for the short take-off and vertical landing variant and 18 percent of the conventional variant are expected to be released by that time. Program officials state that these represent the most critical drawings. The program has not yet prototyped any of the expected designs. An early prototype is expected to have its first flight in August 2006, but does not include many of the design changes that resulted from an effort to reduce airframe weight. The first demonstration of a prototype that incorporates the design changes is scheduled for late 2007. The carrier version design review is not scheduled until late 2006. It will not be until 2009 that all three variants will be undergoing flight testing.

### **Production Maturity**

The program plans to enter low rate production in early 2007 without demonstrating production maturity. The program is taking steps to collect key information on the maturity of manufacturing processes but will not demonstrate that the aircraft can be produced efficiently by the production decision. If schedules are met, the program will deliver only one nonproduction representative aircraft before the production decision. This aircraft, while not yet complete, has experienced labor inefficiencies, part shortages, and major work performed out of sequence. The program will also not demonstrate that the aircraft works as intended. At the production decision, it will (1) have completed less than 1 percent of the planned flight test program, (2) not have flight tested a fully configured and integrated JSF, (3) have released only 35 percent of the software needed for the system, and (4) have little or no data from full scale

structural testing. Before development is complete in 2013, DOD plans to buy 424 low rate production aircraft at an estimated cost of about \$49 billion. DOD plans to use cost reimbursement-type contracts for its initial production orders, meaning that the government will pay any cost overruns.

### **Other Program Issues**

The program plans to develop about 19 million lines of software code. Officials consider software a high risk item. The first of five major software blocks is scheduled to be released in June 2006 to support first flight. However, the Defense Contract Management Agency projects that this release could be delayed 1 to 3 months. Subsequent blocks are showing early indications of falling behind as well.

At this point the cost estimate represents the program office's position. The OSD Cost Analysis Improvement Group was to update its formal independent cost estimate in the spring of 2005, but now does not expect to formally complete its estimate until after the 2006 design review. However, a preliminary estimate was higher than the program office's with large projected funding shortfalls in the 2007 to 2011 time frame.

### **Agency Comments**

The JSF Program Executive Officer continues to nonconcur with GAO's methodology and conclusions on technology maturity. Hardware and software integration for multiple subsystems is ongoing in labs, years sooner than in legacy programs. Critical design reviews were completed in March 2004 for all design areas except the airframe. The air system design review in early 2006 will evaluate design maturity and performance against requirements. Manufacturing of the first test aircraft is well underway with much shorter assembly times than planned and exceptional quality demonstrated in fabrication, assembly, and mate. As of November 2005 the actual weight of 7,600 delivered components is within 1 percent of predictions. While the first aircraft lacks some design improvements, demonstrated processes and outcomes justify high confidence in design and weight predictions for all variants due to commonality of design, tools, and manufacturing methods. JSF acquisition strategy, including software development, reflects a block approach. Development is on track.