

## AVSIM Commercial Aircraft Review

# *F-16 Fighting Falcon X*



### Product Information

**Publisher:** [Aerosoft](#)

**Description:** Multi-role jet fighter with 21 external models and 61 liveries.

**Download Size:**  
684 MB

**Format:**  
Download and CD

**Simulation Type:**  
FSX (SP2 or Acceleration required)

**Reviewed by:** [David Wilson-Okamura](#) AVSIM Staff Reviewer - December 21, 2008

### Introduction

The F-16 Fighting Falcon, manufactured by Lockheed Martin, has been in production now for three decades and is expected to remain in service for at least two more. Fast, light-weight, and versatile, it can fire missiles and launch bombs in numerous configurations; this package simulates about twenty of them. Developed by Aerosoft, the visual model is said to be "the most detailed aircraft ever designed for FSX." But what's it like to fly?

### Installation and Documentation

The download is hefty: 684 mb, not including patches. Installation, though, is painless and does not require online authorization if you need to reinstall later on. (I had to do this for all of my add-ons recently, and was grateful to Aerosoft for making it so easy.) When it is all done, you will have 61 variants of the F-16 (including 21 different models) and one PDF manual.

The fifty-page manual is good so far as it goes. It's well illustrated, and it clearly spells out which of the real F-16's systems are modeled and which are not. But while it names the various symbols on the heads-up display (HUD) and radar, it doesn't explain what they mean or how to use them in flight. Some of this information I was able to pick up by asking questions on the Aerosoft support forum; in most cases the answers I received there were both prompt and detailed.



Target radar in B-scope format

Try as I might, though, I still had trouble correlating the target radar with the moving map. Both of them display AI traffic, but the target radar uses what is called a B-scope format, where the bottom of the display -- all of it from left to right -- represents the nose of the aircraft. This isn't explained or even mentioned in the Aerosoft documentation.

What finally set me straight was the manual from a 1998 product, Falcon 4.0, which I downloaded from [http://www.f-16.net/downloads\\_f4manuals.html](http://www.f-16.net/downloads_f4manuals.html).

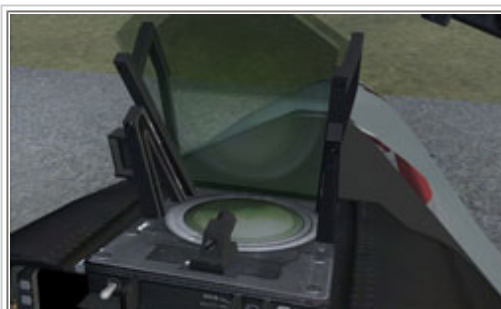
Compared with Aerosoft's F-16 manual, which has 46 pages in English, the Falcon 4.0 manual is 579 pages long and covers tactics as well as weapons systems. That's more than I wanted to read (much less print out), but if you want to get the most from Aerosoft's F-16, the longer manual is a help. I

especially recommend the sections on understanding the target radar (4-6), landing (3-2 to 3-6), and using the HUD for navigation (3-20 to 3-21).

I do wish that the manual explained how to use some of the systems that, currently, it just refers to. On the other hand, you don't have to own the product to download the manual; it's available for free on the product web page. This is useful, because it tells exactly what is, and is not, modeled in the product before you buy. I wish all companies would follow this example.

## Visual Model

According to the product web page, Aerosoft's F-16 model has almost half a million vertices. We can put that in perspective by comparing file sizes. There are 21 variations, so I'll just look at the first one. The exterior model (what you see in spot plane view) is 24 mb and the interior model (what you see in the virtual cockpit) is about 15 mb. So far, those are just numbers, so let's look at the F/A-18 Hornet from FSX: Acceleration: its exterior model is 4 mb and its interior model is 2 mb. Judging just by the file sizes, the Aerosoft Falcon would seem to have about six times more detail than the Acceleration Hornet.



Acceleration Hornet HUD



Aerosoft Falcon HUD



## Aerosoft Falcon HUD

In practice, does the more complicated model actually look better? One place where I noticed the extra detail was the area around the heads-up display (HUD). The first screenshot is of the Acceleration Hornet; the others are of the Aerosoft Falcon. The Hornet looks pretty good, until you put it next to the Falcon. I notice three differences. First, there are gaps in the Hornet frame. Admittedly, these screenshots were taken from rather unusual angles (using TrackIR to move the eye point up and forward). I doubt whether, in the real planes, I could have put my head where I did with the canopy down and locked -- certainly not with a helmet on.

Second, look at all the cords and gear that are part of the Aerosoft HUD; most of these aren't modeled at all in the Acceleration HUD. Third, look at the screws. In the Aerosoft model, they're molded in three dimensions; in the Acceleration model, they're pictured in two. That's not automatically a bad thing; less detail can mean high frame rates, and the Hornet model has both. But the difference is real and it jumps out right away. The Falcon model is a lot more detailed than the Hornet model (which was already quite good, I think), and the details are noticeable.



Multiple configurations and liveries

According to the product web page, the Falcon ships with 21 different external models and 61 different liveries. Why so many different models? The F-16 has been in production for thirty years now; over that time, the design has evolved and variations have multiplied. This package includes three variants -- the A, AM, and C models -- with two different engines -- General Electric F110-GE-100 and Pratt & Whitney F100-P-220 -- and fourteen different external loads. A few of these loads are fuel tanks, but most are weapons:

1. AIM-120 AAMRAAM
2. AIM-9 Sidewinder
3. Smokewinder
4. AIM-2000 IRIS-T
5. GBU-12 Paveway II
6. AGM-88A HARM
7. External wing 370 tank
8. Conformal fuselage tank
9. AN/ALQ-131 ECM pod
10. AN/ALQ-184 ECM pod
11. External fuselage tank 300
12. AN/AAQ-33 Sniper
13. AN/AAQ-28 Litening
14. AN/ASQ-213 HTS

No, the weapons can't be fired. Yes, Aerosoft is planning to release additional permutations; if you'd like to suggest one, there's a thread for that purpose on the F-16 support forum.

Why so many liveries? As of this writing, the package comes with textures for fifteen different countries:

1. Belgium
2. Chile
3. Denmark
4. Egypt
5. Greece
6. Italian
7. Israel
8. Netherlands
9. Norway
10. Poland
11. Portugal
12. Singapore
13. Taiwan
14. USA
15. Venezuela

Additionally, some countries have more than one livery. The biggest group of liveries, though still not a majority, are for the US Navy (2) and US Air Force (22). But Belgium and the Netherlands each have 5 liveries, and Portugal has 3. There's also a paint kit available; using this, customers have already contributed more than a dozen additional liveries, including more variants for Italy and the United States, as well as Pakistan, Jordan, and Bahrain.

With so many variants, keeping up is not easy. Nick Churchill, at <http://screenshotartist.co.uk>, has created a profile gallery of the initial batch and if you look hard on the Aerosoft support forum you can find a list of the different models posted by Aerosoft's Mathijs Kok.

Here are some close-ups, to show what the modeling is like:



If you look at the tail, you'll notice there's a drag chute folded up over the exhaust novel. No, it doesn't deploy. As Mr. Kok explained on the support forum, "*The chute is only used in rather special occasions (short runway with low braking action) and certainly not used standard. We discussed it but in the end decided that adding all that code made little sense and never would look realistic. To make a realistic looking and above all WORKING (meaning it would increase braking in regards to speed/wind) just was not worth the effort. If it could not be done at least semi-realistic we would not do it.*"



In addition to the usual animations, the F-16 also has a feathering exhaust nozzle, dual speed brakes, a dorsal port for mid-air refueling, jet starter doors on the starboard fuselage, leading as well as trailing edge flaps, and laser targeting pods on some of the munitions. Oh yes, and the pilot can put down his sunshades.

## Sound

The sounds for this package were licensed from Turbine Sound Studios (TSS); you can hear a YouTube demo at <http://secure.simmarket.com/turbine-sound-studios-f-16-pw-f100-fsx-soundpack.phtml>. According to the product web page, this package features "General Electric F110-GE-100 and Pratt & Whitney F100-P-220 engines." The two engines differ in weight, fuel consumption, and thrust -- variations that are reflected in the various flight models. But no matter which engine you fly, the engine you hear will be a Pratt & Whitney F100. I don't consider this a major, or even a middling, shortcoming. What's more interesting to me is that sound is directional (i.e., it uses FSX's sound cone feature). If you are in front of the plane, you will hear the air intake; if you are behind the plane, you will hear more of the engine.

I do have one misgiving: it's about volume. It seems to me that the afterburner sound should get louder when power increases; instead, it seems to be constant. I asked about this on the forum, and a few other users have noticed the same thing. But so far no one seems to have an explanation.

## Virtual Cockpit

First, the negative:

- There is no 2D cockpit. (I haven't used one since I got TrackIR, but some people still want it, so I'm mentioning it here.)
- The Falcon's Pilot Fault Display (PFD) is not modeled.
- The Emergency Power Unit (EPU) fuel indicator could not be made to work correctly.
- The landing light was found to interfere with the Heads-Up Display (HUD); to get around this, it was made to glow on the model but not illuminate the ground.
- The HUD has a working mode for air-to-air combat, but the mode for air-to-ground attack has been disabled.
- Weapons systems are disabled, as are defensive systems that track incoming missile threats and confuse them with chaff and flares. You can see the switches and the display, but they don't do anything.



Considering the cockpit's positives (which I'll get to in a moment), these shortcomings seem minor. FSX has more scope for missiles and bombs than previous versions of Flight Simulator, but they're undeveloped as yet, and to make use of them would require a whole add-on environment, not just one model.

The navigational instruments in the Aerosoft Falcon are less sophisticated than in the Acceleration Hornet. Partly this mirrors real-world conditions. The real Falcon has a primitive autopilot that can hold an altitude, a pitch, a heading, or an attitude. It can't track a VOR or follow a GPS flight plan. These limitations are observed in the model as well.



The one thing I'm a little surprised not to see is better engine read-outs, especially for fuel consumption, on the multi-function display (MFD). Currently, this shows weapons stores (which can't be changed in flight), a horizontal situation indicator (HSI), or a GPS-style map (with flight plan, if you have one loaded). The map page is apparently more functional than the real thing, but surely there are some data pages missing. You can set the BINGO fuel level, but you have to calculate endurance yourself.



Night lighting

On the left side of the cockpit, there is a dedicated radar display for locking intercept targets. (Prior to locking, you can see the direction of all AI aircraft up to a range of 80 nm, both on the radar display and on the map display.) Selecting targets can take a few clicks of the mouse button, but once a target is locked you will start receiving data on its heading, aspect angle, altitude, ground speed, and speed relative to your aircraft (if you're catching up, this will be positive; if you're falling behind, it's negative).

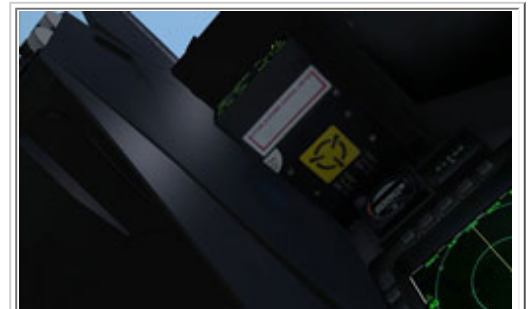
In intercept mode, this information is also displayed on the HUD. The HUD on the Aerosoft Falcon is probably the most impressive thing, apart from all of the modeling detail, in the whole cockpit. This isn't the first time someone has modeled a heads-up display -- there's a good one, for example, in the Acceleration Hornet. But if you move your eye point in the Hornet (which, if you're using TrackIR, probably happens all the time), some aspects of the display won't work as intended. The data will still be correct, but the flight path marker won't be in quite the right place. This is because the Acceleration HUD is conformal but not collimated.

The Aerosoft HUD is both: where you see the flight path marker is the exact spot where the plane is heading (i.e., it's conformal), regardless of your viewing angle (it's also collimated). For example, if the flight path marker is centered on a mountain peak, you are going to collide with that peak unless you change your flight path or run out of fuel. Once you understand how it works, the conformal display makes a whole range of flying tasks easier and more fun: maintaining altitude in a turn, intercepting other traffic, mid-air refueling, dodging obstacles, or tracking a waypoint.



This is quite a feat of programming. To get the full benefit, however, you do need to study the support forum and read the Falcon 4.0 pages I suggested earlier. The included documentation tells you the names of what you see on the HUD, but doesn't explain how to use it or what the names mean.

There is one more set of things to say about the virtual cockpit. The view in the real F-16 is largely unobstructed. Not only is the bubble canopy clear, with no bracing struts, but all the instruments (except the HUD) are sunk low in the pit. This makes for great visibility -- a good thing in a fighter -- and the model replicates all of it. If you have TrackIR it feels very natural to look up and down, scanning the skies and then glancing down at the instrument panel. If you don't have TrackIR, you'll want to map some controller buttons to move your eye point up and down; the manual explains how to do this.



Details that are almost impossible to see without TrackIR

## Flight Model

I am not a pilot of anything, much less a jet fighter, so what I say about the Falcon's flight model will have the force of description, not evaluation. The F-16 fighter, like the Airbus series of tubeliners, is guided using a so-called fly-by-wire system, in which a computer, rather than the pilot, moves the actual control surfaces.

In the Airbus, this is supposed to prevent the pilot from destroying the aircraft (for example, by inducing a stall). The Falcon, however, is slightly unstable by design -- so that it's more nimble in fast maneuvers -- and to keep it in the air, a computer adjusts the control surfaces automatically. The pilot aims the aircraft in the direction it should go, and the computer calculates how to make it happen.

FSX is better at simulating fly-by-wire systems than previous versions of Flight Simulator, but it's not all the way there. In the Aerosoft Falcon, you need to use more trim than you would in the real F-16, but I put this down to a limitation of the simulator engine, not a defect in the flight model.



As a pilot, I rate myself no better than average; and most of my sim hours are in props, not jets. Even so, I had fun right away. The F-16 has a lot of thrust, a lot of speed, and a lot of inertia. To a surprising extent, though, you really can point and fly. Landing the F-16 is a little bit harder than flying, but not by much, and the HUD helps you to match your touchdown point with the ideal angle of attack. Again, the support forum has useful advice on this that's not covered in the manual (including links to a couple of videos).

## Missions

With version 1.1, the Falcon now comes with two missions, both based in Hawaii. The first mission requires you to meet up with Air Force One, the American president's 747, and escort it back to Oahu. To best way to accomplish this

is to lock onto Air Force One with the targeting radar and then match speeds (bringing your closing speed down to zero). If you're good enough -- and even I'm good enough, which isn't saying much -- you can open the in-air refuel portal and steal some of Air Force One's jet fuel while you're en route. But that's not part of the mission, and of course a real escort would never do this (even if Air Force One had the proper equipment, which it doesn't). The second mission is a training exercise in which you attempt to intercept hostile fighters; there's a surprise in mid-flight, but more than that I won't say.



A more advanced set of missions is planned but, as I understand it, this will be a separate purchase.

## Performance

As you would expect, all of this realism (including the HUD) comes at the price of lower frame rates. Early purchasers quickly learned to turn off aircraft self-shadowing, and there's an option to make the HUD less resource-intensive. For my testing, I flew with self-shadowing off, but used the full version of the HUD.

On my hardware, described below, frame rates were noticeably lower than the Acceleration Hornet; I particularly notice this when panning around the cockpit with TrackIR. But in the air, when I'm cruising at altitude, I hovered around my target frame rate (20 fps) except in dense clouds. Would I like higher fps? Yes, especially in a fighter. Would I exchange some modeling details for a smoother over-all experience. I would.



This model is not for borderline hardware. The forum is explicit on this point: if you don't already have a well running sim, this package will push it over the edge. What surprises me, actually, is how high the frame rates are, given how much detail is being displayed, and how sophisticated the HUD is.

Another thing I notice is that switching back to cockpit view from one of the external views is very fast: there's no waiting while the cockpit redraws, as there is (for example) in some higher-fps models like the RealAir Spitfire. Of course, if asked to choose between high frame rates and a delay in switching views, all of us would choose higher frame rates

## Conclusion

Aerosoft sells the download version of F-16 Fighting Falcon X for 30 euros, fewer if you don't have to pay VAT. (At today's exchange rate, U.S. buyers can get it for about \$33.) That's good for what you get. Detail is high, frame rates are flyable, there's a wide variety of configurations and liveries, and the heads-up display is more realistic (and therefore more useful) than any we've seen before in Flight Simulator.

It's also quite fun. A lot of the fun is just power: you can climb very fast, dive even faster, roll over on your belly, zip around the deck, and if you get into trouble, just turn up the heat. Ok, it's not always that simple. But more often than not, the F-16 will do what you want it to -- if necessary, by brute force.

Also rewarding, but requiring more subtlety, are the tasks of intercepting, escorting, and siphoning fuel from other jets. It's not the best platform for exploring ground scenery, but if it's speed you want this is your machine.

Start-up time is minimal and, with no FMC to program, you can be on your way in about a minute. Fuel consumption is high, so range is limited unless you refuel. But distance goes by fast: that's nice when you're pressed for time, but still want to go somewhere that's not just the next airfield (which is also fun, but in a different way).

It used to be that AVSIM only gave its highest rating, five stars, to products that break new ground; that rating system was abandoned before I came on board as a reviewer, but this product would have earned its fifth star. It's not often that advanced products are also affordable, but this one is. For its combination of features, innovation, and affordability, we award this product the AVSIM Gold Star.

### Test System

Core2Quad Q6600 @ 2.4 GHz  
4 gigabytes RAM  
Nvidia 8800 GT (512 Mb)  
Samsung 20" widescreen LCD  
(1680 x 1050)  
Windows XP Pro SP2  
TrackIR 3 with Vector Expansion  
CH pedals, yoke  
Saitek X45 throttle  
Sidewinder Precision Pro joystick  
Buttkicker Gamer  
Sound Blaster X-Fi XtremeGamer  
sound card  
Logitech X-540 5.1 speaker  
system

**Flying Time:**  
17 hours

### What I Like About The F-16 Fighting Falcon X

- This is some really clever and subtle work which has a lot more to it than is at first apparent
- A vast array of choices are on offer
- Despite FSX compatibility, FS9 is not abandoned, with RSP still receiving updates for the older version of FS

### What I Don't Like About The F-16 Fighting Falcon X

- The help screen needs improving and a 'Read Me' should point out possible pitfalls
- The GUI could do with some tidying

### Printing

If you wish to print this review or read it offline at your leisure, right click on the link below, and select "save as"

[\*\*F-16 Fighting Falcon X\*\*](#)

[\(adobe acrobat required\)](#)

[Comments?](#)

**Standard Disclaimer**

The review above is a subjective assessment of the product by the author. There is no connection between the product producer and the reviewer, and we feel this review is unbiased and truly reflects the performance of the product in the simming environment as experienced by the reviewer. This disclaimer is posted here in order to provide you with background information on the reviewer and any presumed connections that may exist between him/her and the contributing party.

**[Tell A Friend About this Review!](#)**

**© 2008 - AVSIM Online  
All Rights Reserved**

**[Powered by AVSIM SimWords](#)**

**[AVSIM Reviews](#)**

Want to stay on top of the most recent ad ons? See our Reviews!  
**[www.avsim.com](http://www.avsim.com)**

**[Make Money with SimWords!](#)**

Join the ranks of websites earning an income from SimWords. Become a Publisher today!  
**[www.avsim.com](http://www.avsim.com)**

**[VRS F/A-18E NOW SHIPPING!](#)**

The first military add-on with the sophistication, realism and beauty of a high-end transport package. SHIPPING NOW!  
**[Vertical Reality Simulations](#)**

**[Become a SimWord Publisher!](#)**

**[Advertise Here!](#)**

Want your advertising to count? Advertise in this slot for pennies a day!  
**[www.avsim.com](http://www.avsim.com)**