



Jeff Van West and Kevin Lane-Cummings

For serious pilots, it's not a game

MICROSOFT® FLIGHT SIMULATOR X FOR PILOTS: REAL-WORLD TRAINING

Jeff Van West and Kevin Lane-Cummings



Wiley Publishing, Inc.

Microsoft® Flight Simulator X for Pilots: Real-World Training

Published by

Wiley Publishing, Inc.

10475 Crosspoint Boulevard

Indianapolis, IN 46256

www.wiley.com

Copyright © 2007 by Wiley Publishing, Inc., Indianapolis, Indiana

Published by Wiley Publishing, Inc., Indianapolis, Indiana

Published simultaneously in Canada

ISBN: 970-0-764-58822-8

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

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To C., B., one yet to see...and all the other pilots of tomorrow.

ABOUT THE AUTHORS

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ACKNOWLEDGMENTS

We doubt any two individuals could create a book like this on their own. We are deeply grateful for the assistance of many people in making this project possible. Chris Webb of Wiley Publishing has shown superhuman patience and faith in seeing the project get off the ground as well as jumping in where needed to make equipment loans work or find key team members. Kelly Dobbs Henthorne, our production editor, and Dr. Andrew Herd, our technical editor, found the short circuits and loose ends within our manuscript and kept us on track. The artists and designers at Wiley also have our thanks for putting everything together in such a great-looking book.

On the computer side of things, thanks to Microsoft's FS evangelist Hal Byran and also Leon Rozenshein. Fred Zanegood is thanked for his parts-scrounging skills. Thanks to all members of the FS group at Microsoft and the Microsoft beta testers for their work making FSX the amazing experience it is. Thanks to both Alienware and WidowPC for their support of this project. Without their hardware...well, it wouldn't have been nearly as much fun.

The greatest thanks, however, goes to our mentors and students and our spouses and children. Their enthusiasm and patience lets us learn new things everyday.

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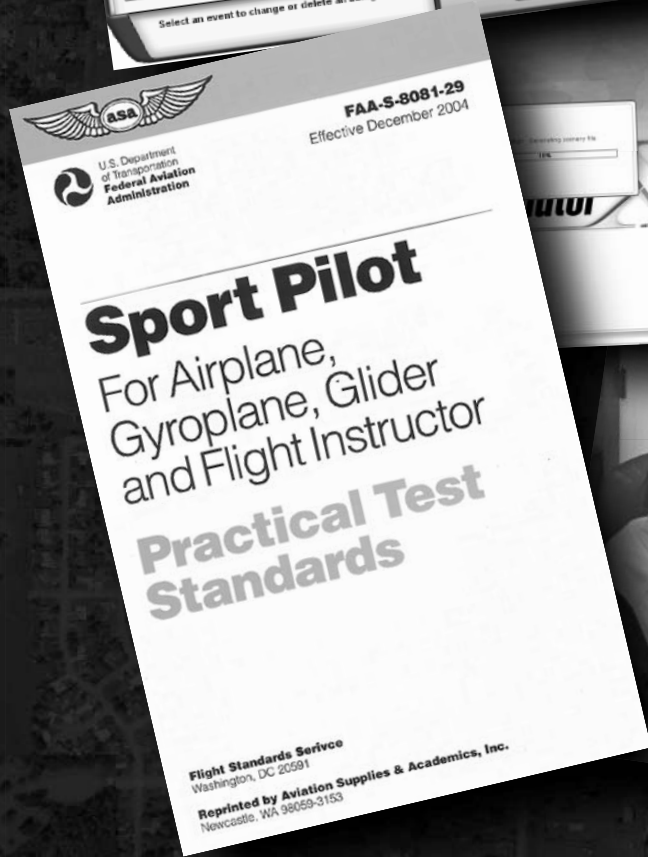
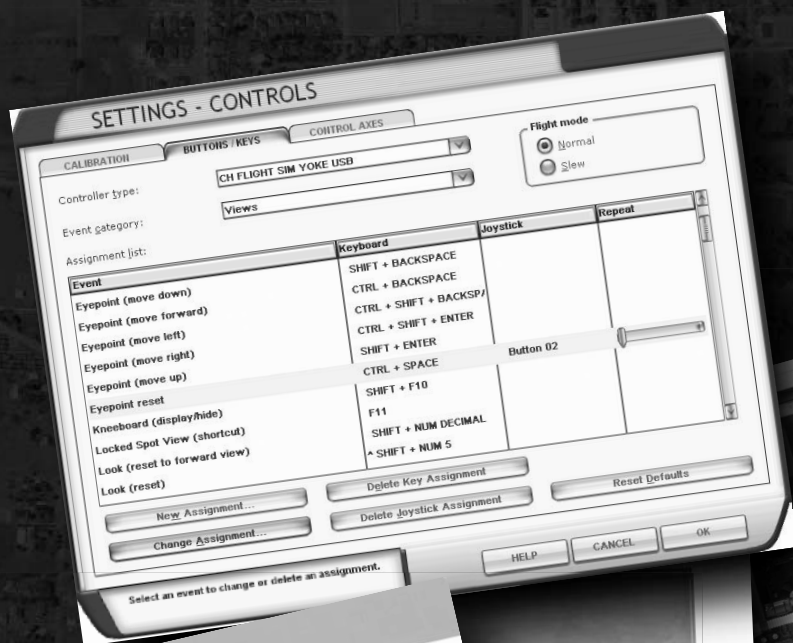
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PART

PREFLIGHT



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FIRST FLIGHT IN THE PIPER J-3 CUB





INTRO

WHY USE FLIGHT SIMULATOR FOR REAL-WORLD TRAINING?



"FLYING IS SO MANY PARTS SKILL, SO MANY PARTS PLANNING, SO MANY PARTS MAINTENANCE, AND SO MANY PARTS LUCK. THE TRICK IS TO REDUCE THE LUCK BY INCREASING THE OTHERS."

—DAVID L. BAKER

WHY WE FLY

If you spend enough time around the airport, or just instructing students, you find that everyone comes to flying with a story. One of the secrets to good flight instruction is to find out what a student's story is, because that's how you find out what motivates them. That's the reason they want to fly.

Some folks love the freedom of being in the air or traveling hundreds of miles in just a couple of hours. Some folks love the technical details and perfecting their technique. Some people even come to aviation to conquer their fear of heights or of flying itself. No matter what your story, however, some underlying drive—some passion—is motivating you and can be satisfied only by learning to fly.

So, what does that have to do with Flight Simulator? Well, flying is expensive, demanding, subject to the whims of weather and maintenance, and sometimes just doesn't fit easily into the realities of our schedules. Flight Simulator lets you feed your passion when, for one reason or another, flying a real airplane is not an option or even desirable.

Even when flying is an option, developing your skills and knowledge using Flight Simulator can make your flying time more efficient and a lot more fun. Whisking your sweetheart away by air for a romantic island getaway sure beats banging out landing after landing trying to get it just right. Judicious use of Flight Simulator can make that island getaway a possibility just a bit faster.

HOW TO USE THIS BOOK

This book mimics the path you might take after you decide to learn to fly, but it does not contain everything you need to know to fly an airplane. Instead, we focus on the items that Flight Simulator teaches well. We also give you the collateral information you would get during real flight training, such as checklists or examples of accidents that illuminate a point. The idea is to use Flight Simulator to give aspiring pilots the best head start possible and help virtual pilots create the most realistic experience.

These items are presented in a chronological order that starts with what a student pilot would learn and ends with a pilot preparing for an airline job. You don't have to read these chapters in order, but at times we will reference something that we explained in an earlier chapter.



↓ STUDENT OF THE CRAFT

SOME OF OUR FAVORITE AVIATION BOOKS

Too many great aviation texts are out there to list them all, but building a good aviation library is an important part of keeping up your skills as a pilot. Or, at least it's a great excuse to collect a bunch of fun books. Here's a short list to get you going if you need it. In addition, you might want to check out some of the flight manuals for the airplanes you fly in Flight Simulator. Many of them are available through historical aviation merchants and online.

Stick and Rudder, by Wolfgang Langewiesche. A classic since its publication in 1944, this is still arguably the best book on how an airplane flies described from the pilot's point of view.

The Compleat Taildragger Pilot, by Harvey Plourde. This is our favorite book on flying tailwheel airplanes. It's a great reference to help master the Cub.

Weather Flying, by Robert Buck. This is another classic on aviation weather written for the pilot in clear, easy-to-understand terms.

Seaplane Operations, by Dale De Remer and Cesare Baj. This is one of the best general texts on flying floatplanes and flying boats (FSX has both). It contains great graphics and some amazing photos.

Mountain Flying, by Doug Geeting and Steve Woerner. This book is hard to find, but we find it more approachable than Sparky Imeson's classic of the same title. Sparky's text is a great book too, though.

Basic Aerobatics, by Geza Szurovy and Mike Goulian. Read this book, and then strap on the Extra 300 to get a different attitude on flying.

Song of the Sky, by Guy Murchie. This book contains a series of essays from the golden era of aviation that give an interesting perspective on how far we've come in transport-category flying.

Wind, Sand, and Stars, by Antoine de Saint-Exupery. This is arguably one of the most poetic books ever written on the early days of aviation and the people who made it possible.

Fate Is the Hunter, by Ernet Gahn. This is simply a classic and part of any pilot's understanding about life (and death) in the air.

West with the Night, by Beryl Markham. This book contains true tales of early flying in Africa and the first east-to-west transatlantic crossing. It is beautifully written.

Federal Aviation Regulations and Aeronautical Information Manual, by the FAA. Calling this a favorite is a bit disingenuous. Who reads the rules just for fun? But the *FAR-AIM* is the bible of real-world flying in the United States. If you want your sim flying to be as real as it gets, fly according to these rules and procedures.

PROCEDURE TRAINING VS. SCENARIO-BASED TRAINING

Flight training has undergone a major shift in the past 10 years. A combination of change in certification standards for airplanes, liability laws, and the availability of cheap electronics has brought a number of complex and capable airplanes onto the general aviation (GA) market. The Garmin G1000 “glass cockpits” in several of the Flight Simulator X (FSX) aircraft are great examples of the kinds of computing power you might find in a GA cockpit.

All that computing power comes at a price. The amount of information a new pilot has to learn, and the amount of information any pilot has to integrate, has gone way, way up. Old-school flight training was based around teaching the procedures for flying an airplane—how the throttle works or how to fly around the traffic pattern in an airport, for example. That was fine when aircraft were fairly simple, but with so many complex systems on modern aircraft, a new system was needed to help pilots integrate thinking skills, technical skills, and physical motions that are needed to work together to use the airplane well.

That’s where scenario-based training comes in. Scenarios are kind of like those do-it-yourself stories you might remember from your childhood where you’d read a little bit and then have to make a choice between two actions, each with its own page number. After you chose, you went to that page to find out what happened, read a little more, make another choice, and so on. By the end of the book you could’ve found the pirate’s treasure or ended up stranded on a deserted island.

In scenario-based flight instruction, the instructor guides the student through a scenario where the student has to use all available resources to try to have a successful outcome. For example, while flying from airport A to airport B, the instructor might simulate a partial power loss to the engine. The student would have to fly the airplane in its impaired state, use the GPS to find an alternate airport, and troubleshoot the problem. There are no right or wrong answers, just choices and consequences.

FSX is a great tool for flying scenarios and practicing this integrated approach to flying. Even better than with a real airplane, FSX lets you set up any kind of wind or weather, stop and redo scenarios from any point, and even get the view from outside the airplane. Wherever possible, we’ll structure our training around scenarios that you can fly.

WHAT’S ON THE WEBSITE

FSX comes with preinstalled flights that place you in a particular airplane at a particular airport, with some challenge to accomplish. For each of the lessons throughout this book, we have created our own flights and provided them on the website at www.wiley.com. All you have to do is load up the flight and turn to that section in this book to be ready to practice.

Flight instructors regularly demonstrate maneuvers or procedures to their students before asking the student to give it a try. Although we can’t sit down next to you at your home computer, we have used FSX’s flight recorder feature to record us demonstrating a maneuver so you can play it back and see it for yourself. Several of these flights are on the website.

To get the flights and movies onto your computer, you’ll need to move them to the correct FSX folder. Here’s what to do under Windows XP:

1. Go to www.wiley.com, and do a search for *Flight Simulator X for Pilots*.
2. Click the link for FSX Flights and Movies. You will be prompted whether you want to open or save the file. Save it somewhere you can find it later.
3. When the download is complete—and it might take a long time if you don't have a broadband Internet connection—double-click the compressed folder you downloaded. It's called `FSX_Files.zip`.
4. This should open the folder and show quite a few files. You can use the "Extract all files" link in the folder tasks on the left, or you can simply select all the files and choose Edit > Copy.
5. Open the My Documents folder on your computer.
6. Open the Flight Simulator X Files inside My Documents.
7. Choose Edit > Paste.

This should copy all the FSX flights and movies referenced in this book into your folder, so they will be available the next time you start FSX.

We've also included several other documents to help with your flight training, such as aviation charts. We'll mention them as they come up in this book, and you can find on the website in a compressed file called `Additional Files.zip`.

Color versions of the black-and-white images in the book are also on the website under the "Book images" link and are organized by chapter.



CHAPTER

FLIGHT SCHOOL SETUP

1



"[THE AIRPLANE] DOES NOT ISOLATE MAN FROM THE GREAT PROBLEMS OF NATURE BUT PLUNGES HIM MORE DEEPLY INTO THEM."

—ANTOINE DE SAINT-EXUPÉRY

"SPEED IS LIFE."

—ISRAELI AIR-TACTICS MANUAL

INSTALLING FSX

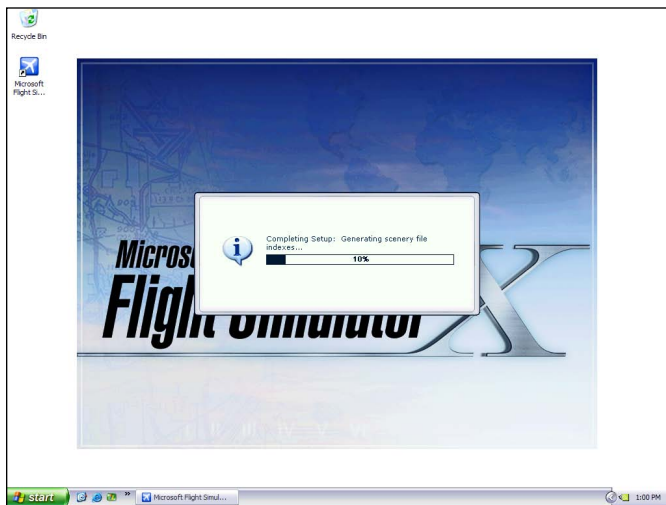


Figure 1-1: Even on a ripping-fast computer system, you'll see quite a bit of this progress bar as a flight loads.

the fun out of your virtual flying. We'll talk about customizing your performance settings and why you might want to do this later in this chapter (see "Getting the Right Hardware") and also in Appendix C.

Installing Flight Simulator (FSX) is rather painless, other than that it takes a long time. It also takes up almost 13GB of disk space. (That's not a typo. It's 13 not 1.3.) When you run FSX for the first time, it will take some additional time to configure itself. During this process, FSX will figure out the best display settings to give you a balance between visual performance—how smoothly the airplane appears to fly—and visual quality.

FSX does a pretty good job in striking the right balance, assuming your computer system is fairly high-end. That might be a big assumption, but the truth is if you want Flight Simulator to accurately represent a real-world airplane, you need to invest in a fairly decent system to run it. FSX will run on older systems, but the frustration of waiting for it to load (Figure 1-1) each time you want to fly and having a rather cartoonish-looking airplane might take much of

LOOKING AT WHAT'S NEW IN FSX



Figure 1-2: The view from the tower is new.

When FSX finishes all its start-up duties, you'll be at the Learning Center and the Getting Started page. The three huge buttons correspond to three promo movies, which are actually fun to watch if you have some time. One of these movies gives you a rundown of what's new in this version of Flight Simulator. We'll save you the trouble and let you know the key differences right here:

- The video quality of the world overall has increased immensely—if your computer is capable of showing it. FSX has a potential increase in scenery resolution 16 times that of Flight Simulator 2004. Figure 1-2 shows the amazing view from the tower.