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FOR PILOTS
Real World Training

Jeff Van West and Kevin Lane-Cummings

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

Jeff Van West and Kevin Lane-Cummings



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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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CONTENTS

ABOUT THE AUTHORS	iii
CREDITS	iv
ACKNOWLEDGMENTS	v

PART I: PREFLIGHT 1

INTRO: WHY USE FLIGHT SIMULATOR FOR REAL-WORLD FLYING? 3

WHY WE FLY	4
HOW TO USE THIS BOOK	4
PROCEDURE TRAINING VS. SCENARIO-BASED TRAINING	6
WHAT’S ON THE WEBSITE	6

CHAPTER 1: FLIGHT SCHOOL SETUP 9

INSTALLING FSX	10
LOOKING AT WHAT’S NEW IN FSX	10
GETTING THE RIGHT HARDWARE	11
PROCESSOR, MEMORY, VIDEO CARDS	12
MONITORS	13
FLIGHT CONTROLS AND HEADSETS	13
ADJUSTING PERFORMANCE SETTINGS	14
ORGANIZING YOUR COCKPIT	16
KEY FLIGHT SIM COMMANDS	17
USE OF SLEW FOR PRACTICE	19
USING THE FSX BUILT-IN FLIGHT LESSONS	19
SELECTING A REAL-WORLD FLIGHT SCHOOL	20
AIRCRAFT TYPES	20
ENVIRONMENT	20
INSTRUCTOR	21
COSTS	21
INTRODUCTORY FLIGHT	23

WORKING WITH YOUR FLIGHT INSTRUCTOR	23
FSX AS PART OF A LESSON	23
SHARED COCKPIT	24
USING THE PRACTICAL TEST STANDARDS	25
PLUGGING IN TO PILOT COMMUNITIES	26
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	28

CHAPTER 2: FIRST FLIGHT IN THE PIPER J-3 CUB

FLIGHT FUNDAMENTALS FOR THE PILOT	30
WE ALL HAVE OUR LIMITS	31
THE FOUR FUNDAMENTAL GAITS OF FLIGHT	32
VISUALIZE YOUR CONTROL SURFACES	33
TRIM	36
FIRST FLIGHT IN THE CUB	38
START THE ENGINE	40
TAXI	42
TAKEOFF	44
PRACTICE THE FIRST THREE GAITS AND TRIM	46
MAKE TURNS	47
THE TAIL'S BALANCING ACT	49
FLY ONCE AROUND THE LAKE	50
APPROACH THE AIRPORT	51
LAND	52
ROLLOUT	54
TAKEOFFS, LANDINGS, AND GO-AROUNDS	54
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	56

PART II: SPORT PILOT

CHAPTER 3: GROUND REFERENCE MANEUVERS

THE EFFECTS OF WIND	60
A RIVER OF AIR	60
HEADING, COURSE, AND TRACK	61
GROUND REFERENCE MANEUVERS WITH WIND	63
COORDINATED AND UNCOORDINATED FLIGHT	63

GROUND REFERENCE MANEUVERS FLIGHT	63
RECTANGULAR COURSE	65
TURNS AROUND A POINT	68
S-TURNS	70
STEEP TURNS	73
CROSSWIND TAKEOFFS	75
FORWARD SLIP	77
SIDESLIP AND CROSSWIND LANDINGS	80
RIDICULOUS WINDS	83
MAXIMUM DEMONSTRATED CROSSWIND	83
WORST CROSSWINDS—KONA, HAWAII	85
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	86

CHAPTER 4: AIRPORT OPERATIONS **87**

UNCONTROLLED AND CONTROLLED AIRPORT OPERATIONS	88
AIRPORT PROCEDURES	88
RADIO COMMUNICATIONS	95
OTHER AIRCRAFT	98
AIRPORT WEATHER AND NOTICES	99
POST MILLS TO LEBANON MUNICIPAL	102
STARTUP	103
TAXI AND TAKEOFF	104
APPROACH AND LANDING	105
DEPART FOR LEBANON	106
APPROACHING LEBANON	106
LAND AND TAXI	109
TAKE THE CUB TO BEANTOWN	109
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	113

CHAPTER 5: OLD-FASHIONED NAVIGATION **115**

PLANNING A TRIP	116
READING CHARTS	117
A ROUTE FROM A TO B	118
DEAD RECKONING	119
PILOTAGE	120
THE FSX FLIGHT PLANNER	121
HOW HIGH TO FLY	123
FLY LEFT, LOOK RIGHT	125

WHO OWNS THIS AIRSPACE?	125
MOVING LOADS, BURNING GAS	130
A MULTILEG FLIGHT USING PILOTAGE	132
TAKE OFF AND TURN SOUTH	132
SERIOUSLY DEAD RECKONING	139
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	141
<i>CHAPTER 6: EMERGENCIES</i>	<i>143</i>
IN-FLIGHT EMERGENCIES	144
IMMEDIATE-ACTION EMERGENCIES	145
URGENT SITUATIONS	148
EMERGENCY TRAINING	149
POWER-OFF DESCENT	150
RAPID DESCENT	153
ODDBALL EMERGENCIES	155
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	157
<i>CHAPTER 7: PERFORMANCE TAKEOFFS AND LANDINGS</i>	<i>159</i>
AERODYNAMICS OF PERFORMANCE	160
TAKEOFF AND LANDING CALCULATIONS	160
RATE AND ANGLE OF CLIMB AND DESCENT	162
SHORT-FIELD AND SOFT-FIELD PROCEDURES	163
SHORT RUNWAYS	164
SOFT RUNWAYS	167
OFF-AIRPORT OPERATIONS	170
YET ANOTHER RUNWAY SURFACE	171
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	172
<i>CHAPTER 8: SLOW FLIGHT, STALLS, AND SPINS</i>	<i>173</i>
TAKING IT SLOWLY	174
THE AERODYNAMICS OF SLOW FLIGHT	174
THE SEPARATION BEGINS	175
STALLS WITH A TWIST: SPINS	176
TAKING THE CUB FOR A SPIN	178
SLOW DOWN	178

X

POWER-OFF, OR ARRIVAL, STALLS	181
DEPARTURE, OR POWER-ON, STALLS	182
NOW FOR SOME SPIN	183
CATCHING THE BUS	186
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	187

PART III: PRIVATE PILOT **189**

CHAPTER 9: FIRST FLIGHT IN THE CESSNA 172SP **191**

TRANSITION TO THE CESSNA 172SP	192
MODERN AIRCRAFT INSTRUMENTS	194
THE FLAP ABOUT FLAPS	199
OTHER SYSTEM DIFFERENCES	201
CHECKOUT FLIGHT IN THE CESSNA 172SP	206
ENGINE START	207
RADIOS USE	207
TAXIING AND RUNUP	208
TAKEOFF AND CLIMB	209
BASIC MANEUVERS	210
APPROACH AND LANDING	214
ADVANCED MANEUVERS	215
PERFORMANCE TAKEOFFS AND LANDINGS	216
EMERGENCY PROCEDURES	217
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	220

CHAPTER 10: RADIO NAVIGATION WITH TRADITIONAL AVIONICS **221**

FOLLOW THE INVISIBLE ROAD	222
FINDING THE BEACON	222
FLYING A RADIAL	224
BUT HOW FAR AWAY ARE YOU?	232
FLYING WITH GPS	233
FLYING CROSS-COUNTRY WITH RADIO NAVIGATION	235
OFF YOU GO	237
THE FIRST TURN	238
NORTH TO DULUTH	239

GIVING GEORGE THE CONTROLS	239
DIRECT WITH GPS	242
GETTING UNLOST AND GOING ELSEWHERE	244
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	246
CHAPTER 11: FIRST FLIGHT WITH THE G1000	247
WELCOME TO THE AGE OF GLASS	248
A DISTRIBUTED SYSTEM	249
THE PRIMARY FLIGHT DISPLAY	249
THE RADIOS	256
THE MULTIFUNCTION FLIGHT DISPLAY	258
G1000 CROSS-COUNTRY	263
GETTING SET UP	263
TAKING OFF	266
STAYING ON TOP OF THINGS	267
USING VORs	268
TRY IT WITH A CROSSWIND	270
NO WIND VECTOR!?	270
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	271
CHAPTER 12: NIGHT FLIGHT	273
WHEN DARKNESS FALLS	274
VISION AND ILLUSIONS	274
NIGHT FLYING TECHNIQUES	278
LIGHTS	280
EMERGENCIES	284
NIGHT FLIGHT IN THE CESSNA 172SP	285
DEPARTURE	285
ON COURSE	287
ARRIVAL AT FLYING CLOUD	288
NIGHT FLIGHT IN THE G1000	289
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	290
CHAPTER 13: WEATHER	291
WEATHER THEORY AND DATA	292

WEATHER HAZARDS	292
WEATHER CONTROLS AND EFFECTS	297
THE JOY OF SCUD RUNNING	301
SCUD RUN IN CESSNA 172 WITH G1000	306
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	307

CHAPTER 14: MAXIMIZING PERFORMANCE **309**

QUICK, CLEAN, AND COOL	310
NO REPLACEMENT FOR DISPLACEMENT	310
A NEW, BLUE CONTROL	311
STUFF HANGING DOWN AND STICKING OUT	312
INTRODUCING FLIGHT PROFILES	314
FLY FAST IN A MOONEY	317
GETTING EVERYTHING IN POSITION	317
POURING ON THE COALS	319
CLIMB, CLEAN, COOL, COMMUNICATE	319
PICKING UP SPEED	321
COMING DOWNHILL	322
COMBINATIONS COUNT	322
GOING DOWN AND SLOWING DOWN	323
ARRIVING AT THE AIRPORT	324
APPROACHING FOR LANDING	324
LANDING	326
MOONEY UNDER GLASS	328
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	330

PART IV: INSTRUMENT RATING **331**

CHAPTER 15: BASIC ATTITUDE INSTRUMENT FLYING **333**

FLY IN THE CLOUDS	334
IFR GROUND CHECKS	334
THE IFR SCAN: ATTITUDE IS EVERYTHING	336
THE AUTOPILOT	338
IFR WEATHER	339
IMC FLIGHT IN MOONEY BRAVO	340

BASIC IFR MANEUVERS	342
ADVANCED IFR MANEUVERS	345
HEADING HOME	346
IFR FLIGHT WITH GARMIN G1000	347
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	349

CHAPTER 16: IFR FLIGHT **351**

FLIGHT PLAN CREATION	352
ATC AND FLIGHT PLANS	352
INSTRUMENT CHARTS	354
DEPARTURE PROCEDURES	355
EN ROUTE OPERATIONS	360
ARRIVAL PROCEDURES	369
IFR FLIGHT TO A VISUAL APPROACH	370
PREFLIGHT	371
FLIGHT	374
DEPARTURES, HOLDS, AND ARRIVALS	378
FLIGHT PLAN	378
DEPARTURE	380
HOLD (NO WIND)	381
HOLD (WIND)	383
ARRIVAL	384
GARMIN G1000	385
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	386

CHAPTER 17: INSTRUMENT APPROACHES **387**

THE FINAL MILES BETWEEN HEAVEN AND EARTH	388
THE INSTRUMENT APPROACH PLATE	388
VOR APPROACHES	390
LOCALIZER APPROACHES	403
THE BIG KAHUNA: ILS APPROACHES	407
DOWN THROUGH THE MUCK: FLYING APPROACHES	409
A VOR AT KPAE	409
A LOC AT KAWO	423
AN ILS AT KPAE	429
STRING PAE AWO BFI TOGETHER	436
DO IT WITH WIND	437

KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	439
--	-----

CHAPTER 18: GPS APPROACHES **441**

NO GROUND STATION NEEDED	442
A BASIC GPS APPROACH	442
OVERLAY APPROACHES	444
RNAV APPROACHES	446
GPS SENSITIVITY	449
USING THE GPS	450
FLY SOME GPS WITH A SIX-PACK	455
KSHN GPS Rwy 23	455
RNAV Rwy 34 APPROACH AT KFHR	471
THE VOR OR GPS Rwy 6 AT KHQM	480
INSTRUMENT APPROACHES ON THE G1000	489
GPS Rwy 1 AT KPWT	490
ILS 17 AT KTIW	498
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	503

CHAPTER 19: ADDITIONAL INSTRUMENT APPROACHES **505**

MORE WAYS TO GET AROUND AND DOWN	506
NDB APPROACHES	506
DME ARCS	509
LOCALIZER BACK-COURSE APPROACHES	512
VISUAL AND CONTACT APPROACHES	518
CIRCLE TO LAND	523
MULTIPLE APPROACHES—CALM WIND	526
AN NDB AT KTIW	527
A DME ARC AT KOLM	531
A BACK COURSE AT KSLE	533
A CONTACT APPROACH AT KBFI	535
MULTIPLE APPROACHES—WITH WIND	537
NDB APPROACH WITH WIND	537
DME ARC WITH WIND	538
LOC BC APPROACH WITH WIND	539
COMBO WITH A SIDE OF WIND	539
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	541

CHAPTER 20: IFR EMERGENCIES **543**

IFR EMERGENCIES IN THEORY	544
PARTIAL-PANEL FLYING	544
OTHER IMC EMERGENCIES	551
RECOVERY FROM UNUSUAL ATTITUDES	555
LOST COMMUNICATION	557
IFR EMERGENCIES IN PRACTICE	562
PARTIAL PANEL	562
ELECTRICAL FAILURE	563
UNUSUAL ATTITUDE RECOVERY	564
UNEXPECTED EMERGENCIES	565
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	567

PART V: COMMERCIAL LICENSE **569**

CHAPTER 21: MULTIENGINE FLYING IN THE BEECHCRAFT BARON **571**

FLYING MULTIENGINE AIRPLANES	572
REDLINE AND BLUELINE	572
SOME OTHER BARON POINTS	574
GETTING UP TO SPEED IN THE BARON	577
TAXI THE TWIN	579
A LEAN MACHINE	580
THE TAKEOFF BRIEFING	581
PATIENCE, PATIENCE	581
FLIGHT PROFILES FOR THE BARON	582
BARON ON THE GAUGES	587
DOING PERFORMANCE TAKEOFFS AND LANDINGS	591
WHAT MAKES THE FIELD SHORT?	592
CROSSWIND APPROACHES	594
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	596

CHAPTER 22: COMMERCIAL FLIGHT MANEUVERS **597**

LOADING AND PERFORMANCE	598
WEIGHT	598

CG AND AIRCRAFT PERFORMANCE	600
FLIGHT MANEUVERS—EIGHTS ON PYLONS	603
COMMERCIAL FLIGHT MANEUVERS	605
STEEP TURNS	606
SLOW FLIGHT AND STALLS	607
WEIGHT AND BALANCE FLIGHT TESTING	607
SINGLE ENGINE-ONLY MANEUVERS	609
STEEP SPIRAL	609
EMERGENCY APPROACH AND LANDING	610
CHANDELLES	611
LAZY EIGHTS	613
EIGHTS ON PYLONS	615
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	616
 <i>CHAPTER 23: FLYING WITH ONE FEATHERED</i>	 <i>617</i>
ONE ENGINE DOWN	618
SINGLE-ENGINE AERODYNAMICS	618
ENGINE-OUT PROCEDURES	624
SINGLE-ENGINE APPROACHES AND LANDINGS	627
WHAT'S HAPPENING HERE?	627
SINGLE-ENGINE ILS	633
SINGLE-ENGINE GPS APPROACH	634
SINGLE-ENGINE CROSSWIND LANDINGS	635
ADDITIONAL SINGLE-ENGINE WORK	636
ENGINE FAILURE ON TAKEOFF	636
V _{MC} DEMO	638
DRAG DEMO	639
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	641

PART VI: ATP AND BEYOND ***643***

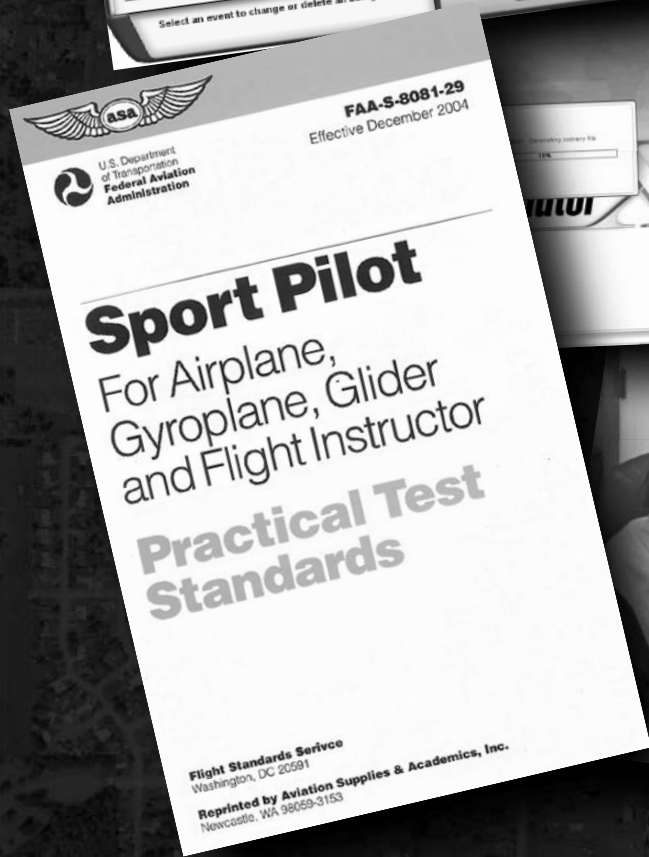
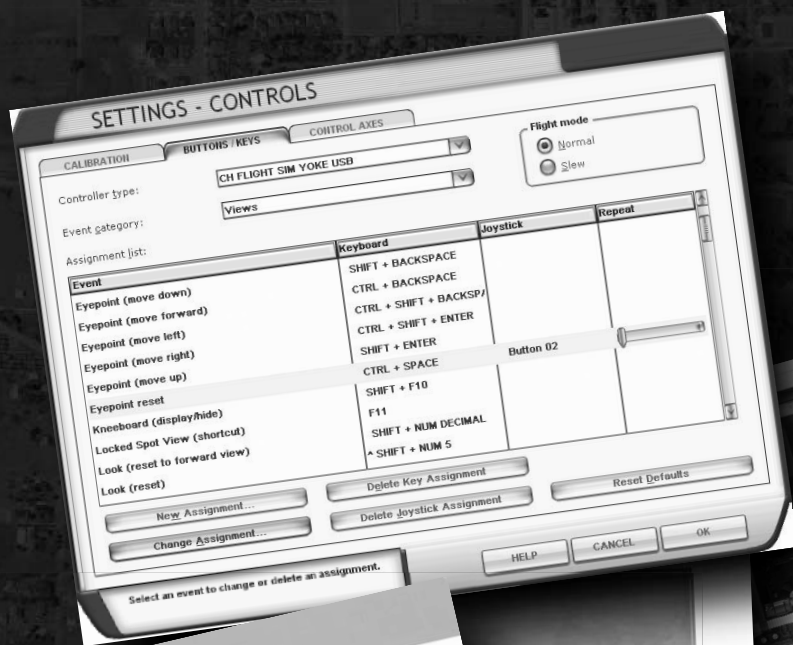
CHAPTER 24: MULTIPLAYER ***645***

SHARING THE VIRTUAL SKIES	646
HOW MULTIPLAYER WORKS	646
GETTING INTO MULTIPLAYER	647

HOSTING A MULTIPLAYER SESSION	649
SETTING UP SHARED AIRCRAFT	653
JOINING A MULTIPLAYER SESSION	654
PLAYING WELL WITH OTHERS	657
LET'S CHAT	658
RADIO CHATTER	658
FLYING WITH OTHER AIRPLANES	661
FLYING WITH ANOTHER PILOT	662
CLIMBING INTO THE TOWER	665
YOUR WORLD, THEIR WORLD	669
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	670
<i>CHAPTER 25: VIRTUAL AIRLINES AND ONLINE FLYING</i>	<i>671</i>
VIRTUAL AIRLINES	672
FINDING A VIRTUAL AIRLINE	673
HUBS AND PILOT BASES	674
MOVING UP THE RANKS	674
MULTIPLAYER	675
ONLINE FLYING	676
STARTING OUT	677
COMMUNICATION	678
TRAINING AND EXPERIENCE	679
REAL (VIRTUAL) CONTROLLERS	680
EVENTS	684
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	685
<i>CHAPTER 26: VIRTUAL AIR TRAFFIC CONTROL</i>	<i>687</i>
PUSHING TIN	688
SOFTWARE REQUIREMENTS	689
BECOMING A CONTROLLER	690
THE RADAR SCREEN	691
COMMUNICATION	695
WORKING WITH OTHER CONTROLLERS	696
ATC POSITIONS FROM THE GROUND UP	698
CLEARANCE DELIVERY	698
GROUND CONTROL	700
TOWER (LOCAL) CONTROL	701
APPROACH (AND DEPARTURE) CONTROL	704

EN ROUTE (CENTER) CONTROL	706
KEY POINTS FOR REAL FLYING AND FSX BUILT-INS	708
CHAPTER 27: CONCLUSION	709
PELICAN’S PERSPECTIVE	710
INDEX	711

PREFLIGHT



CONTENTS



INTRO PAGE 3

WHY USE FLIGHT SIMULATOR FOR
REAL-WORLD TRAINING?

CHAPTER 1 PAGE 9

FLIGHT SCHOOL SETUP

CHAPTER 2 PAGE 29

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 PLAN-
NING, 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

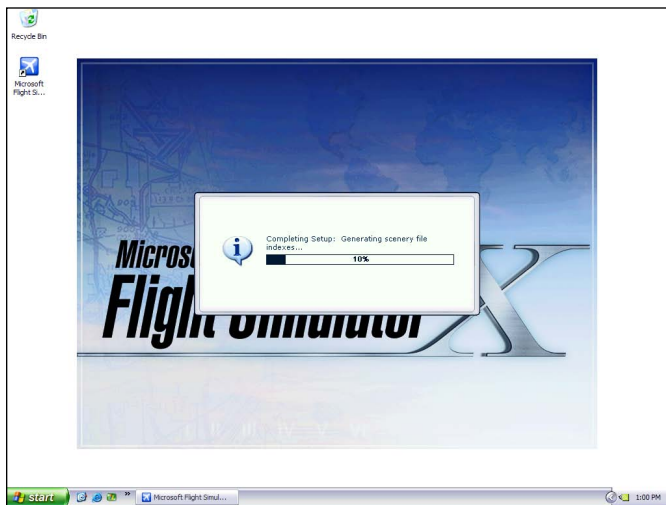


Figure 1-1: Even on a ripping-fast computer system, you'll see quite a bit of this progress bar as a flight loads.

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.