Using PC-Based Flight Simulations Based on FAA-Industry Training Standards

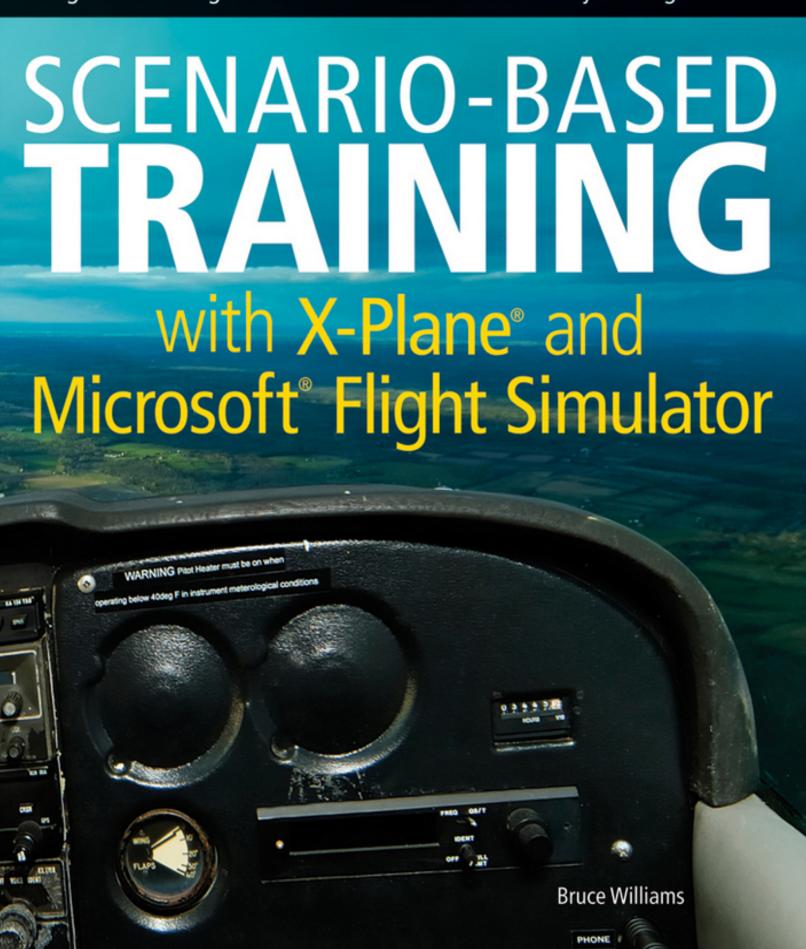


Table of Contents

Cover

Part I: Before You Take Off

<u>Chapter 1: What You Need to Use This</u> <u>Book</u>

Supported Flight Simulations
Computer and Accessories
Additional Software and Web Access
Glass Cockpits and Flying RNAV (GPS)
Procedures
Virtual Flying with Others

<u>Chapter 2: Essential Resources on the Website</u>

Additional Resources for X-Plane and FSX
Scenarios
Resources for Further Learning
Charts

<u>Chapter 3: Using PC-Based</u> <u>Simulations Effectively</u>

<u>The Great Debate</u> <u>Simulators, FTDs, and Simulations</u> <u>The Deeper Distinction</u> Where X-Plane and FSX Fit In
ATD Instructional Features
Flight Dynamics
The Consensus
Echoes of Long-Running Disputes
Limitations of Training Devices
Logging Simulation Time
Other Uses for PC-Based Simulations
Summary

<u>Chapter 4: Scenario-Based Training</u> <u>for Virtual Aviators</u>

Learning Like a Real Pilot

A Systematic Approach

Starting Over?

Learning to Fly

<u>Chapter 5: Choosing a PC-Based</u> <u>Simulation: X-Plane or FSX?</u>

Essential Features
Basic Decision Tree
Add-Ons
Cockpit Controls
Realism
Help and Support

Chapter 6: A Quick Guide to X-Plane

<u>Getting Help for X-Plane</u> <u>The Cessna 172 Cockpit in X-Plane</u> Important X-Plane Commands
Recording Flights in X-Plane
Instructor Operating Station

<u>Chapter 7: A Quick Guide to Microsoft</u> <u>Flight Simulator X</u>

Getting Help for FSX
The Cessna 172 Cockpit in FSX
Important FSX Menus
Recording Flights in FSX
Using the Shared Aircraft Feature

Part II: Getting the Most from X-Plane and FSX

<u>Chapter 8: Beyond the Basics:</u> <u>Additional Advice about Using</u> <u>Simulations Effectively</u>

Developing Situational Awareness
Using Other Airplane Types
Choosing Conventional Gauges or Glass
Adding Randomness
Using the Charts and Data
Simulating Air Traffic Control
Complementing Formal Training

<u>Chapter 9: Scenario-Based Training</u> and FITS The FITS Approach
Scenario-Based Training
PC-Based Simulations and SBT
Aeronautical Decision Making and Risk
Management
Learner-Centered Grading
Further Reading

<u>Chapter 10: Using the Scenarios in</u> This Book

Starting Points: Situations and Flights
Flying in the Pacific Northwest
Preparing for a Lesson
Installing the Scenarios
Installing the Situations for X-Plane
Installing the Flights for FSX
Naming Conventions

Part III: Flying Fundamentals

Chapter 11: Flying Fundamentals

Integrated Flight Instruction
Getting a Better View
The Golden Rule of Flying
The Four Fundamentals
Using the Trim Control
Using the Rudder

<u>Chapter 12: Flying the Cessna 172</u> <u>Skyhawk</u>

Skyhawk Tips from the AOPA ASI

Key Specifications

Cessna 172: Cockpit Tour

X-Plane Default Cockpit View

<u>Flying Tips</u>

Cessna 172 Performance Data

Part IV: Private Pilot Scenarios

<u>Chapter 13: Introduction to the</u> <u>Private Pilot Syllabus</u>

What Is a Private Pilot?

Basic Requirements

Essential References

<u>Three-Phase Private Pilot Syllabus</u>

<u>Chapter 14: Private Pilot Lesson 1:</u> <u>Introductory Flight</u>

Scenario

Objectives

<u>Completion Standards</u>

References and Resources

<u>Preflight Briefing</u>

Objectives and Desired Outcome Grading

Sheet

<u>Chapter 15: Private Pilot Lesson 2:</u> <u>Fundamental Flight Maneuvers</u>

Scenario

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 16: Private Pilot Lesson 3:</u> Ground Reference Maneuvers

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 17: Private Pilot Lesson 4: A</u> <u>Short Cross-Country Flight</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

<u>What-Ifs</u> <u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 18: Private Pilot Lesson 5:</u> <u>Another Short Cross-Country Flight</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u>
<u>Sheet</u>

<u>Chapter 19: Private Pilot Lesson 6: A</u> <u>Trip to a Fly-In Breakfast</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 20: Private Pilot Lesson 7:</u> <u>Ground Reference Maneuvers</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 21: Private Pilot Lesson 8:</u> <u>Evening Flight</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 22: Private Pilot Lesson 9:</u> <u>Charity Flight</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 23: Private Pilot Lesson 10:</u> <u>Crosswind Landings</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 24: Private Pilot Lesson 11:</u> <u>Preparation for Solo Flight</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 25: Private Pilot Lesson 12:</u> <u>First Solo Flight</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

<u>What-Ifs</u> <u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 26: Private Pilot Lesson 13:</u> <u>Review of Basic Maneuvers</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 27: Private Pilot Lesson 14:</u> <u>Progress Assessment: Stage Check</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 28: Private Pilot Lesson 15:</u> <u>Soft-Field Landings</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 29: Private Pilot Lesson 16: VOR Navigation</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 30: Private Pilot Lesson 17:</u> <u>Maximum Performance Takeoffs and Landings</u>

Scenario

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 31: Private Pilot Lesson 18:</u> <u>Flight in Marginal Weather</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 32: Private Pilot Lesson 19:</u> <u>Solo Practice Flight</u>

<u>Scenario</u>

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 33: Private Pilot Lesson 20:</u> <u>Long Cross-Country Flight</u>

<u>Scenario</u> <u>Objectives</u> <u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 34: Private Pilot Lesson 21:</u> <u>Cross-Country Night Flight</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 35: Private Pilot Lesson 22:</u> <u>Flight Planning and Navigation</u> <u>Practice</u>

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

<u>References and Resources</u>

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u>
Sheet

<u>Chapter 36: Private Pilot Lesson 23:</u> <u>Night Cross-Country Flight</u>

Scenario

Objectives

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 37: Private Pilot Lesson 24:</u> <u>Night Freight Run</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 38: Private Pilot Lesson 25:</u> <u>Cross-Country Flight in Marginal VFR</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

<u>What-Ifs</u> <u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 39: Private Pilot Lesson 26:</u> <u>Cross-Country Flight: Progress Check</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u>
<u>Sheet</u>

<u>Chapter 40: Private Pilot Lesson 27:</u> <u>Long Solo Cross-Country Flight</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 41: Private Pilot Lesson 28:</u> <u>Preparation for the Practical Test</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 42: Private Pilot Lesson 29:</u> <u>Further Preparation for the Practical</u> <u>Test</u>

Objectives

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 43: Private Pilot Lesson 30:</u> The Private Pilot Practical Test

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u>
Sheet

Part V: Instrument Rating Scenarios

<u>Chapter 44: Introduction to the</u>
<u>Instrument Rating Syllabus:</u>
<u>Background and Resources for IFR</u>
<u>Lessons</u>

<u>What Is an Instrument Rating?</u>

Basic Requirements

Essential References

Resources from the AOPA Air Safety

Institute

IFR Charts

Important X-Plane Limitations

Important FSX Limitations

<u>RNAV (GPS) Approaches</u>

Current Approach Information

The IFR Syllabus

<u>Chapter 45: IFR Lesson 1: Basic</u> <u>Attitude Instrument Flying</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 46: IFR Lesson 2: Basic</u> <u>Attitude Instrument Flying</u>

Scenario

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 47: IFR Lesson 3: Partial-</u> <u>Panel Flight</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

Chapter 48: IFR Lesson 4: Partial- Panel Instrument Flight

<u>Scenario</u> <u>Objectives</u> <u>Completion Standards</u>
<u>References and Resources</u>
<u>Preflight Briefing</u>
<u>What-Ifs</u>
<u>Objectives and Desired Outcome Grading</u>

<u>Chapter 49: IFR Lesson 5: Holding</u> Procedures

Scenario

Sheet

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 50: IFR Lesson 6:</u> <u>Non- Precision Approach</u>

Scenario

<u>Objectives</u>

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

| Cha | apter 51: | : IFR Le | <u>sson 7:</u> | <u>IFR</u> |
|-----|--------------|----------|----------------|-----------------|
| | - | | | <u>Approach</u> |

Scenario

Objectives

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 52: IFR Lesson 8: ILS</u> <u>Approach</u>

Scenario

Objectives

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 53: IFR Lesson 9: IFR Cross-</u> <u>Country</u>

Scenario

DME Arcs

Automatic Direction Finder (ADF)

Objectives

Completion Standards

<u>References and Resources</u>
<u>Preflight Briefing</u>
<u>What-Ifs</u>
<u>Objectives and Desired Outcome Grading</u>
Sheet

<u>Chapter 54: IFR Lesson 10: IFR Cross-</u> <u>Country</u>

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 55: IFR Lesson 11: IFR</u> <u>Cross- Country and Equipment</u> <u>Malfunctions</u>

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u>
<u>Sheet</u>

<u>Chapter 56: IFR Lesson 12: IFR</u> <u>Cross- Country and Off- Airway</u> <u>Routes</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 57: IFR Lesson 13: Long IFR</u> <u>Cross- Country</u>

Scenario

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> <u>Sheet</u>

<u>Chapter 58: IFR Lesson 14: Night IFR</u> <u>Flight</u>

Scenario

Objectives

Completion Standards

References and Resources
Preflight Briefing
What-Ifs
Objectives and Desired Outcome Grading

<u>Chapter 59: IFR Lesson 15: Night</u> <u>Approaches</u>

Scenario

Sheet

<u>Objectives</u>

<u>Completion Standards</u>

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 60: IFR Lesson 16: Practical</u> <u>Test Preparation</u>

<u>Objectives</u>

Completion Standards

References and Resources

<u>Preflight Briefing</u>

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 61: IFR Lesson 17: Practical</u> <u>Test Preparation</u> **Scenario**

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

<u>Chapter 62: IFR Lesson 18: IFR</u> <u>Practical Test</u>

Scenario

Objectives

Completion Standards

References and Resources

Preflight Briefing

What-Ifs

<u>Objectives and Desired Outcome Grading</u> Sheet

Chapter 63

<u>Chapter 63: Introduction to the</u> <u>Advanced Scenarios: Test Your Skills</u>

<u>Useful References</u> <u>Flying Tips</u>

<u>Chapter 64: Advanced 1:</u> <u>Eugene, OR, to Olympia, WA</u> <u>Charts and Information</u> <u>Preflight Briefing</u> <u>What-Ifs</u>

<u>Chapter 65: Advanced 2: Night Flight:</u> <u>Spokane, WA, to Walla Walla, WA</u>

<u>Charts and Information</u> <u>Preflight Briefing</u> What-Ifs

<u>Chapter 66: Advanced 3: Boise, ID, to</u> <u>Redmond, OR</u>

<u>Charts and Information</u> <u>Preflight Briefing</u> <u>What-Ifs</u>

<u>Chapter 67: Advanced 4: Crossing the</u> <u>Cascades</u>

<u>Charts and Information</u> <u>Preflight Briefing</u> <u>What-Ifs</u>

<u>Chapter 68: Advanced 5: Medford,</u> <u>OR, to Astoria, OR</u>

<u>Charts and Information</u> <u>Preflight Briefing</u> <u>What-Ifs</u> <u>Glossary</u> <u>Copyright</u> <u>Introduction</u>

Part I: Before You Take Off

In This Part

Chapter 1: What You Need to Use This Book

Chapter 2: Essential Resources on the Website

Chapter 3: Using PC-Based Simulations Effectively

Chapter 4: Scenario-Based Training for Virtual Aviators

Chapter 5: Choosing a PC-Based Simulation: X-Plane or

FSX?

Chapter 6: A Quick Guide to X-Plane

Chapter 7: A Quick Guide to Microsoft Flight Simulator

X

Chapter 1

What You Need to Use This Book

If you're like most pilots, you enjoy gadgets — they're one of aviation's main attractions — and when you get serious about using a PC-based simulation to complement flight training or the hobby of virtual flying, it's tempting to set up an elaborate home cockpit.

But aside from the desire to learn and a commitment to work through the lessons in this book in a logical sequence, here's all you need to use this book effectively:

- X-Plane version 9 or Microsoft Flight Simulator X (FSX)
- A suitable computer with a single display, a basic joystick, and a mouse (a keyboard usually isn't required after you start the simulation); even a laptop can suffice (see Figure 1-1)
- Web access to download the scenarios and background reading for the lessons
- A PDF reader, such as the free Adobe Reader, to read the FAA training handbooks, view charts, and use other resources that complement this book

<u>Figure 1-1:</u> The minimum required setup for X-Plane or FSX: a laptop, mouse, and joystick



Cross-reference

For more information about using PC-based simulations in training, see Chapter 8.

Supported Flight Simulations

Pilots and flight simulation enthusiasts engage in passionate debates about the relative merits of X-Plane (see <u>Figure 1-2</u>) versus FSX (see <u>Figure 1-3</u>) — you'll find a chapter devoted to the subject later in this book — but either product can be equally effective when used properly as a training tool.

The scenarios in this book are based on preset initial conditions — location, time of day, weather, and so forth — stored in files that you can open in either X-Plane or FSX. You can find separate sets of these scenarios for each