

DPW Solutions

David's Flight Simulator – The Design



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Contents

Abbreviations.....	2
My Design	2
Introduction	2
Hardware	2
Monitors.....	2
PC's.....	2
Engravity MIP and Overhead Panels.....	2
Flight Illusion Gauges	3
Phidgets Interfaces	3
Software.....	3
Microsoft.....	3
Peter Dowson.....	3
Project Magenta.....	3
Others	3
High Level Drawing	4
The Details	5
FS PC-01	5
Wide Sever	5
VOX.....	5
TSR AutoBrake.....	5
Navigraph Charts.....	5
Navigraph FMS Data Manager	5
PFPX	5
TOPCAT	5
FS PC-02	6
FS PC-03	6
FS PC-04	6
FS PC-05	6
FS PC-06	6
FS PC-07	7
FS PC-08	7
Links	7

David's Flight Simulator – The Design

Abbreviations

PM	Project Magenta
MIP	Main Instrument Panel
ATC	Air Traffic Control
EICAS	Engine Indicating & Crew Alerting System

My Design

Introduction

This document is work in progress, just like the simulator.

I have had a great interest in flying from a very early age. I can remember watching model aeroplane displays and loving every minute of them. I later moved on to build and fly my own model helicopters. I even flew and owned a microlight.

As the cost of these hobbies kept increasing and my eye sight really was not helping with flying model helicopters, I looked in a different direction to continue my passion for flying.

My work in IT and electronics over the years has given me a good grounding for this project. This work has been on both large and small systems, from servers to networking; I started with Microsoft Flight Simulator 2000. I now run Microsoft FSX as the flight Simulator engine to my Flight Simulator.

I was looking for a cheap option, but the bug has hit me and the costs are going through the roof, however all my flying now costs me no more, apart from adding and expanding my cockpit.

My flight simulator has been built rather than designed. I am trying to base it on a Boeing 737NG. All my ideas have come from the Internet following what others have already done. There are several components that make up this flight simulator and there are also lots of help out on the Internet.

Hardware

Monitors

My simulator consists of 8 monitors ranging from a 32 to a 10 inch touch screen.

PC's

I have 7 PC's of varying ages and capabilities, the main PC is the most powerful as it drives the main visual displays and has to do all the computing. It also runs various additional add on programs. The other PC's are mainly as interfaces for other hardware and to provide the graphics to all the various other displays in the cockpit.

Engravity MIP and Overhead Panels

My panels have been purchased from Fly Engravity; these provide me with detailed structure for my cockpit.

Flight Illusion Gauges

For my MIP and Overhead panel I decided to purchase Flight Illusions gauges. These provide even more realism to my cockpit.

Phidgets Interfaces

Phidgets Interface boards were chosen to provide the interface between PM Systems - switches (rotary & toggle) and LED's for MIP and Overhead operation and lighting indicators.

Software

Microsoft

- Windows 7 64 bit
- Windows XP SP 2
- Microsoft Flight Simulator FSX

Peter Dowson

- FSUIPC
- WideFS

Project Magenta

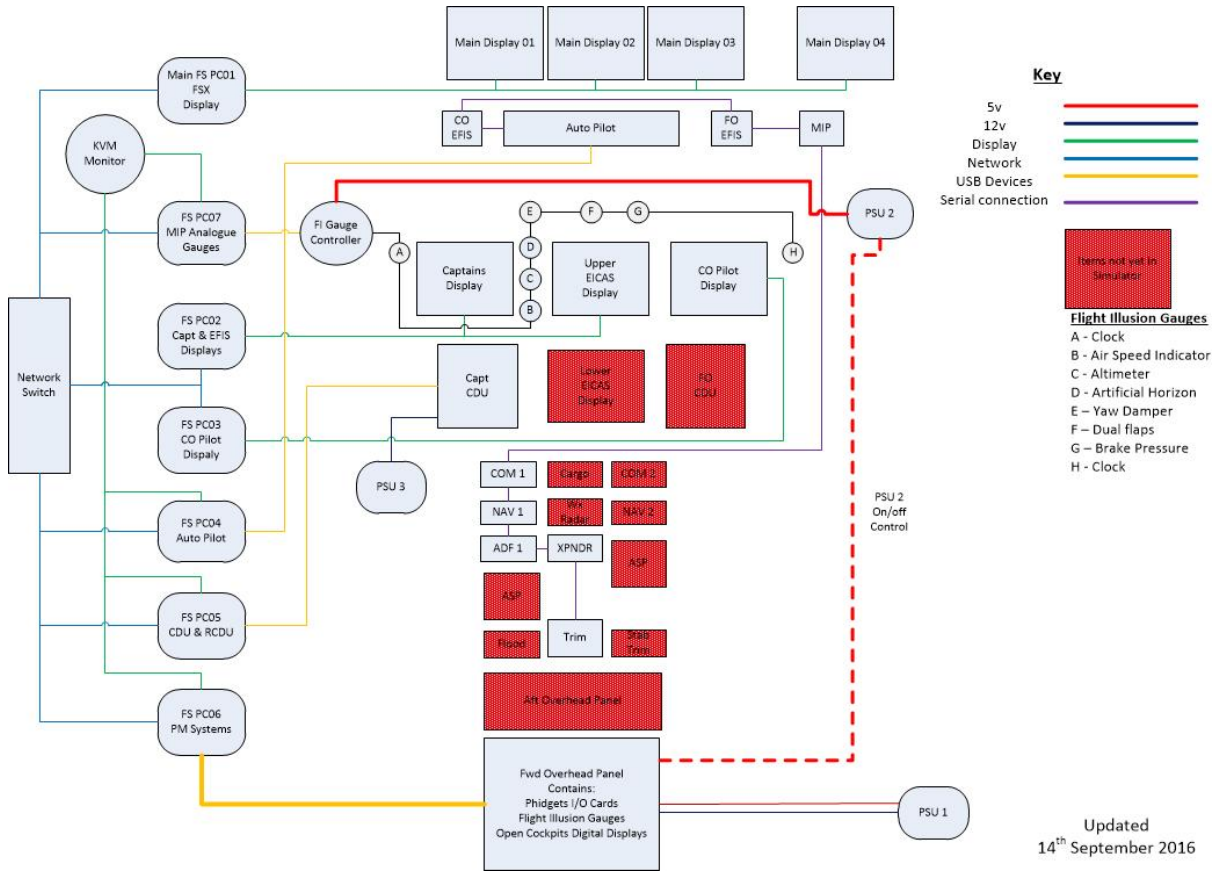
- GA – Class Boeing
 - GC
 - MCP
 - CDU
 - RCDU
- PM Systems
- PM Sounds
- PM Quick Map
- PM Get Weather

Others

- TSR –Autobrake
- RC Simulations - VOX

David's Flight Simulator – The Design

High Level Drawing



The Details

They say the devil is in the detail so here it is:

FS PC-01

PC-01 has a Quad core Intel processor with 8Gb Ram. Running Windows 7 64 bit SP1, with a 1Gb network connection.

This is the hub of the Simulator with FSX SP2 installed. This has FSUIPC 4 installed which is fully registered for FSUIPC and Wide Server 7, other software installed is VOX ATC Software and TSR AutoBrake.

There are 4 monitors attached, with 3 all configured as one for the cockpit window display and the other to display VOX, Charts or inflight procedure lists.

Other peripherals attached are:

Flight control joystick

Rudder pedals

Headset for Speech to ATC (VOX)

Wide Sever

Wide Server is the software interface which communicates with FSX and the other computers on the system over a TCP/IP network.

VOX

VOX is an ATC application which interacts with FSX and provides realistic communications between you in the cockpit and ATC as well as providing generated traffic.

TSR AutoBrake

TSR AutoBrake is a 3rd party application which controls the aircrafts braking on landing. There is a lot going on at this time and anything to help slowing you down is one less distraction.

Navigraph Charts

<https://www.navigraph.com/>

Navigraph FMS Data Manager

<https://www.navigraph.com/>

PFPX

<http://www.flightsimsoft.com/pfpx/>

TOPCAT

<http://www.flightsimsoft.com/topcat/>

David's Flight Simulator – The Design

FS PC-02

PC-02 has a dual core Intel processor with 4Gb Ram, Running Windows XP SP3, with a 1Gb network connection.

This PC just runs 2 instances of the PM Boeing GA Glass Cockpit for the Captains side display and Engine & Flight management systems (Upper EICAS) of the MIP.

These are being displayed on a 19 inch monitor for the Captains Displays, a 10 inch monitor for the Engine & Flight management system pages (EICAS).

FS PC-03

PC-03 is a single core Intel processor with 1Gb Ram, running Windows XP SP2 with a 1Gb network connection.

This PC just runs a single instance of the PM Boeing GA Glass Cockpit on a 19 inch monitor for the First Officers side of the MIP.

FS PC-04

FS PC 04 is a single core Intel processor with 1Gb Ram, running Windows XP SP2 with a 1Gb network connection. This has a USB connection to the CP Flight Auto Pilot and other CP Flight modules including the (Main Instrument Panel (MIP) board. Also installed is the CP Flight Test Software.

FS PC-05

PC-05 is a single core Intel processor with 1Gb Ram, running Windows XP SP2 with a 1Gb network connection. This has a USB Connection to a purpose built CDU. The CDU and RCDU if require can be displayed on the KVM monitor.

FS PC-06

PC-06 is a single core Intel processor with 1Gb Ram, running Windows XP SP2 with a 1Gb network connection.

This PC is dedicated to running software for controlling the Overhead Panel.

Installed hardware and software:

- PM Systems software
- Open cockpits SIOC software
- Phidgets interfaces cards
- Flight Illusion gauges
- Open Cockpits Hardware
 - USB Servo Card
 - USB Expansion
 - Main Board
 - 2 x Display Card
 - Elec Display
 - 2x 5 group 7 segment displays
 - Encoder Card

David's Flight Simulator – The Design

FS PC-07

Is running Flight Illusion software which interfaces with the MIP analogue gauges.

FS PC-08

PC-08 is an additional PC for running various pieces of software like PM WhazzUP (which injects Real World Weather into the PM Units).

This will also be used for any other additional utility that may be required.

Note:

All PC's are running Wide Client 7 to talk to the Wide Server running on FS PC01.

Links

Some useful links to other site:

- [Project Magenta](#)
- [Peter Dowson](#)
- [Flight Illusion](#)
- [Fly Engravity](#)
- [RC Simulations](#)
- [CP Flight](#)
- [FlightSimSoft](#)
- [Navigraph](#)
- [Opencockpits](#)