Project Plan
Super Synoptics

The Capstone Experience

Team GE Aviation

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Project Overview

• Super Synoptics will replace portions of the flight deck instrumentation with Synoptic displays.
• The goal is to reduce crew errors by simplifying the decision making process.
• The interface must be intuitive and creative; superior to current crew alerting systems.
• The system will present solutions and consequences to a given problem situation.
Functional Specifications

• “Synoptics Display” has 3 main windows: Navigation, System Details Page and Problem Alerting System window
• System will include input schemes that are reliable and easy to use in turbulence, etc.
• X-Plane Instructor station will be used, in addition to macros, to simulate the plane state, including failures and other problems
Design Specifications

• The System Details Pages will include intuitive widgets to present information, as opposed to current esoteric/specialized widgets.

• The System Details Pages will initially include a reduced set of instrumentation for clarity, with the ability to overlay specific details.

• The Synoptics Display will be navigated by an MP3-esque scheme for cleanliness.

• Instructor Station will simulate historic crew-error situations.
Screen Mockups

- 3 Windows
- Intuitive widgets
- Clean navigation
Technical Specifications

• The Synoptics Display GUI will be written in C++ with OpenGL.
• The GUI will use the libnUI library, taking advantage of CSS/XML for easy design
• The X-Plane Plugin will be written in C/C++ while building off past Capstones’ code
• The Communication between the 2 applications will be maintained through TCP packets
System Architecture

Model – View – Presenter Design Pattern

• Network interface to X-Plane
  • X-Plane plugin and client code
• Synoptics Display GUI
• Synoptics Logic
System Components

• Hardware Platforms
  ▪ Client and Server PCs

• Software Platforms / Technologies
  ▪ C++
  ▪ OpenGL
  ▪ libnUI
  ▪ X-Plane
Testing

• Usability testing
  ▪ Fresh eyes are important!
• Data synchronization
Risks

• Lack of X-Plane familiarity
  – Look at past Capstones

• Necessity to determine solutions to complex aviation problems (Lack of Aviation Knowledge)
  – Independent research and GE communication

• Pressure to improve on current crew alerting systems
  – Iterative approach to GUI design