CISC322/326 Assignment 1

HTTPS://YOUTU.BE/8OVKLMVOGWC

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Overview

Topics:

1. System Functionality and Interacting Parts
2. System Evolution
3. Data Flow and Control
4. Concurrency in System
5. Division of Responsibilities amongst developers

System Functionality

Simulation of Aircraft Flight

Replicate behaviour of aircraft

Uses various components and models to function

Evaluation of New Designs and Concepts

Simulate proposed changes and design concepts

Training Pilots

Realistic environment for training

Realtime Feedback and Experimentation

Visual and audio feedback

Gather data and perform experiments

System Evolution

Technological Advancements

Improve hardware and software

New features

New Aircraft Design Updates

Update aircraft models and properties

Improve training capabilities

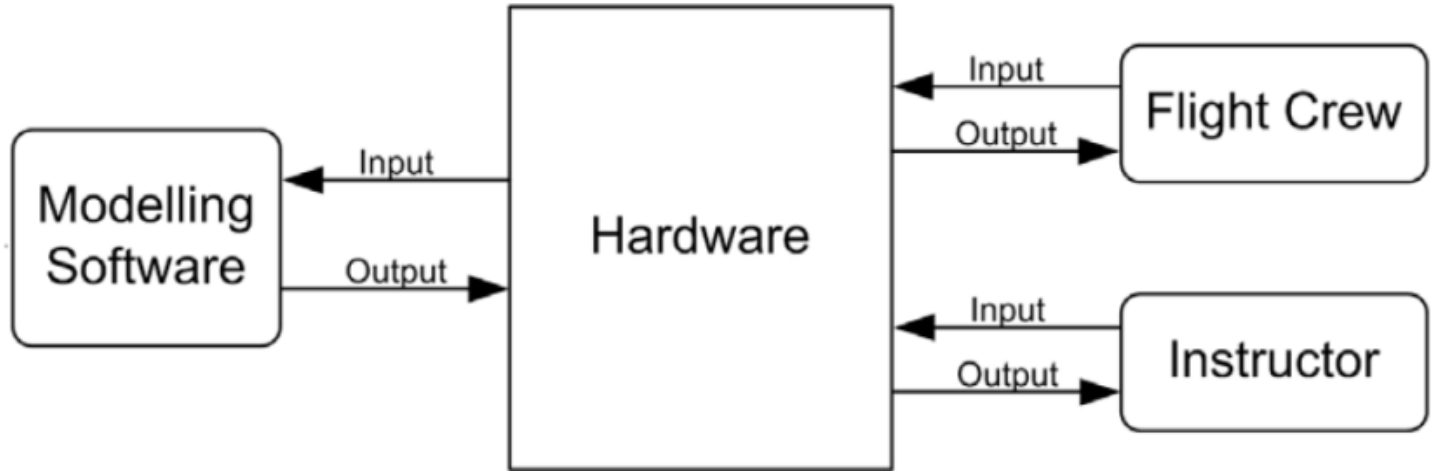
Enhancements to Realism

Improve visual, audio and motion systems

Better replicate flying sensations

Data Flow and Control

1. Input Processing
2. Simulation and Modelling
3. Output Generation



Data Flow and Control

1. Input Processing
   - Simulate aircraft behaviours
   - Mathematical models and algorithms
     - Control input
     - Environmental conditions
     - Aircraft configurations
2. Simulation and Modelling
3. Output Generation

Data Flow and Control

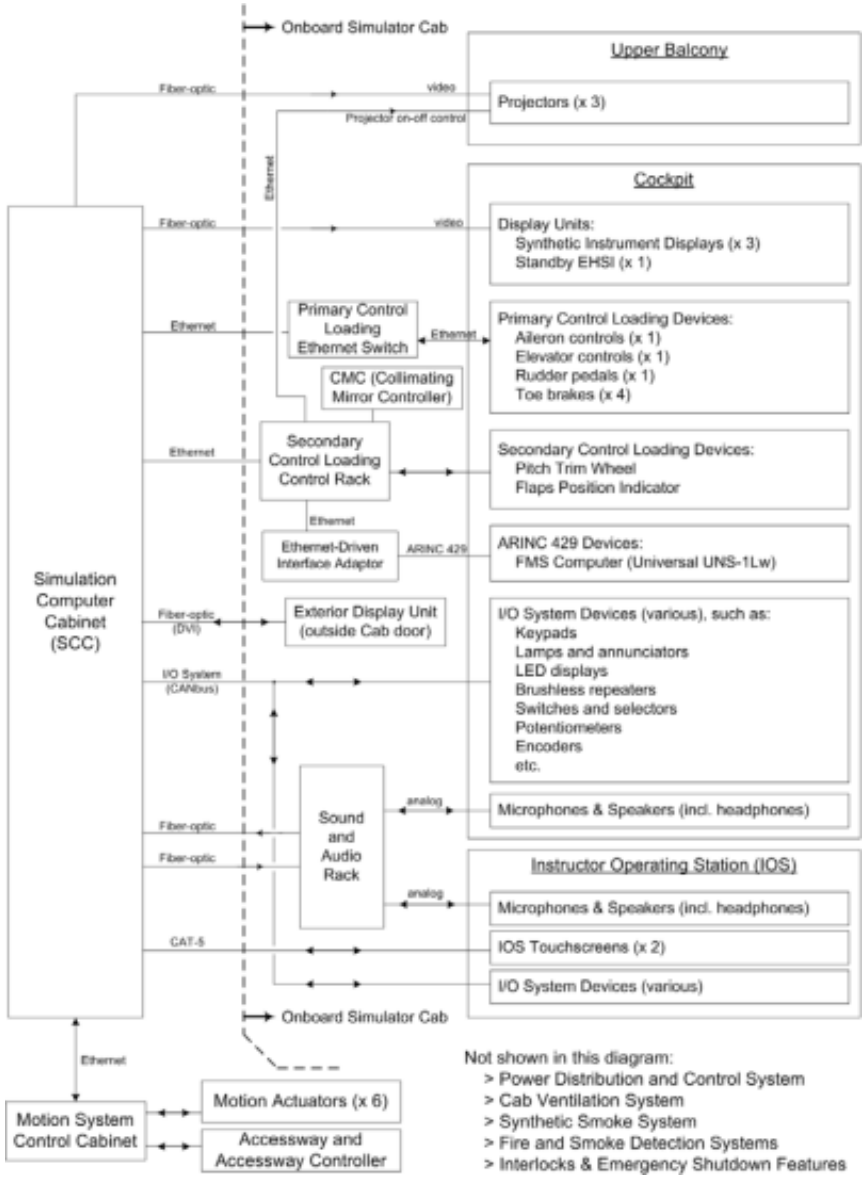
1. Input Processing
2. Simulation and Modelling
   - Execute Mathematical Models
     - Aerodynamics
     - Engine Dynamics
     - Weather Effects
     - System Behaviours
   - Generate Outputs
3. Output Generation

Data Flow and Control

1. Input Processing
2. Simulation and Modelling
3. Output Generation
   - Generate audio, visual and motion cues
     - Simulated Environments
     - Engine/Flight sounds
     - Flight Sensations
   - Coordinated and synchronized

Concurrency in System

1. Parallel Processing
2. Data Acquisition and Processing
3. Multithreading and Asynchronization



Concurrency in System

1. Parallel Processing
   - Simulation models and algorithms run concurrently
     - Aerodynamics
     - Engine Dynamics
     - Environmental Effects
   - Real-time simulation of flight scenarios
2. Data Acquisition and Processing
3. Multithreading and Asynchronization

Concurrency in System

1. Parallel Processing
2. Data Acquisition and Processing
   - Data processing and acquisition run concurrently
   - Generating constant outputs
     - Audio Systems
     - Visual Systems
     - Motion Systems
3. Multithreading and Asynchronization

Concurrency in System

1. Parallel Processing
2. Data Acquisition and Processing
3. Multithreading and Asynchronization
   - Facilitates concurrent mechanisms
   - Allows real-time data exchange between components
     - Visual systems
     - Simulation Computers
     - Audio Systems

Implications/Responsibilities for Developers

1. Maintaining key components
   - Aerodynamics model
   - Engine model
   - Weather model
   - Visual systems
   - Audio systems
   - Motion systems
2. Communication
   - Interactions between components

Summary and Conclusion