MICHIGAN STATE UNIVERSITY

Project Plan

BAPS 2: Battle Aircraft Position Share 2

The Capstone Experience

Team Boeing

Chris Heuser
Josh Theisen
Nick Palm
Devin Rosen

Department of Computer Science and Engineering
Michigan State University

Fall 2011

From Students…
…to Professionals

Project Overview

- Players compete in a 3D arena, seeking out and destroying opposing targets
- Consists of both real-time and turn-based play
- Based on cyber-warfare
- Players have the option of utilizing one of several cyber defense strategies
- A player wins the game by destroying all opposing targets
- Additional offline single player mode
- Played in a universal webapp

Functional Specifications

- Each player places “Technology Centers” throughout the arena which serve as targets for the opponent to locate and destroy
- Player chooses to be human or aircraft, each having different strengths/weaknesses
- Both turn-based and real-time:
  - Firing is turn-based
    - Each player has 30 seconds to fire on a target.
      - After 30 seconds, it becomes the opponent's turn to fire
      - A fire causes an immediate turn switch
  - All other functions are real time

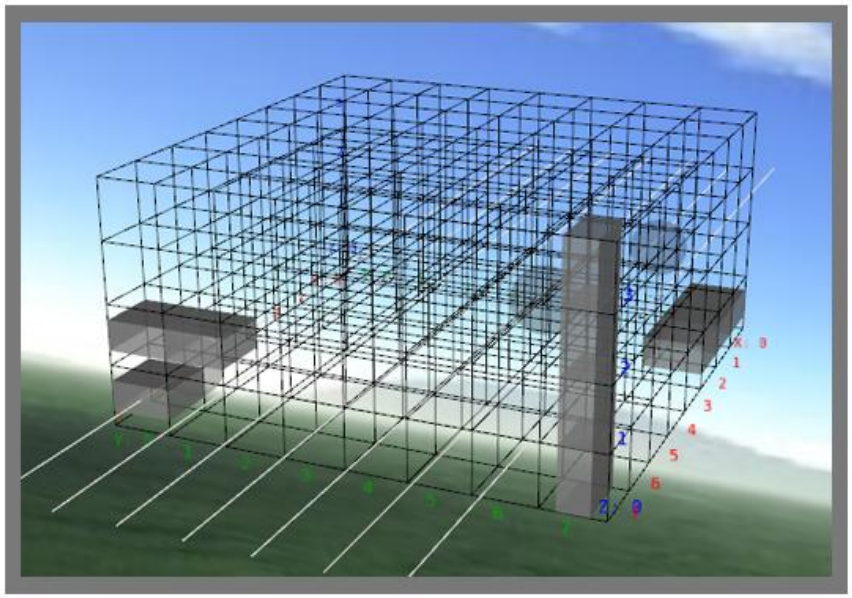
Functional Specifications

- Players that locate each other will be able to attempt to “hack” the opponent. This will bring up a “minigame” during which the player will attempt to execute a simulated “hack.” Victory in this minigame will disrupt the opponent’s information
- Players will also be able to choose between several “cyber protection plans” which will defend against certain types of cyber attacks, while leaving vulnerabilities to others.

Design Specifications

- The UI for BAPS2 will be universal across all devices
- This especially means that it will be both ergonomic and usable on mobile devices
- The Selection Screen will consist of two orthographic views of the 3D space
  - Top view
  - Side view (relative to player heading)
- After selecting a square, opening the Execution Screen will shift the screen to an isometric view of the entire cube
  - The selected square will be highlighted in the cube
  - The coordinates will be auto-filled in the coordinate boxes of each possible action
- On the selection screen, both player location and heading will be clearly displayed

Screen Mockups



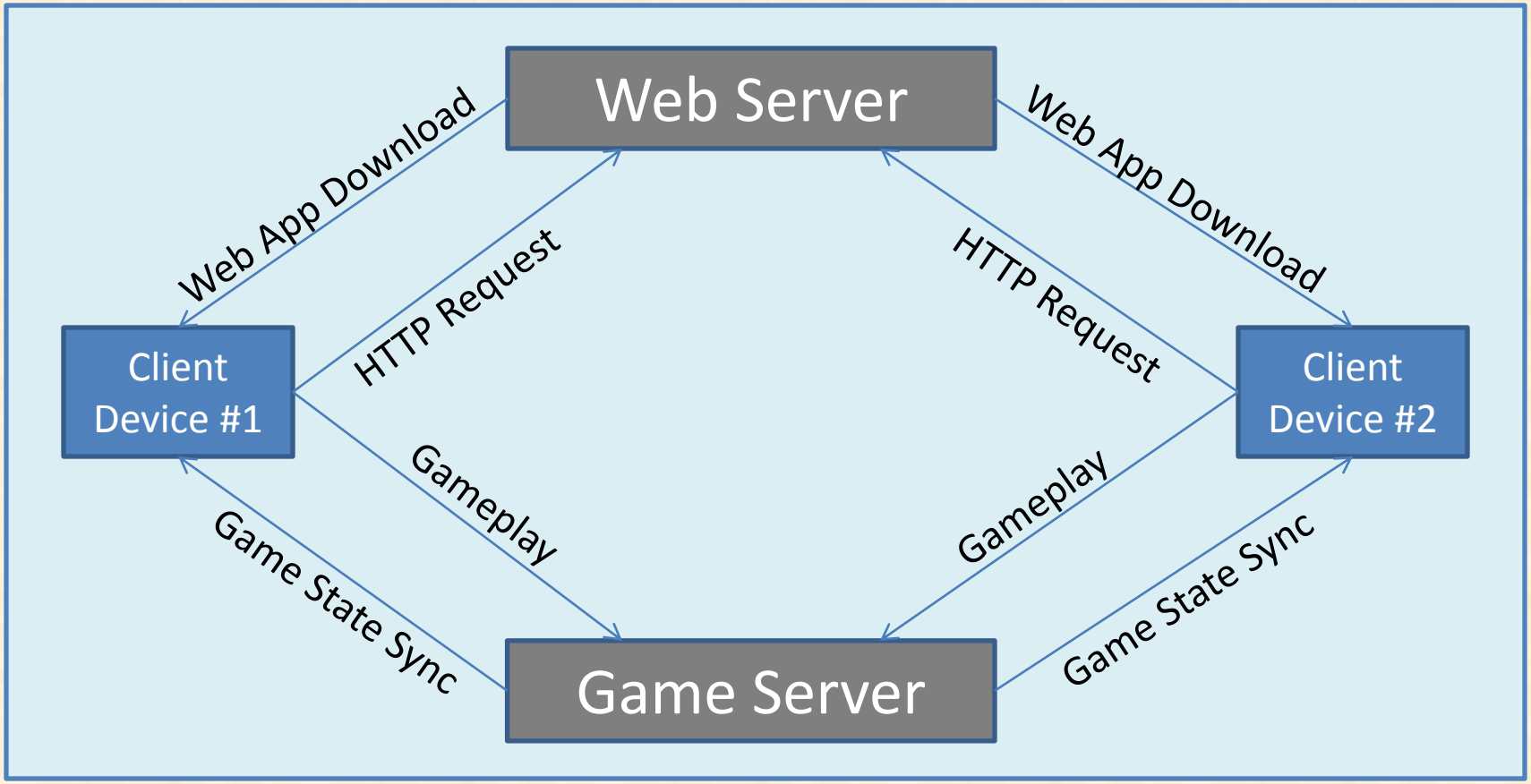
Remember

Heading

Look: UP DN MOVE

FIRE

System Architecture



Technical Specifications

- Implemented as a web app using HTML5, Javascript, and WebGL
- Client universal across desktop and mobile devices
- A central server will serve as a connection point between clients on mobile devices.
- Data connection between devices accomplished using TCP/IP
- All game data and information passed between clients and servers will be encrypted.
- Operable under any system with a suitably advanced browser.

System Components

- Hardware Platforms
  - Desktop
  - Mobile Devices
  - Central Server (rack-mounted)
- Software Platforms / Technologies
  - Operating Systems
    - Windows XP/7, Linux, OS X, iOS, Android
  - HTML5
  - Javascript
  - WebGL

Testing

- The software will be constantly operational.
- All additions will be incremental and functional.
  - This will allow testing of each new feature in a full production environment, as they are implemented.
- Specific areas of testing:
  - Usability on multiple devices
  - Stability of network communication
  - Security of Web App
  - Game flow
  - General Bug Testing

Risks

- HTML5/Javascript/WebGL development
- Ability to get web app to markets
- Cross platform usability
- Balancing product requirements while keeping the game fun
- Encryption in a webapp
- TCP/IP data flow