

MICHIGAN STATE  
UNIVERSITY

# Alpha Presentation

## BAPS: Battle Aircraft Position Share

### The Capstone Experience

Team Boeing

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*From Students...  
...to Professionals*

# Project Overview

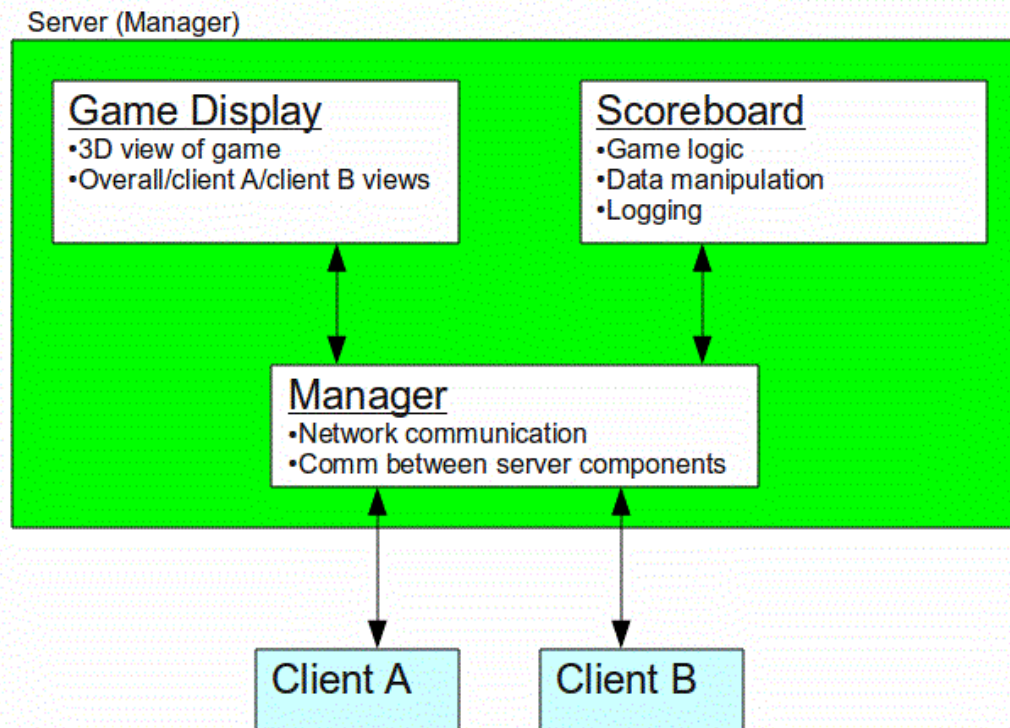
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- Client: Jayson T. Vincent in St. Louis, Missouri
- Combination of battleship, chess, and billiards
- Players use radar scans to find enemy targets
- Firing is turn-based
- Scanning and movement in real time
- Weather affects scanning
- Deal with information overload



# System Architecture

## Server Structure and Basic Communication

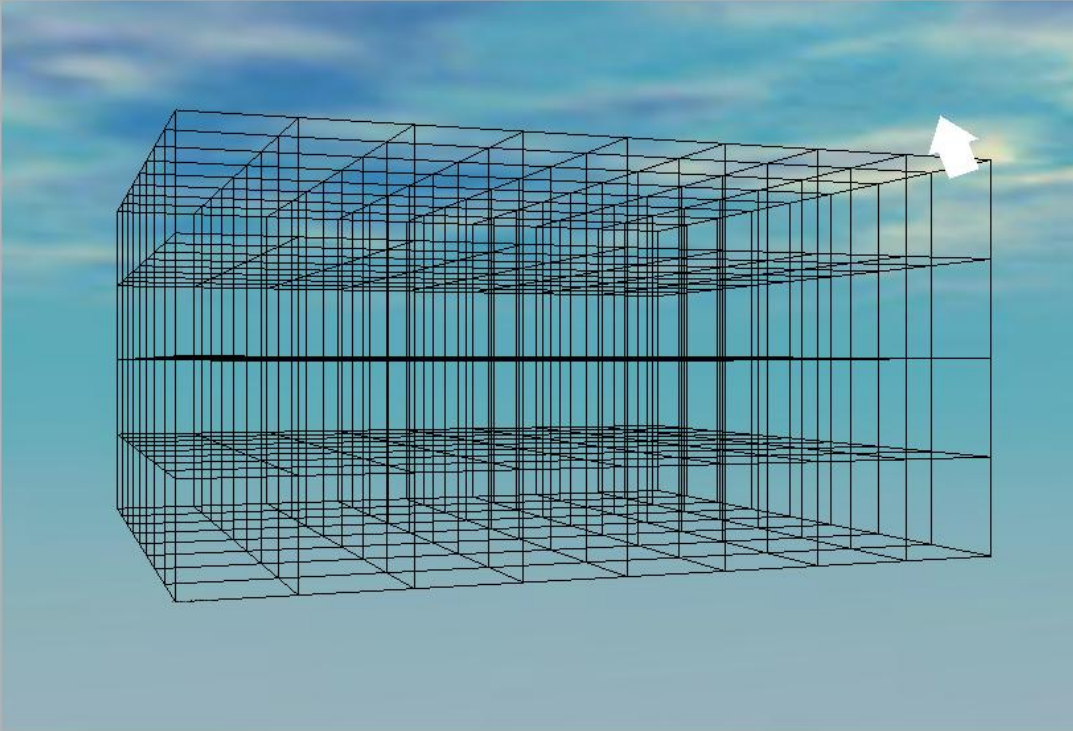


# Main Game Board View

Game Time: 1:27 18:32 Turn: Time Left: 0 Targets Hit: 1 Hits Taken: 1 Enemy Time Outs: 1 Time Outs Left: 1

**Transmitters**  
Human  
Eagle  
Cow  
Lion  
Reflector  
PoolShot  
BounceToYou

**Receivers**  
Amplifier  
Echo  
PoolBoard  
Geo  
Listener  
IHeardYou  
ISawYou



**TIME OUT**

SCAN

MOVE

**FIRE**

Highlight Cube [X, Y, Z]

Mark Scan Success [X, Y, Z]

Mark Scan Failure [X, Y, Z]



# Player Transmitters

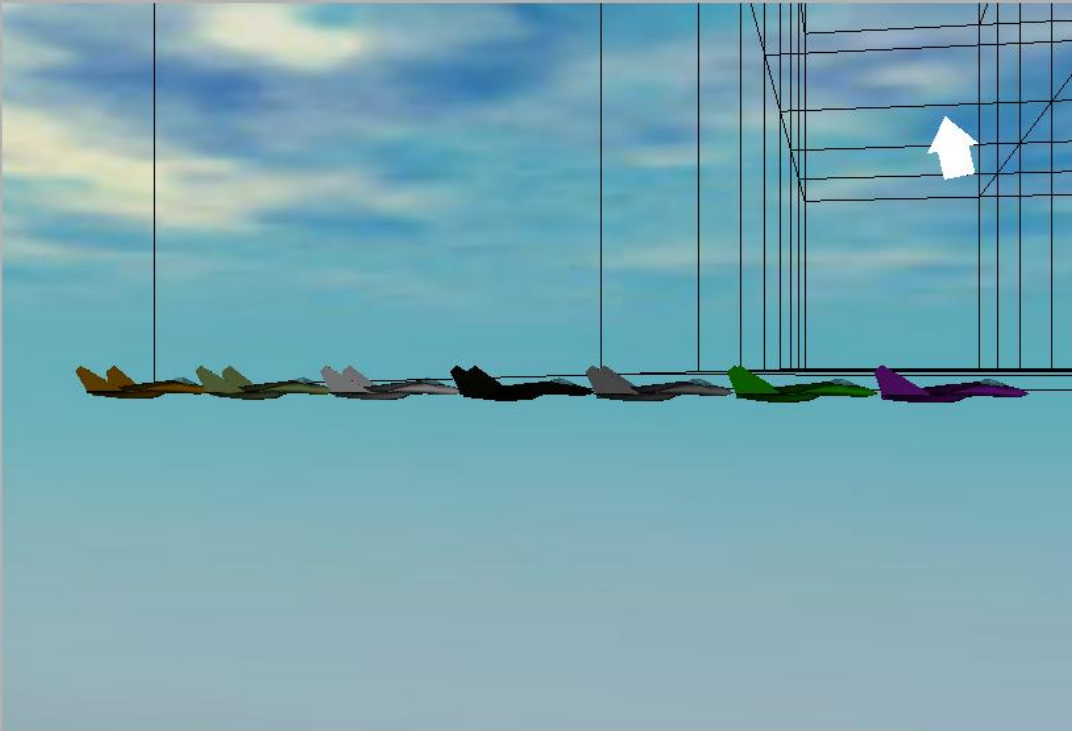
Game Time: 2:47 17:12 Turn: Time Left: 0 Targets Hit: 1 Hits Taken: 1 Enemy Time Outs: 1 Time Outs Left: 1

**Transmitters**

- Human
- Eagle
- Cow
- Lion
- Reflector
- PoolShot
- BounceToYou

**Receivers**

- Amplifier
- Echo
- PoolBoard
- Geo
- Listener
- IHeardYou
- ISawYou



**TIME OUT**

**SCAN**

**MOVE**

**FIRE**

**Highlight Cube** [X, Y, Z]

**Mark Scan Success** [X, Y, Z]

**Mark Scan Failure** [X, Y, Z]

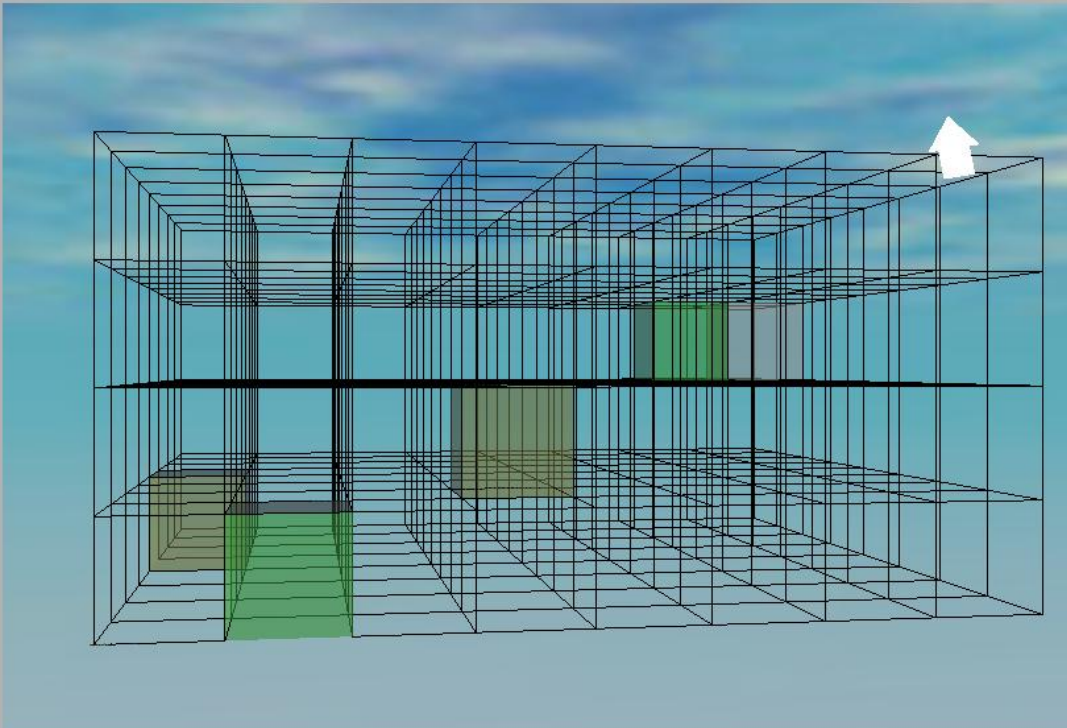


# Game Board Highlighting

Game Time: 31 / 19:28 Turn: Time Left: 0 Targets Hit: 1 Hits Taken: 1 Enemy Time Outs: 1 Time Outs Left: 1

**Transmitters**  
Human  
Eagle  
Cow  
Lion  
Reflector  
PoolShot  
BounceToYou

**Receivers**  
Amplifier  
Echo  
PoolBoard  
Geo  
Listener  
IHeardYou  
ISawYou



**TIME OUT**

SCAN

MOVE

**FIRE**

Highlight Cube (X, Y, Z)

Mark Scan Success (X, Y, Z)

Mark Scan Failure (X, Y, Z)

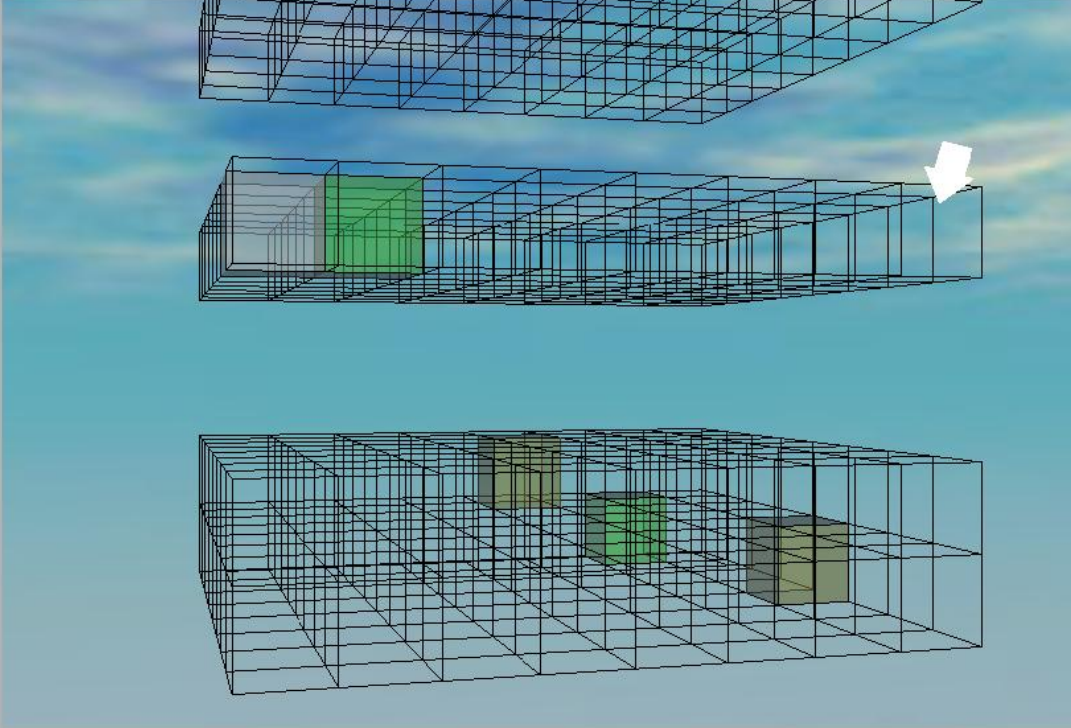


# Z-Level Separation

Game Time: 1:53 18:6 Turn:Time Left: 0 Targets Hit:1Hits Taken:1Enemy Time Outs:1Time Outs Left:1

**Transmitters**  
Human  
Eagle  
Cow  
Lion  
Reflector  
PoolShot  
BounceToYou

**Receivers**  
Amplifier  
Echo  
PoolBoard  
Geo  
Listener  
IHeardYou  
ISawYou



**TIME OUT**

SCAN

MOVE

**FIRE**

Highlight Cube (X,Y,Z)

Mark Scan Success (X,Y,Z)

Mark Scan Failure (X,Y,Z)



# Transmitter Mini-View

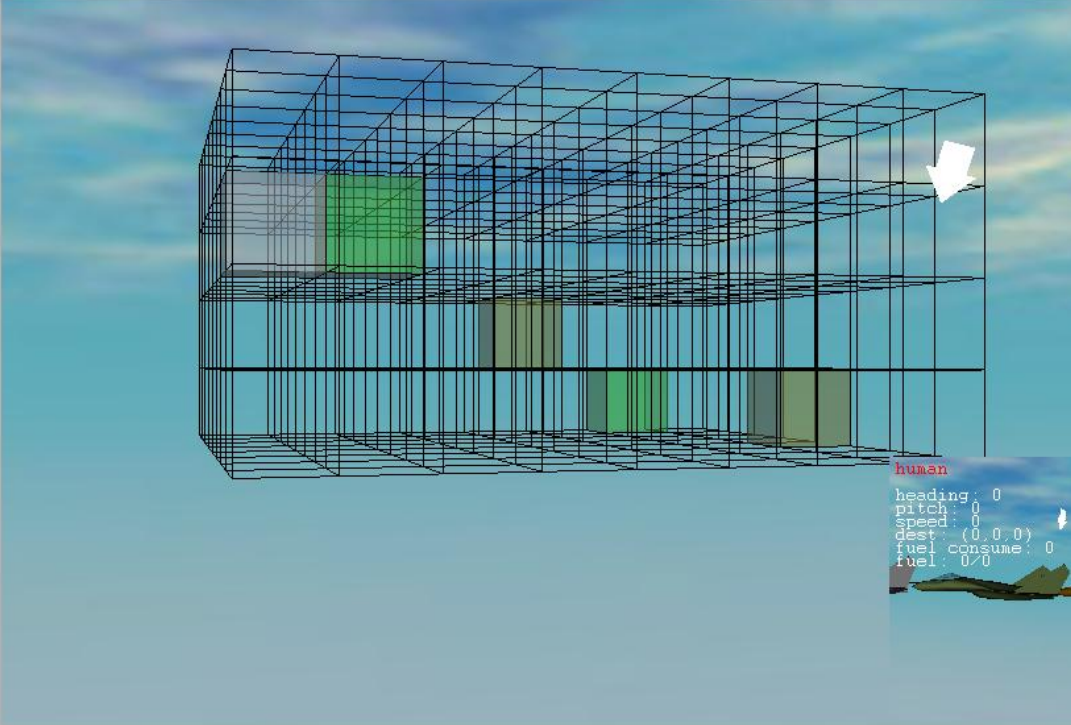
Game Time: 3:39 16:20 Turn: Time Left: 0 Targets Hit: 1 Hits Taken: 1 Enemy Time Outs: 1 Time Outs Left: 1

**Transmitters**

- Human
- Eagle
- Cow
- Lion
- Reflector
- PoolShot
- BounceToYou

**Receivers**

- Amplifier
- Echo
- PoolBoard
- Geo
- Listener
- IHeardYou
- ISawYou



```
human
heading: 0
pitch: 0
speed: 0
dest: (0,0,0)
fuel consume: 0
fuel: 0/0
```

**TIME OUT**

**SCAN**

**MOVE**

**FIRE**

**Highlight Cube** (X, Y, Z)

**Mark Scan Success** (X, Y, Z)

**Mark Scan Failure** (X, Y, Z)





# What's left to do?

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- Scanning
- More Views
- ECEF Coordinates
- Weather
- Encryption
- Multiple skyboxes
- Timeouts
- Scoreboard/Logging

