PARTIAL REPORT

an artillery game

by

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Objectives & Motivation

- **Objectives**
  - Create a Distributed Multiplayer Online Game
  - Design to be resistant against cheating scenarios
    - Moved to being successfully implemented

- **Motivation**
  - Gaming holds synchronization issues, communication, & game state consistency
  - Large amounts of research in trying to deal with these issues
Game Architecture

- Game State
- Controller
  - Ul
  - Coordinator
  - Server
Game Architecture

- **Game State**
- **Controller**
  - **Ui**
  - **Server**
  - **Coordinator**
Server

- Is responsible for Organizing games
- Bootstrapping Mechanism which is only used during the Organization phase of the game.
- Server passes an Initial GameState to each Client
- Used a central server approach:
  - To shorten the Game Organization phase
  - Avoid the complexity of Peer-to-Peer discovery
  - Bootstrapping is short
Game Architecture
Controller

- Model-View-Controller Architecture
- Facilitates Access to the GameState
- Moves the Client through the 3-Phases of the game:
  - Movement
  - Firing
  - Resolution
Game Architecture

Game State

Controller

UI

Server

Coordinator
Game State

- Represents all Data about the State of the Game know at a single Peer.

- Includes:
  - The location of all Teammates
  - All Players on Both Teams
  - A ShotHistory containing all Shots fired by Both Teams

- Accessible only through the Controller
Game Architecture

Game State

Controller

UI

Server

Coordinator
User Interface

- Provides the End-User a View of the current GameState:
  - Location of Friendly Tanks
  - Hit Locations of Friendly and Enemy Shots
  - Distance from Target for Friendly Shots
  - Score

- Allows the End-User to Manipulate the GameState by:
  - Moving
  - Firing
Game Architecture
Coordinator

- Hides the Distributed State from the Controller
- No one knows Everything
  - The Game State is Consistent across Team Boundaries
  - But each team’s view is different
Intra-Team Communication

Team A  |  Team B
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Firing and Movement messages
Inter-Team Communication

**Team A**

- Arrow 1: 3
- Arrow 2: 5
- Arrow 3: 3
- Arrow 4: 3
- Arrow 5: 5

**Team B**

- Arrow 1: 2
- Arrow 2: 3
- Arrow 3: 3
- Arrow 4: 5
- Arrow 5: 5

*Shot and Shot List messages*
The Game in Action
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Server Address: 127.0.0.1

Client Port: 7004

Handle: BillyJack

Server Port: 6009

Connect  Exit
Enemy Tank Was Killed Here
Possible Malicious Scenarios

- A player can report false information to others.
  - False move information
  - False shot information
- Sending multiple Shots
- Incorrect processing/reporting of ShotList.
- Impersonating another player
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