Exploding Kittens

A Distributed Multi-Agent Card Game

Final Project for Distributed Systems Course

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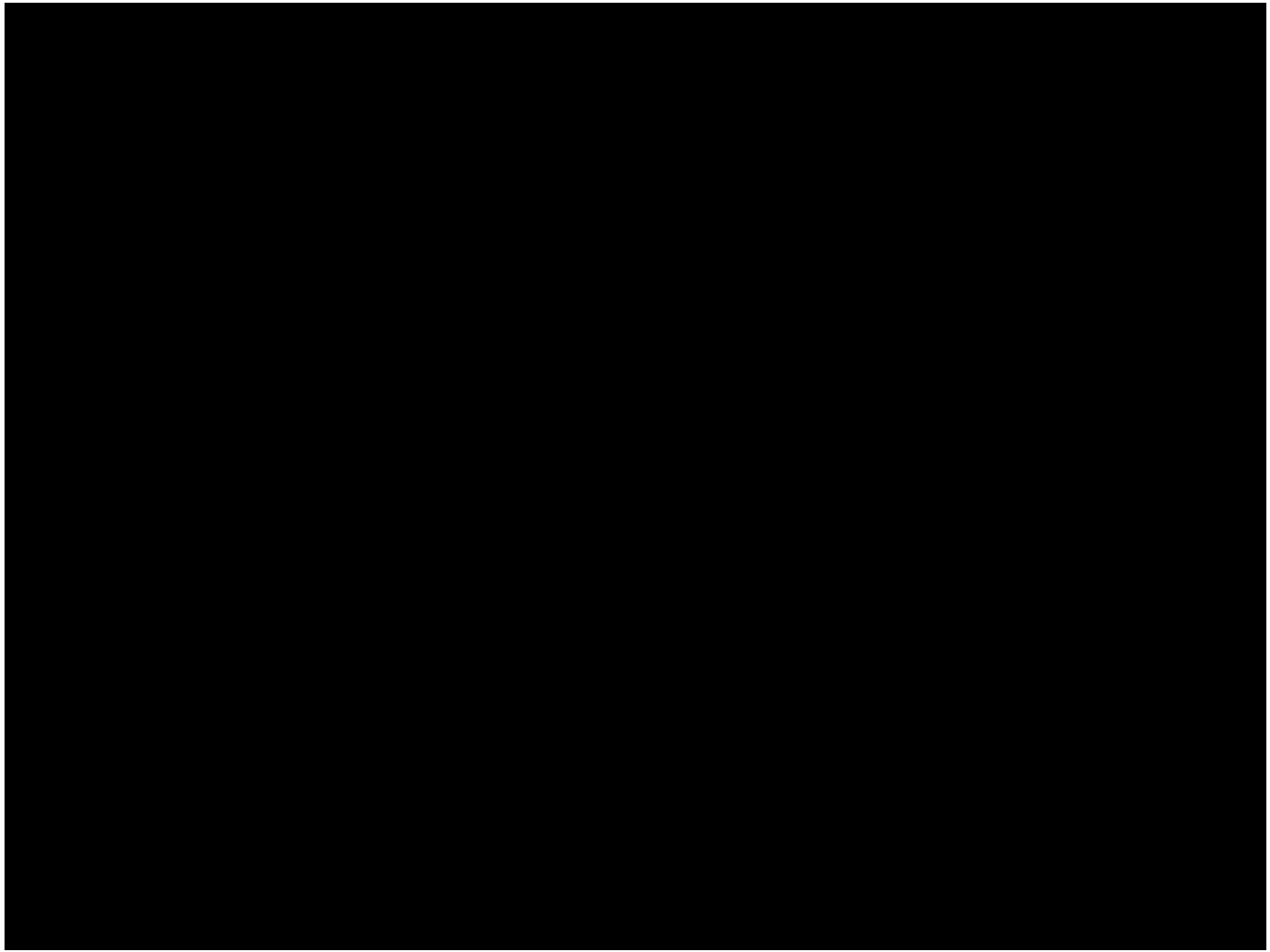
Project goal

Design and implement a distributed version of Exploding Kittens using a multi-agent architecture, supporting 2–4 players and synchronized game state management.

Implemented card effects:

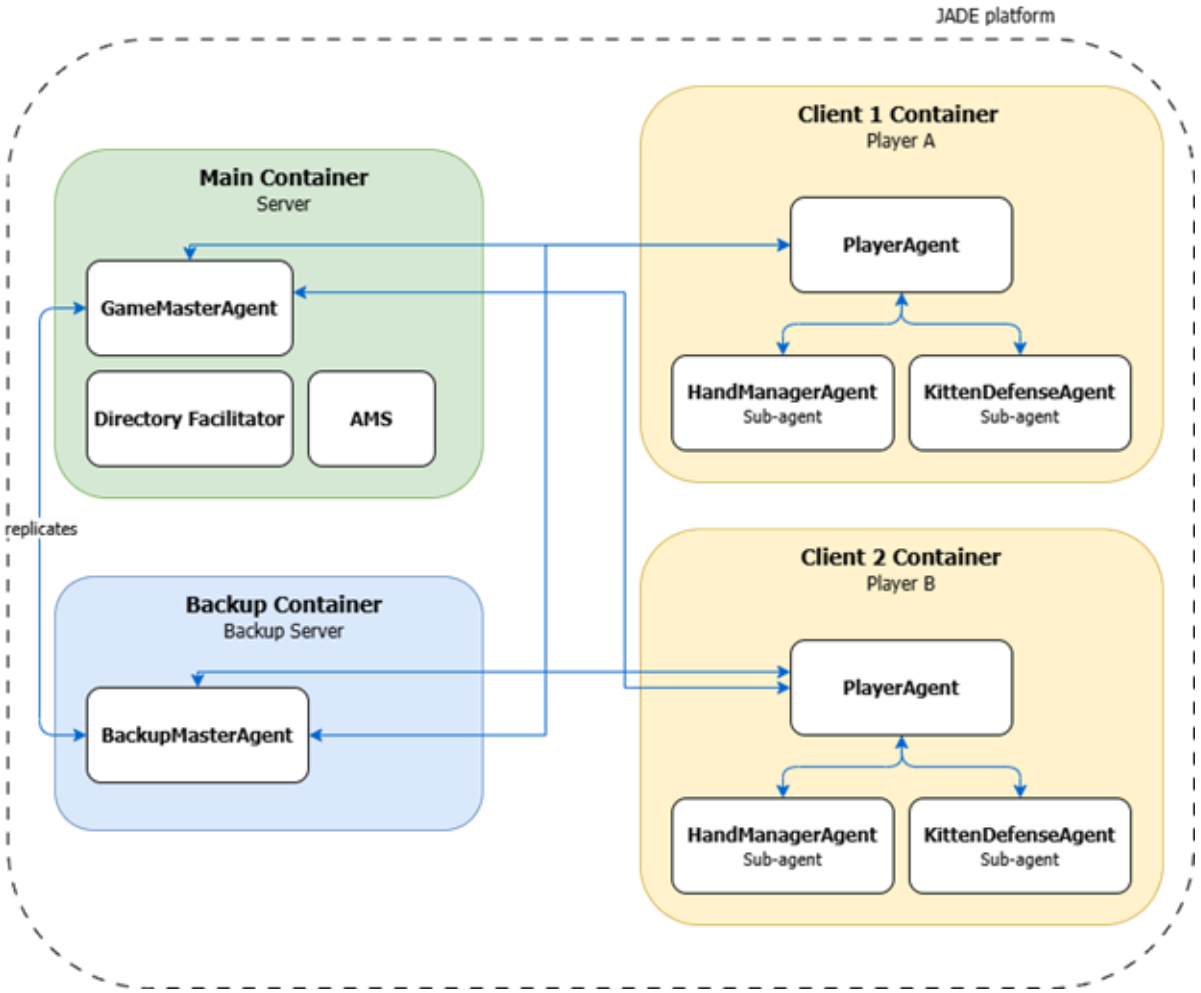
- Exploding Kitten
- Defuse
- Attack
- Skip
- Shuffle
- See the future
- Cat Card

DEMO



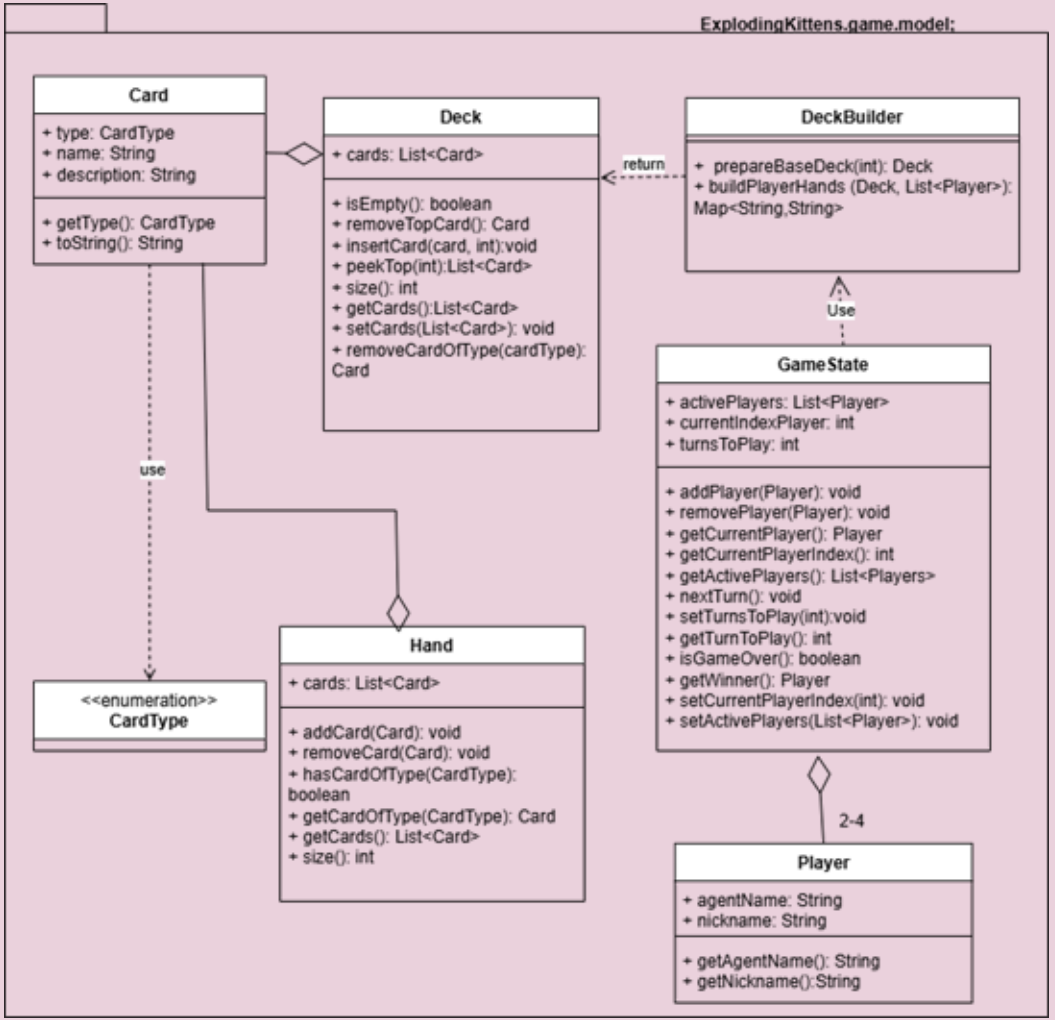
Architecture and Infrastructure

- Local Architecture: MVC
- Distributed Architecture: Client-Server

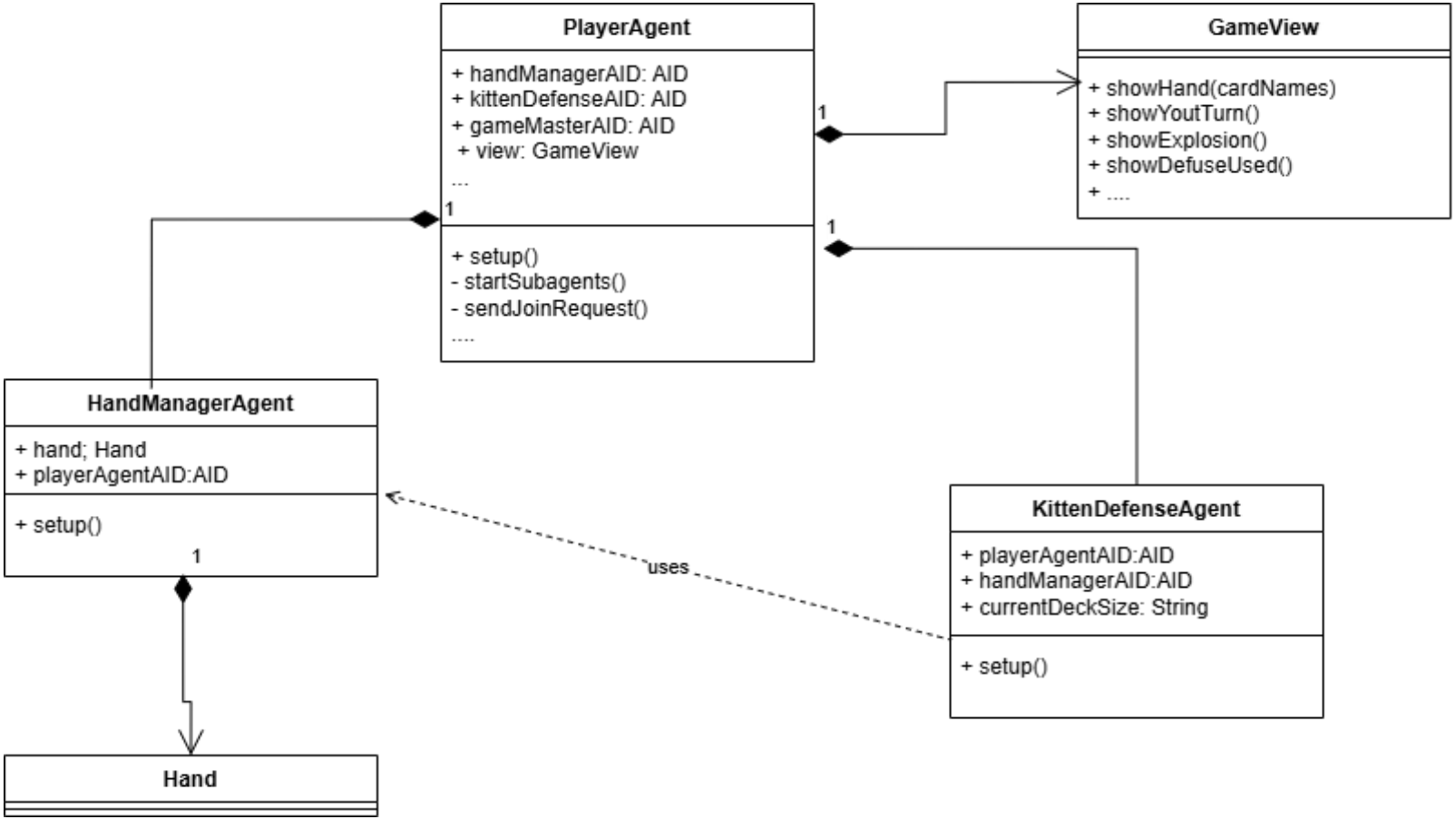


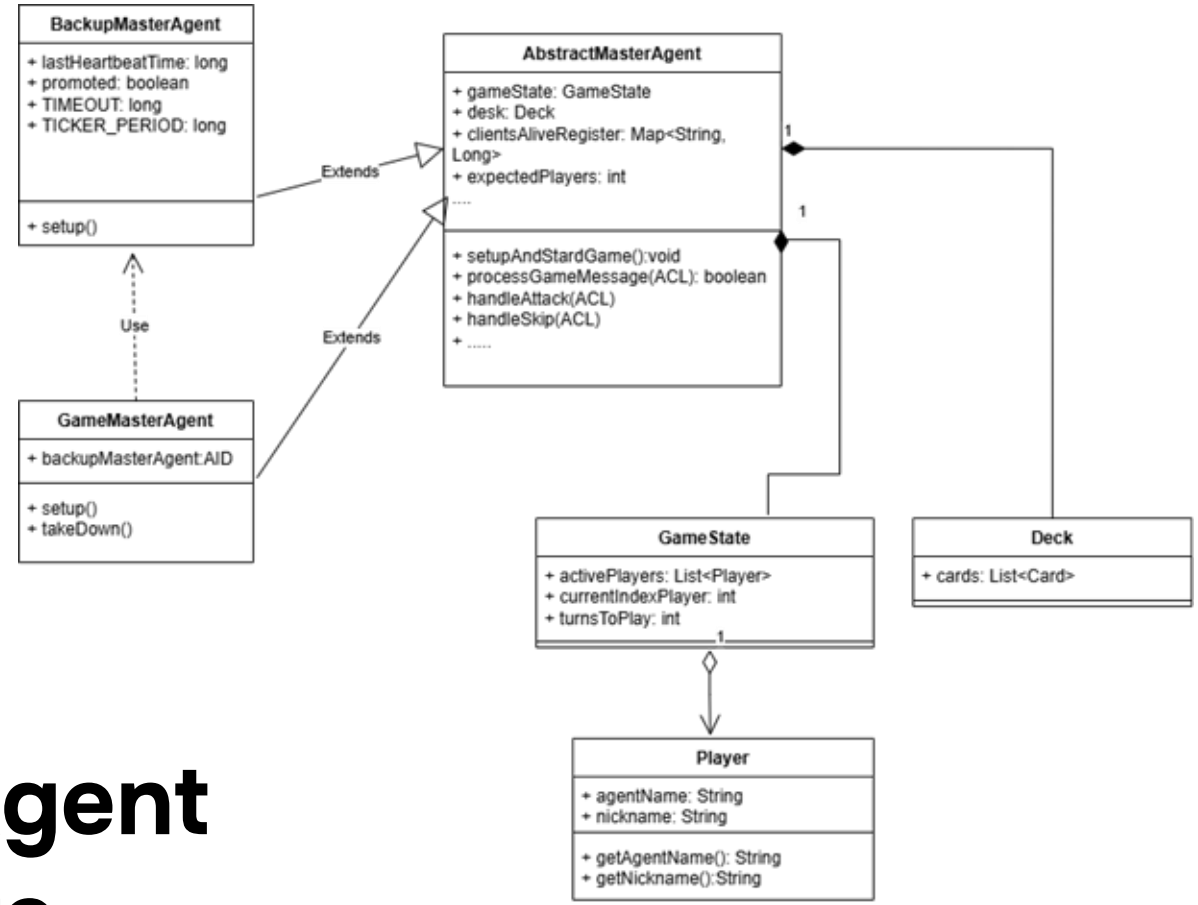
Modelling

- Card
- Deck Builder
- Deck
- Hand
- GameState
- Player



Player agents and local state



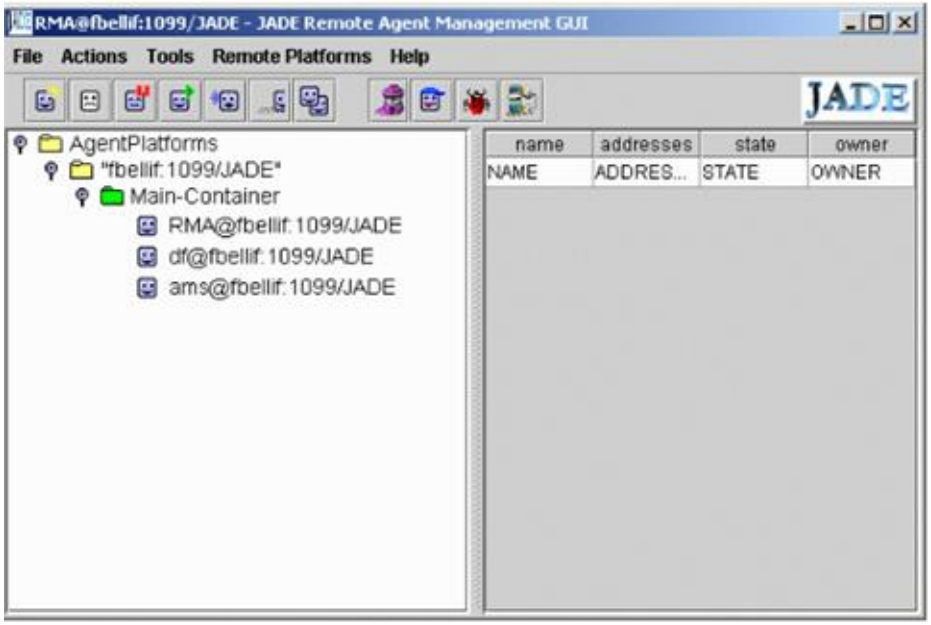


GameMasterAgent and GameState

JADE and Agents

Why we selected JADE

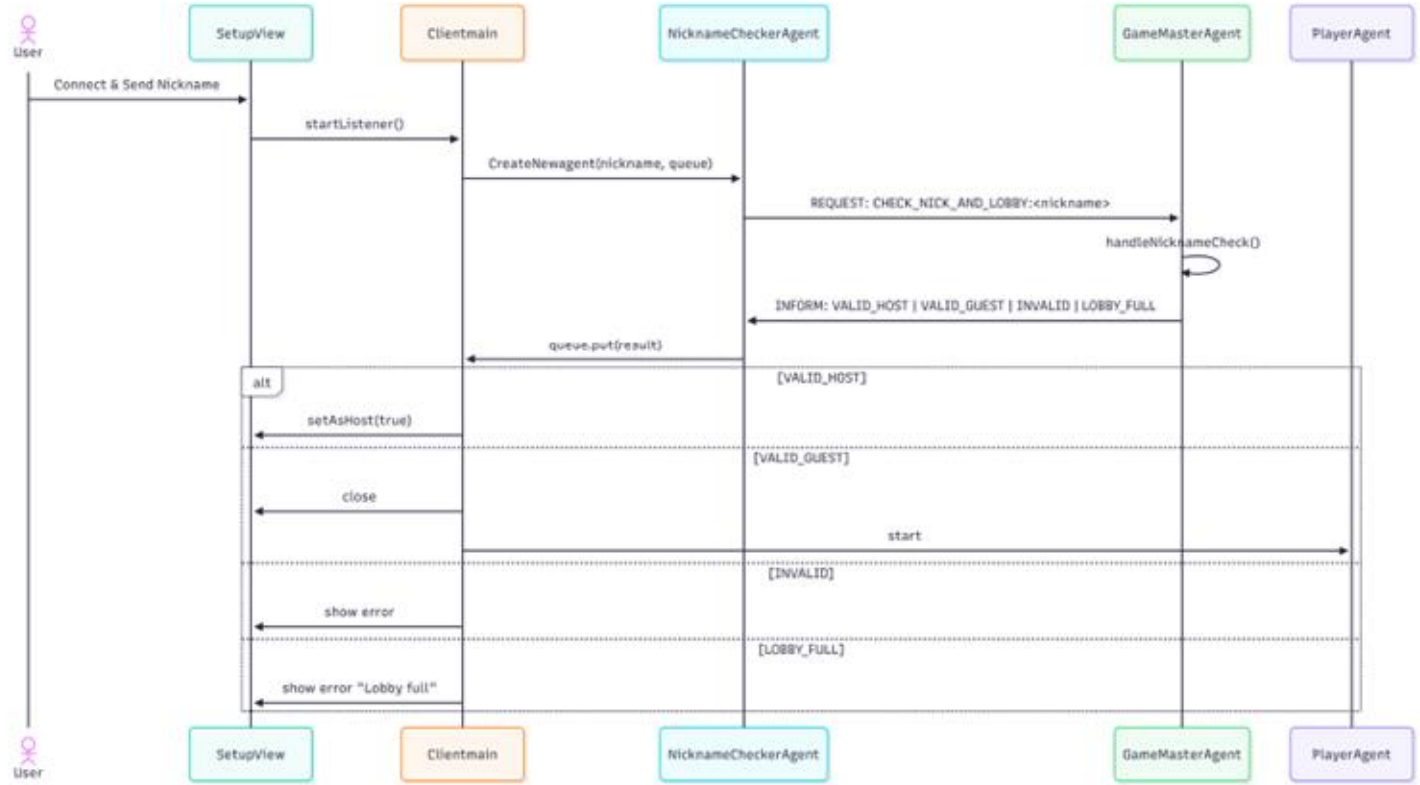
- Native support for **multi-agent systems**
- Built-in **ACL messaging**
- Agent discovery through **AMS** and **DF**
- Behaviour abstraction for asynchronous logic



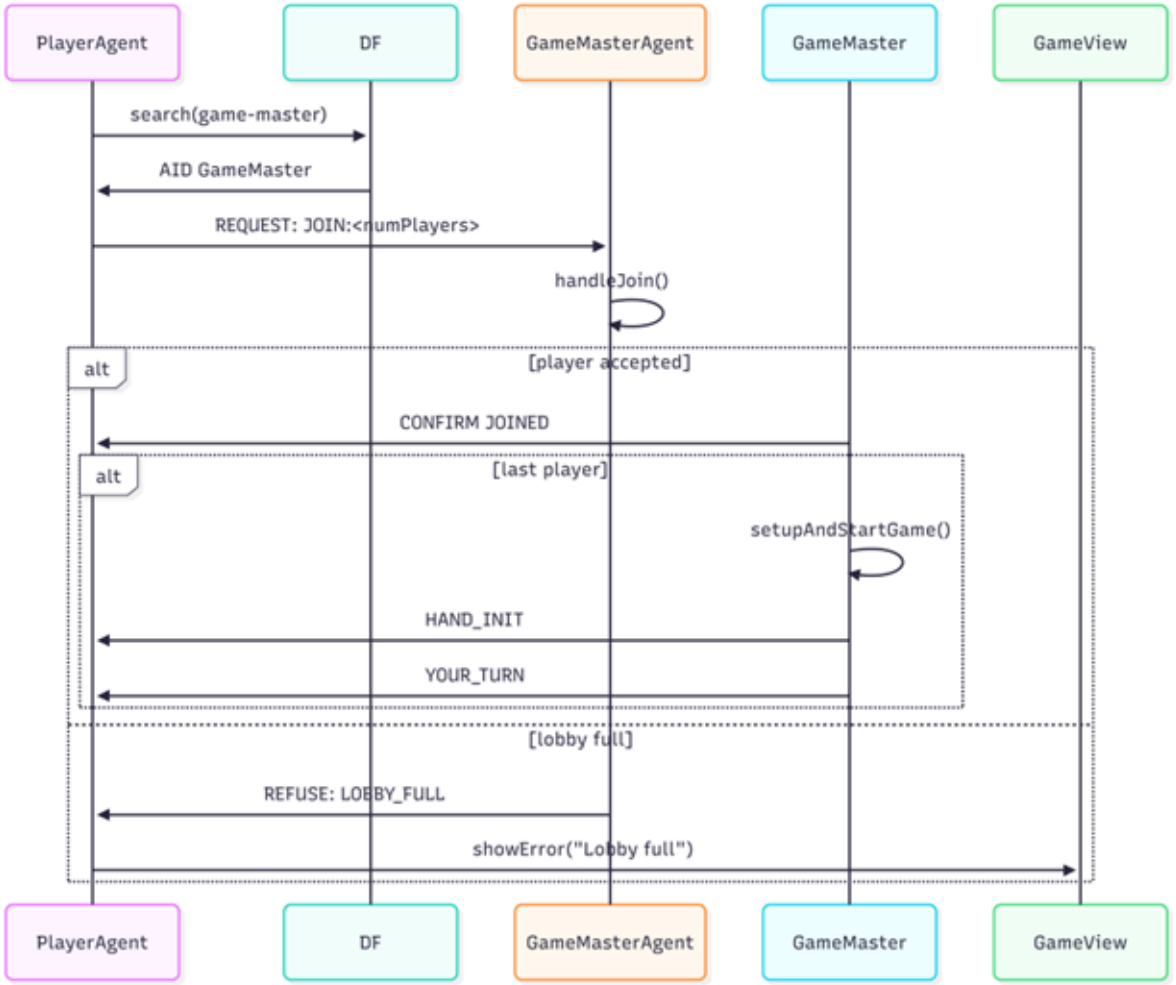
Behaviours used

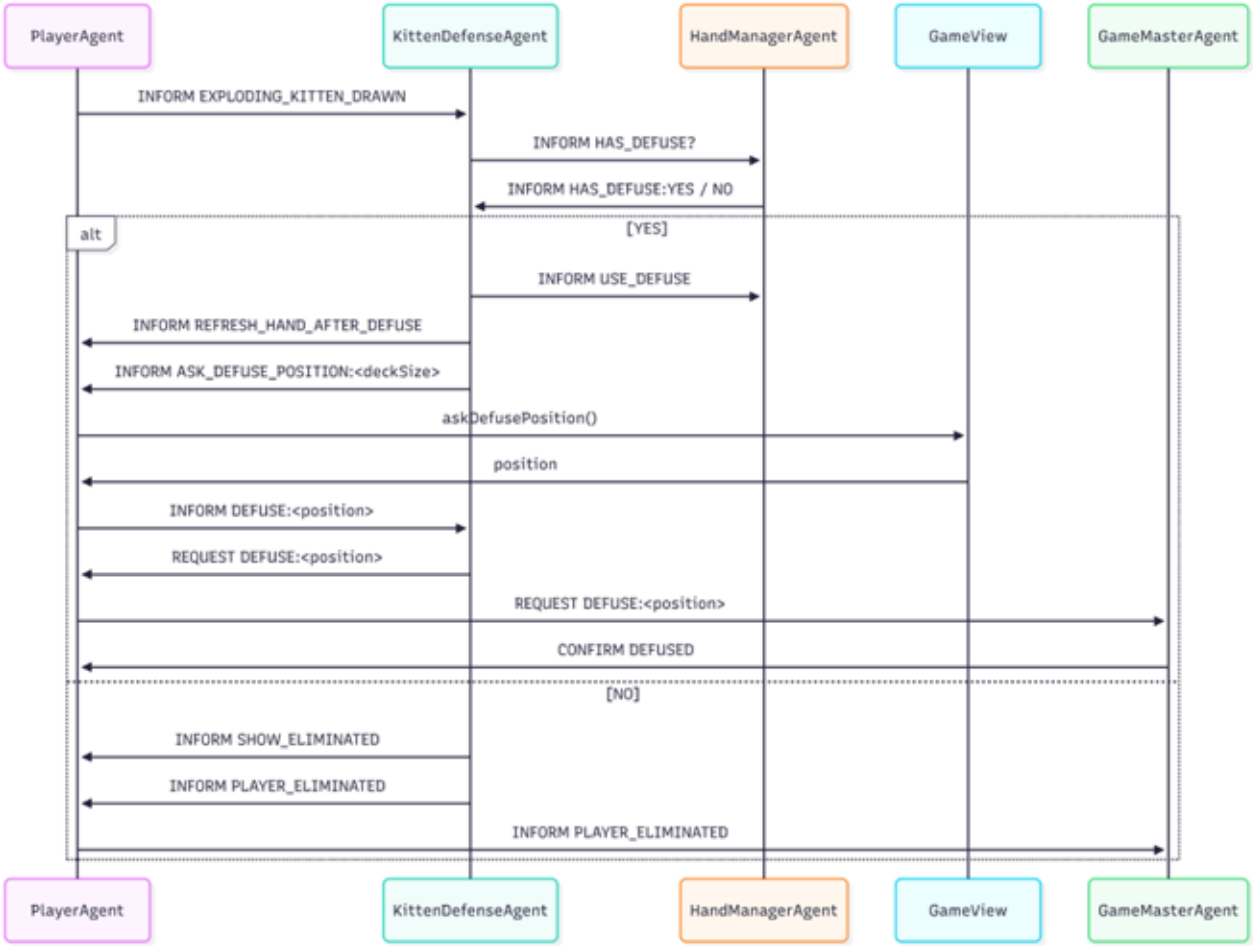
- **CyclicBehaviour** → waiting for messages
- **OneShotBehaviour** → single actions
- **TickerBehaviour** → periodic checks

Initial Connection Validation Flow



Player Registration Sequence

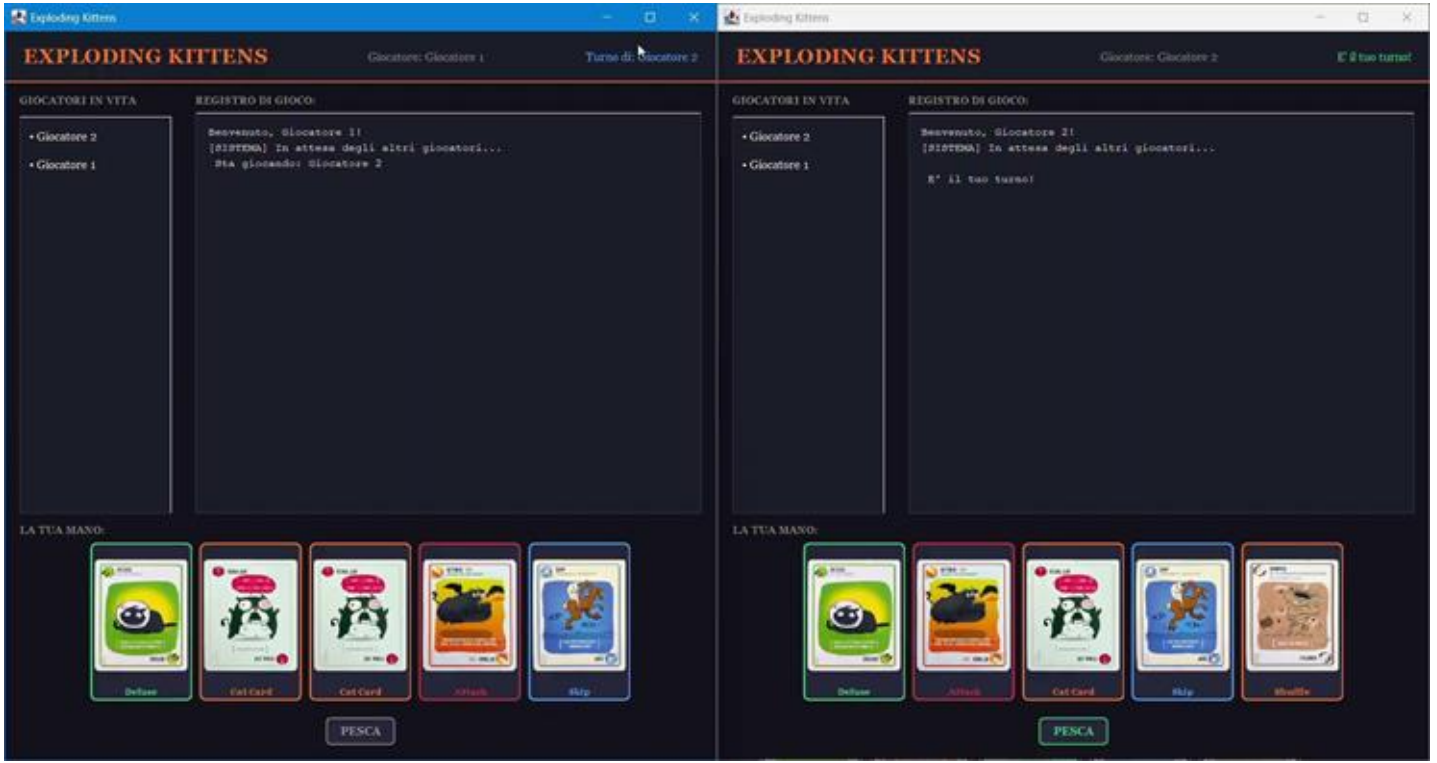




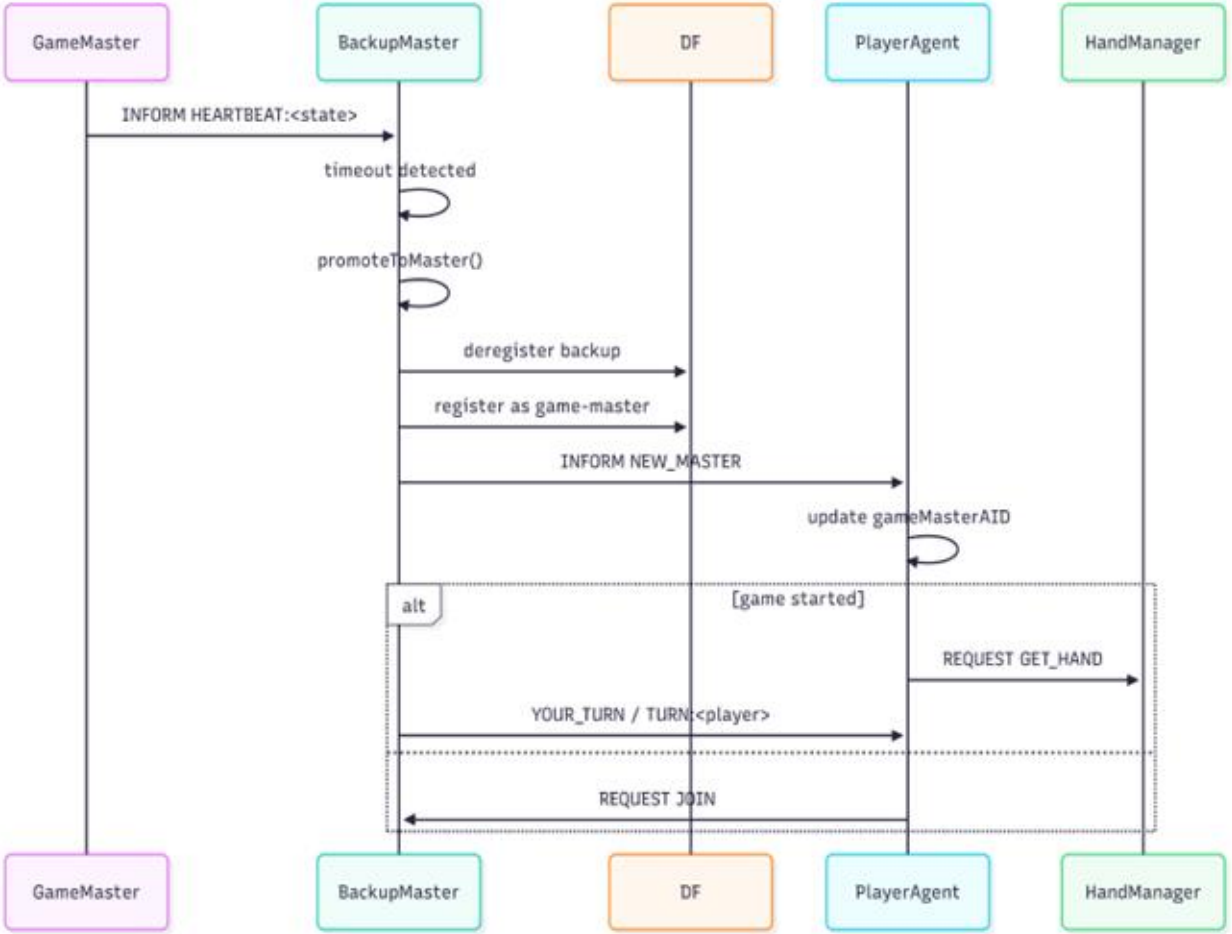
Handling an Exploding Kitten Event

Fault Tolerance and Availability

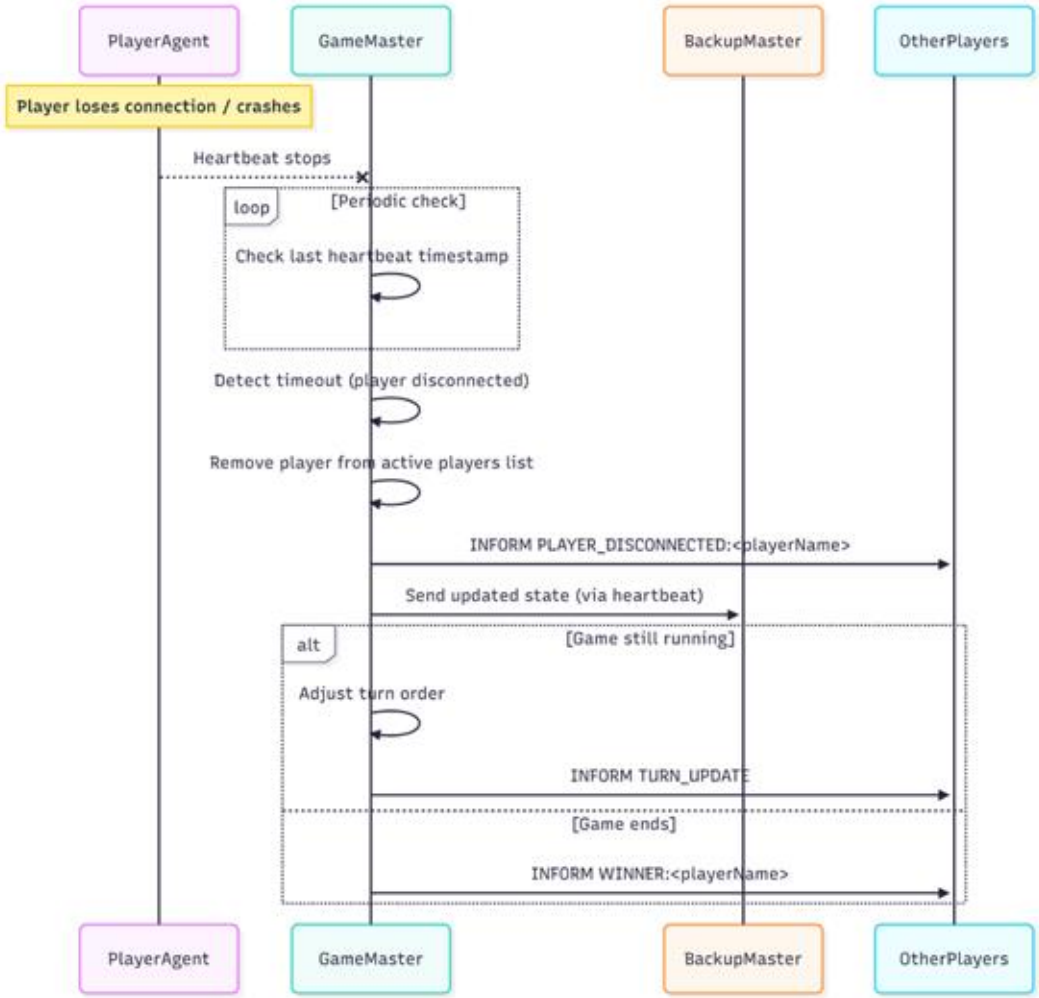
- Fault tolerance Client side
- Fault tolerance Server side



Fault tolerance
Server side



Fault tolerance Client side



Thank you for your attention!