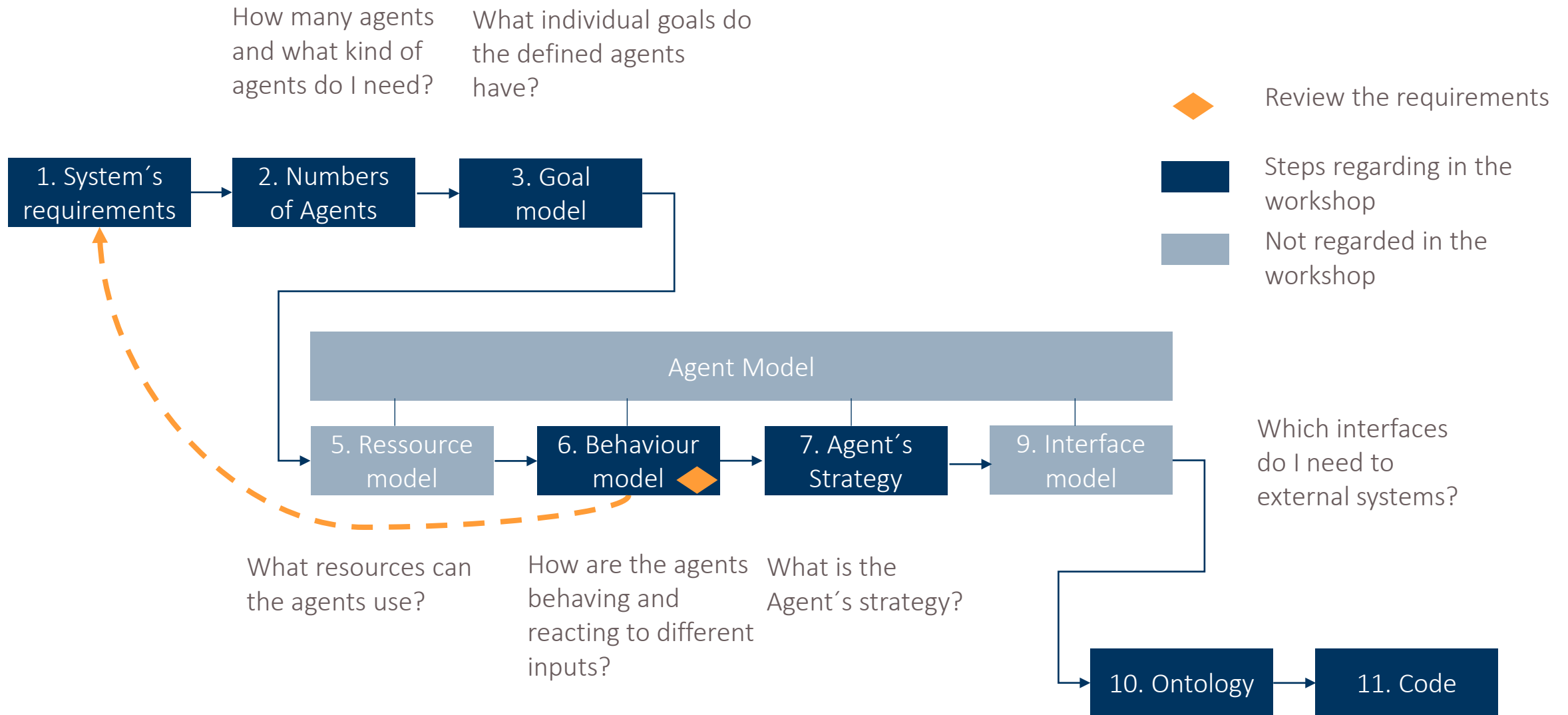**Institut für Automatisierungstechnik**
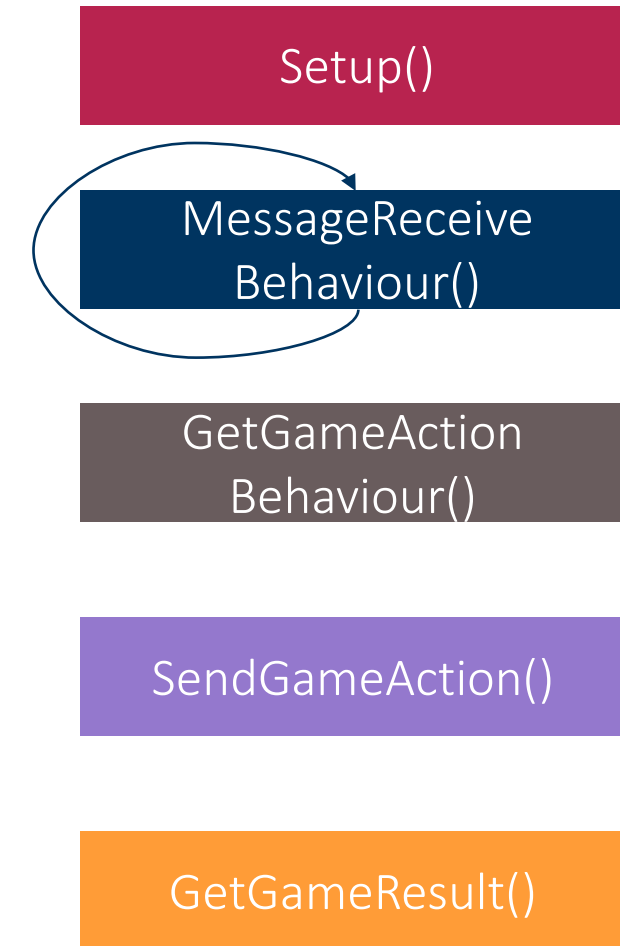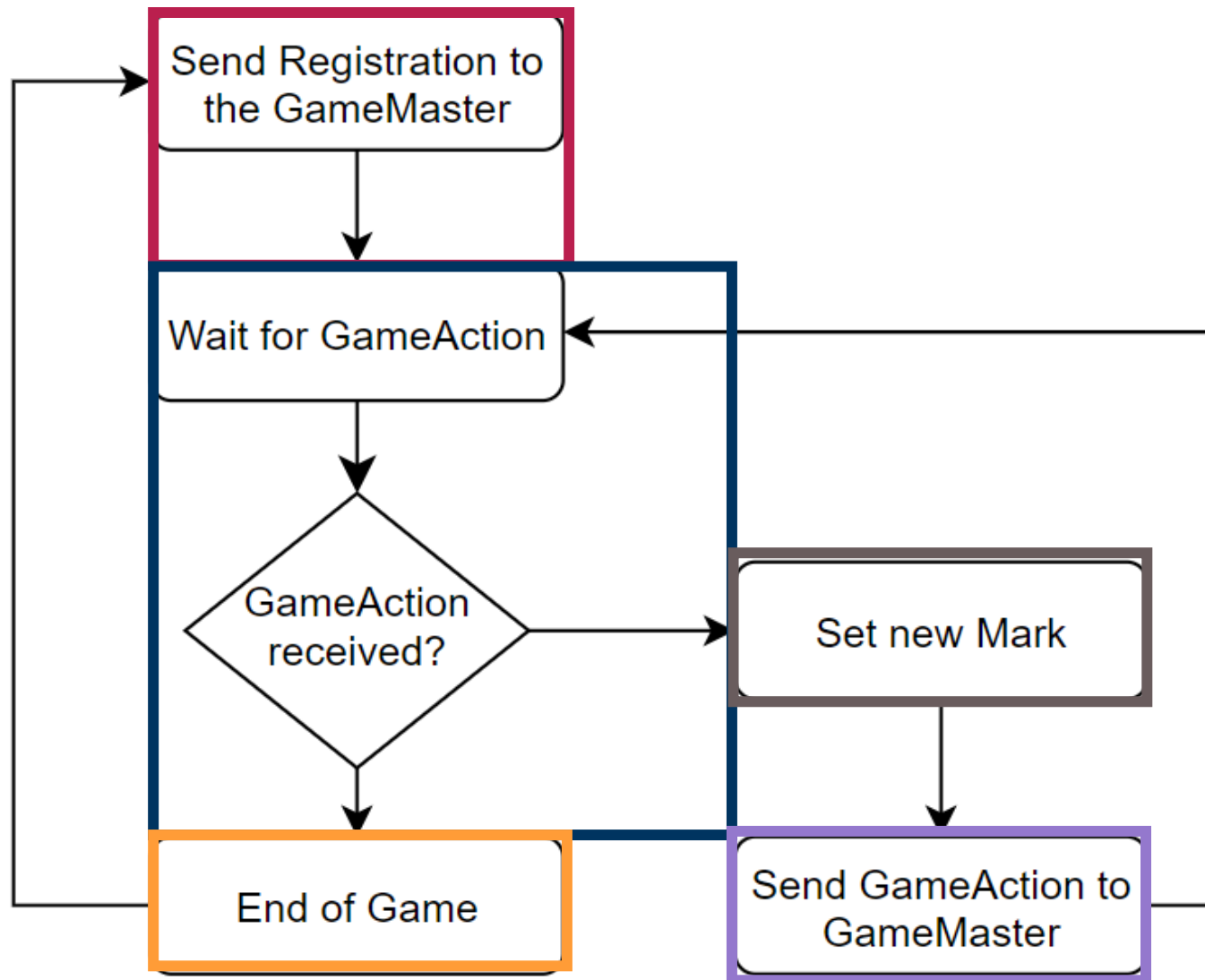
Solution for Tic Tac Toe

Maximilian Kilthau 15.07.2022
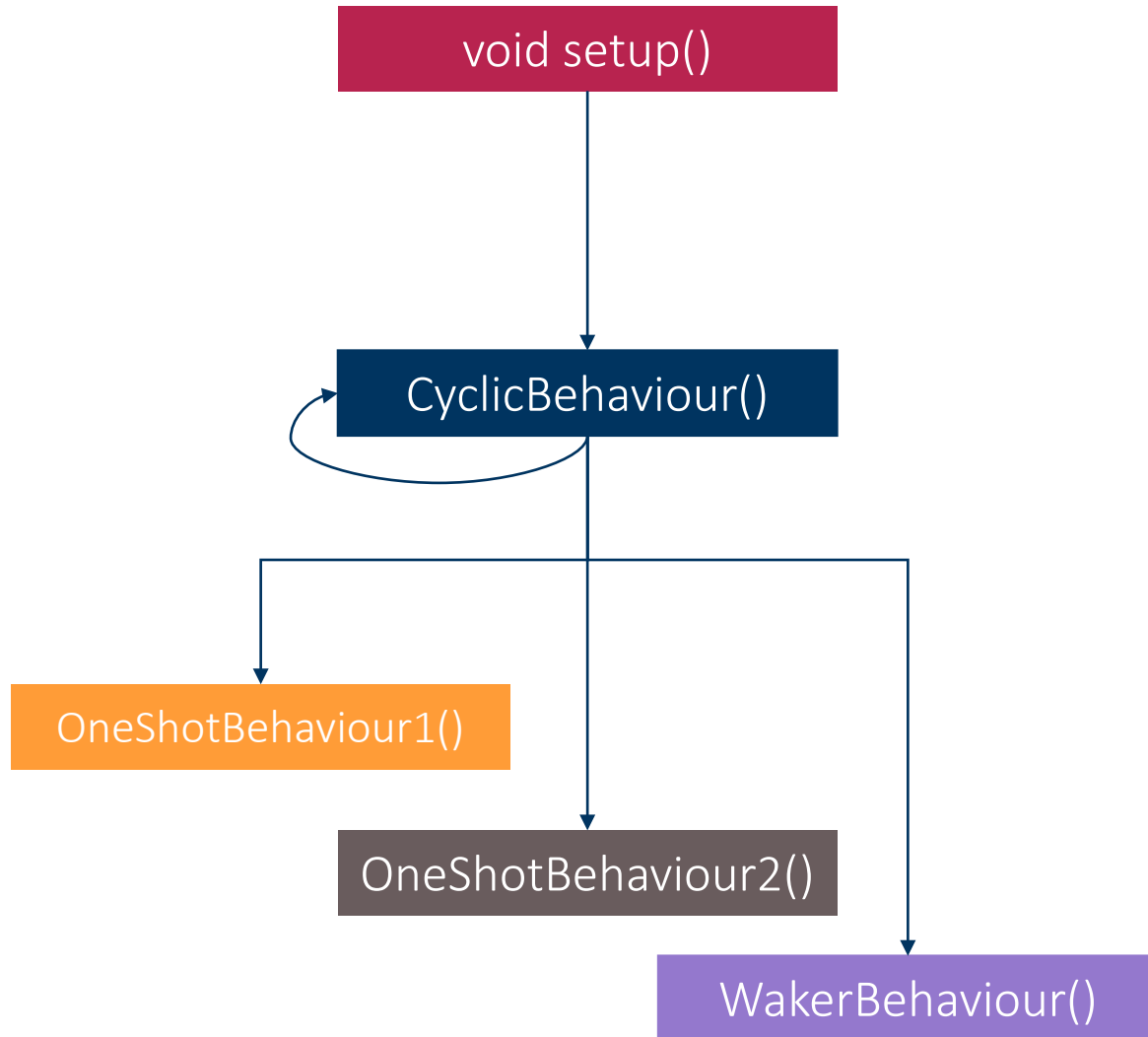
HELMUT SCHMIDT UNIVERSITÄT
Universität der Bundeswehr Hamburg

Engineering process for modelling agents

How many agents and what kind of agents do I need?

What individual goals do the defined agents have?

◆ Review the requirements

■ Steps regarding in the workshop

■ Not regarded in the workshop

1. System´s requirements → 2. Numbers of Agents → 3. Goal model

Agent Model

5. Ressource model → 6. Behaviour model ◆ → 7. Agent´s Strategy → 9. Interface model

Which interfaces do I need to external systems?

What resources can the agents use?

How are the agents behaving and reacting to different inputs?

What is the Agent´s strategy?

10. Ontology → 11. Code

Behaviour Model

Architecture of an JADE-agent

```
void setup()
        |
        v
CyclicBehaviour()  ⟲
        |
   +----+----+
   |         |
   v         v
OneShotBehaviour1()   OneShotBehaviour2()
                              |
                              v
                      WakerBehaviour()
                              ...
```

- setup-Method is called **once** when the agent is started
- Here, the general setup has to be done

- CyclicBehaviour() is a while loop which checks all the time if there is an incoming message
- Checks incoming messages and calls the corresponding OneShotBehaviour()

- Here, the OneShotBehaviour executes whatever should be done with the incoming message.
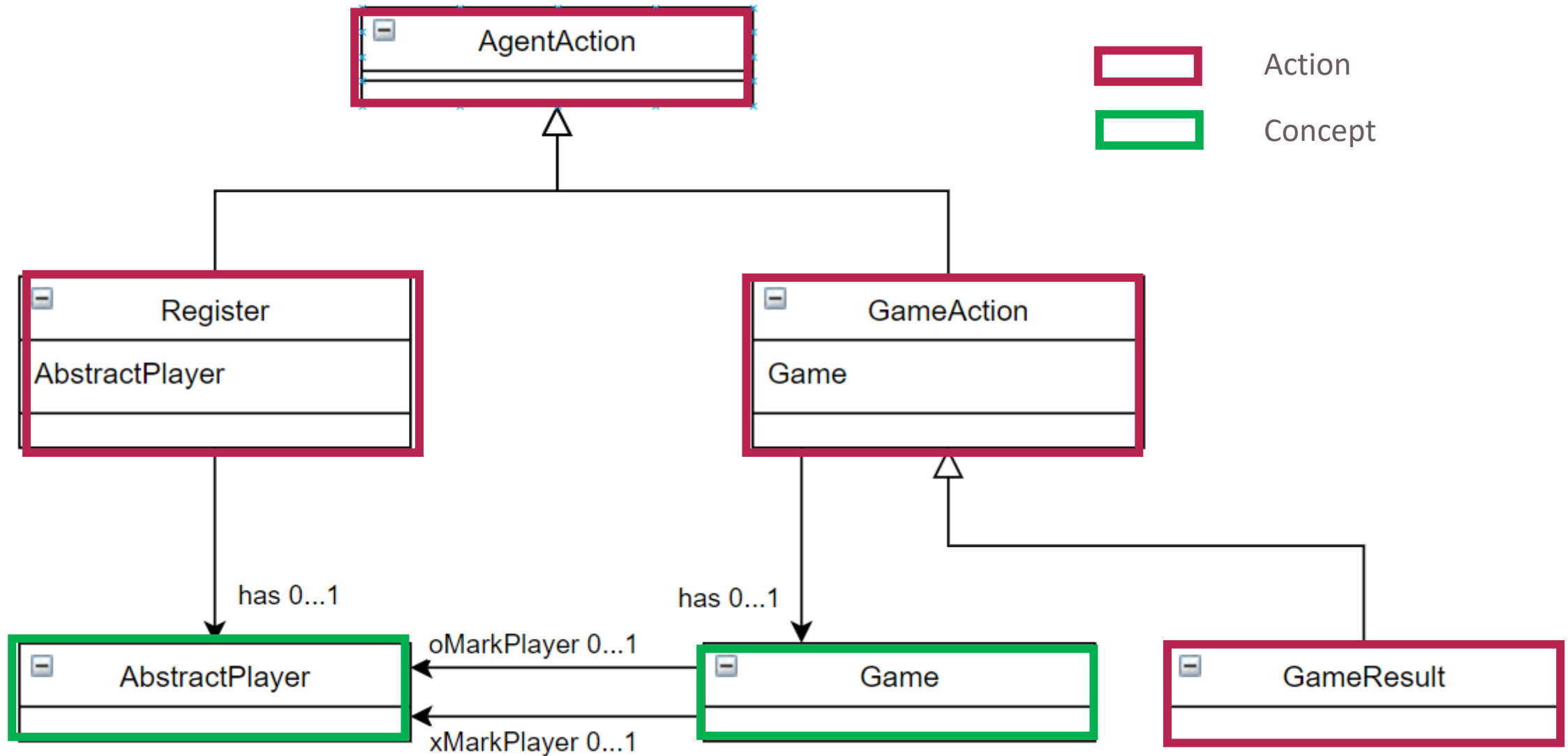- A OneShotBehaviour can call another OneShotBehaviour as well

Architecture of Tic-Tac-Toe

GameMaster

GameAction

GameAction

GameAction
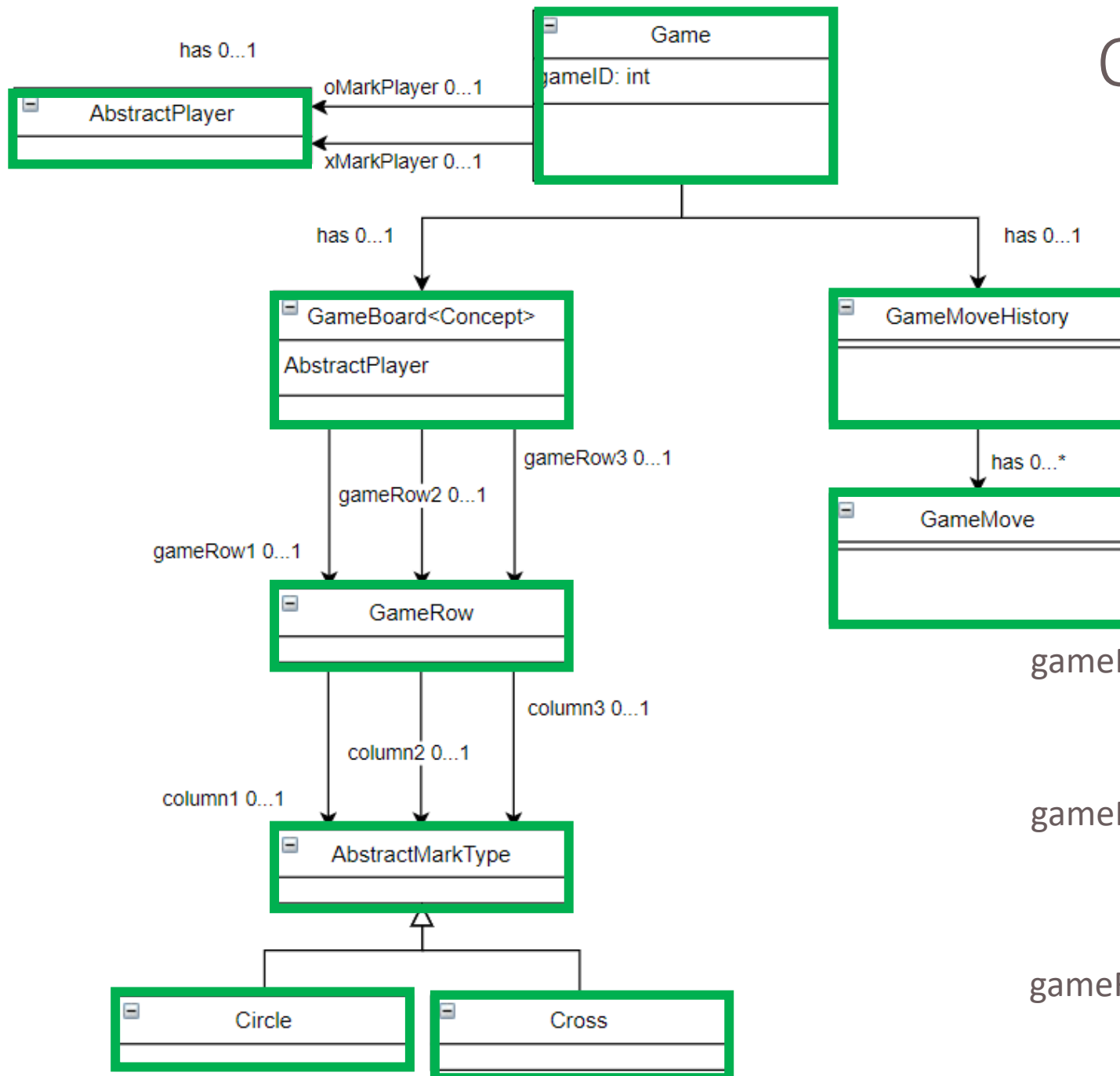
GameAction

AgentPlayer1
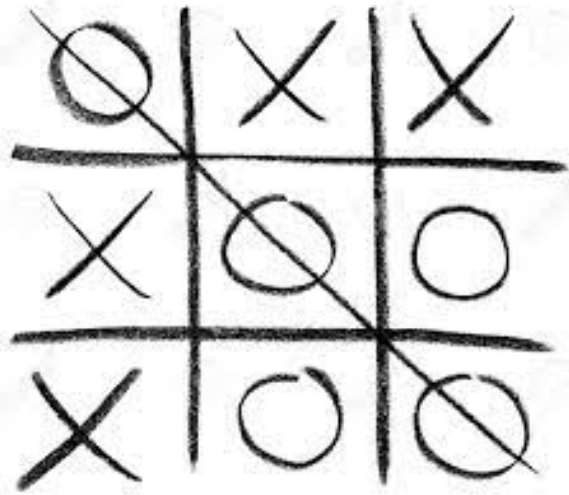
AgentPlayer2

- AgentPlayer 1 is sending the Game as a GameAction to the Game Master
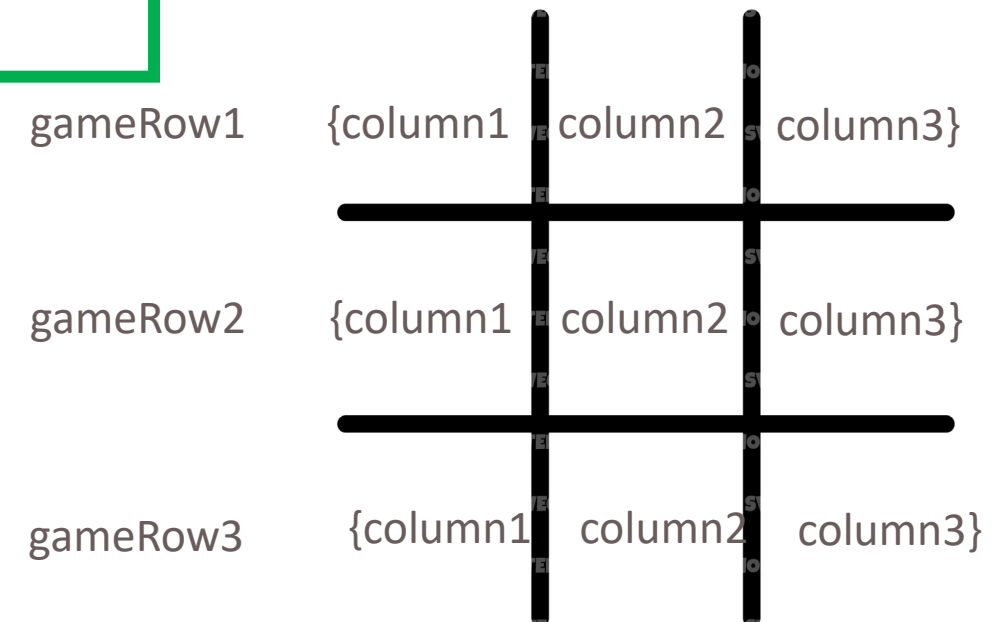- The GameMaster is validating the GameAction and is sending the Game to AgentPlayer 2
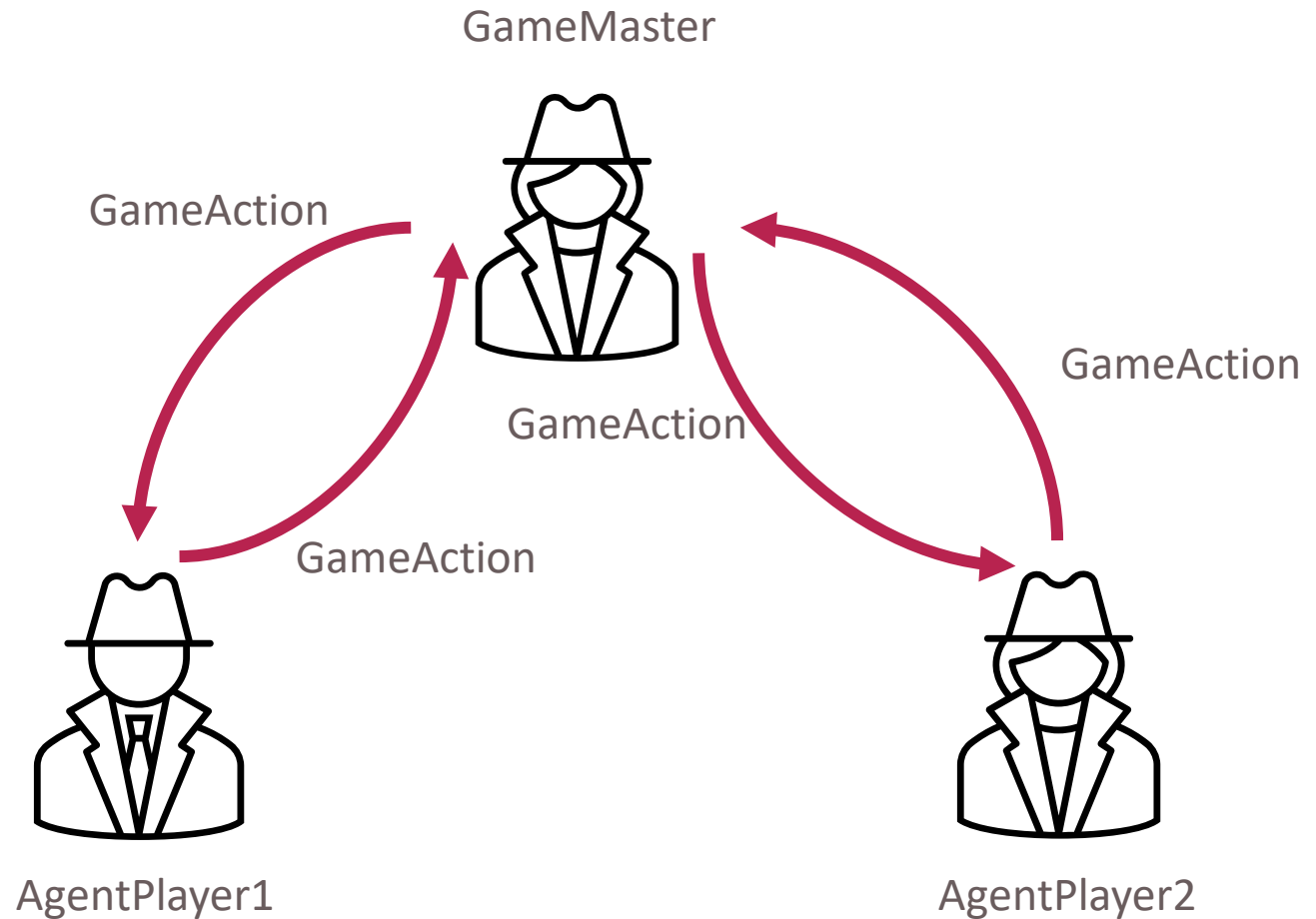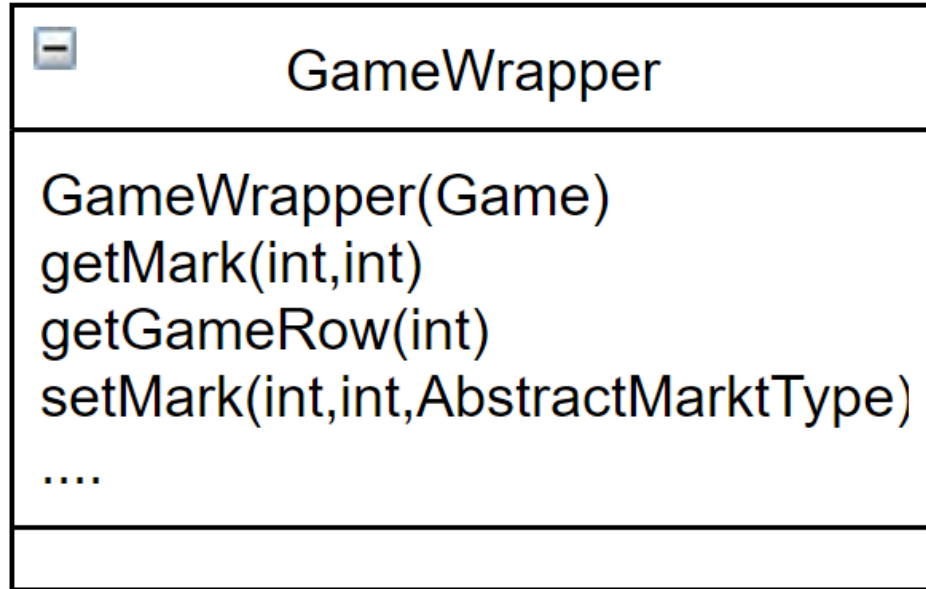
Ontology/Data Structure of TicTacToe

Ontology for Game

GameWrapper

GameWrapper
GameWrapper(Game) getMark(int,int) getGameRow(int) setMark(int,int,AbstractMarktType) ....

GameWrapper is a Class which provides methods to support implementing GameActions

Connecting to Wifi to

Wifi: WLAN-202881

Password: 4894790257192398 1349

Contact Details

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