Simulation

- Role: Coordinator
- Runs behaviours for all entities present in the warehouse using ticks
- Creates a list of orders
- Executes until all orders are dispatched or until error
- Reports number of ticks and final result

- Warehouse
- Entity
- PathFinder
- CostFinder

Warehouse

- Role: Structurer
- Contains a grid of cells to model the warehouse floor

- Grid
- Simulation

Grid

- Role: Structurer
- A 2D structure of cells which model the floor of the warehouse

- Warehouse
- Cell

Cell

- Role: Structurer
- Each cell can contain a single entity

- Grid

PathFinder

- Role: Service Provider
- Calculates the fastest route from point A to B
- Assigns route to Robot once calculated

- Simulation

CostFinder

- Role: Service Provider
- Estimates the cost of following a certain route

- Simulation

PackingStation

Actor

- Role: Service Provider, Coordinator
- Knows if it has been assigned or unassigned an Order
- If not assigned an Order, checks the Order queue for the next available order
- Asks Robots to accept assignments and retrieve items on the Order list
- Packs and dispatches Orders when all items are received

- Actor
- Order

Order

- Role: Information Holder
- Knows whether it is unassigned, assigned or dispatched
- Contains the UIDs of the shelves that contain the items needed

- Status

Status

- Role: Information Holder
- Enum
- Contains a list of possible status' an Order can hold

- Order

StorageShelf

Actor

- Role: Information Holder
- Passive marker for Robots to collect items from
- Knows what item(s) its holding

- Actor
- Robot

Robot	Actor
• Role: Service Provider, Information Holder • Detects when a crash has occurred between two units • Can move horizontally on the grid once per tick • Can collect items from PackingStations • Passively loses battery charge per tick but can be charged when • situated atop the assigned CharingPod • Can travel through/past other entities (such as PackingStation and • ChargingPod) • Accepts or denies assignments from PackingStation	• State

State	
• Role: Information Holder • Enum • Contains all possible states of a Robot	• Robot

ChargingPod	Actor
• Role: Service Provider, Information Holder • Charges the battery of the assigned Robot over a set period of ticks • when Robot is situated on top of it • Knows the UID of the Robot it belongs to	• Robot

Abstract Actor	Entity ChargingPod, Robot, StorageShelf, PackingStation
• Role: Interfacer • Base abstract class for all objects within the simulation.	• ChargingPod, Robot, StorageShelf, PackingStation

Entity	
	Actor
• Role: Interfacer • Base interface for all objects within the simulation.	• Actor