

## Snapshot Week 9 of Group COMPLEX 8

# Defence Science and Technology Group (DSTG) and Swordfish Computing Project Proposal: Distributed Decision-Making



THE UNIVERSITY  
*of* ADELAIDE

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# 1. Product Backlog and Task Board

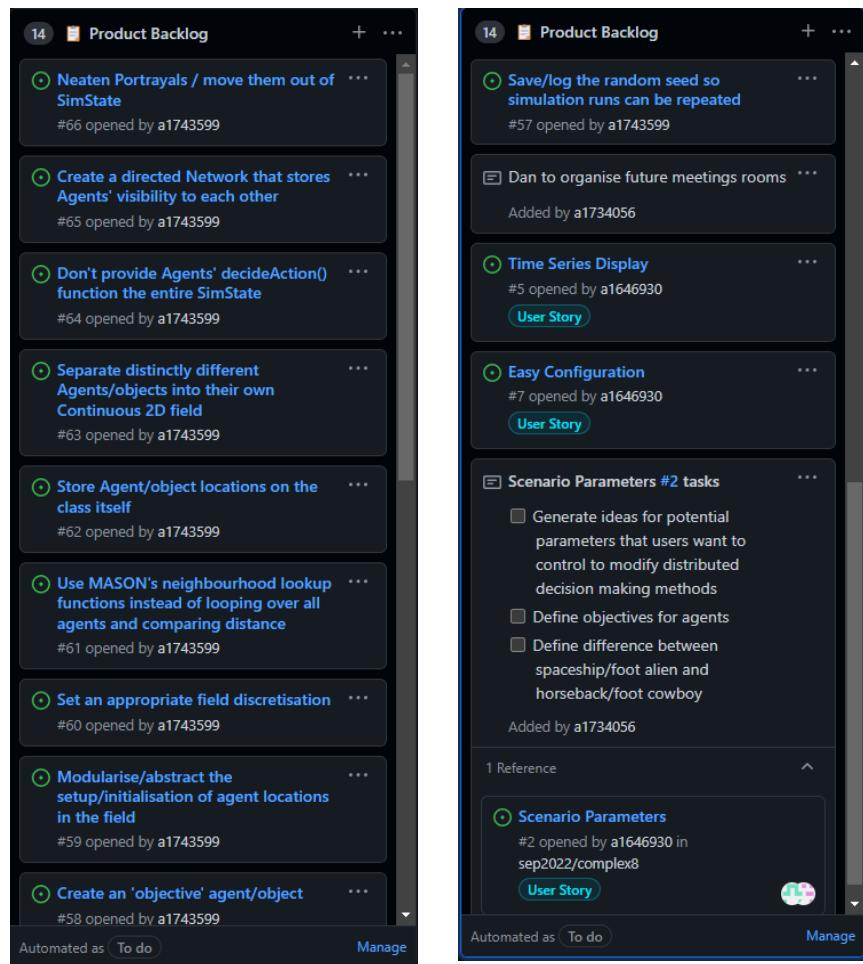


Figure 1: Product Backlog Screenshot

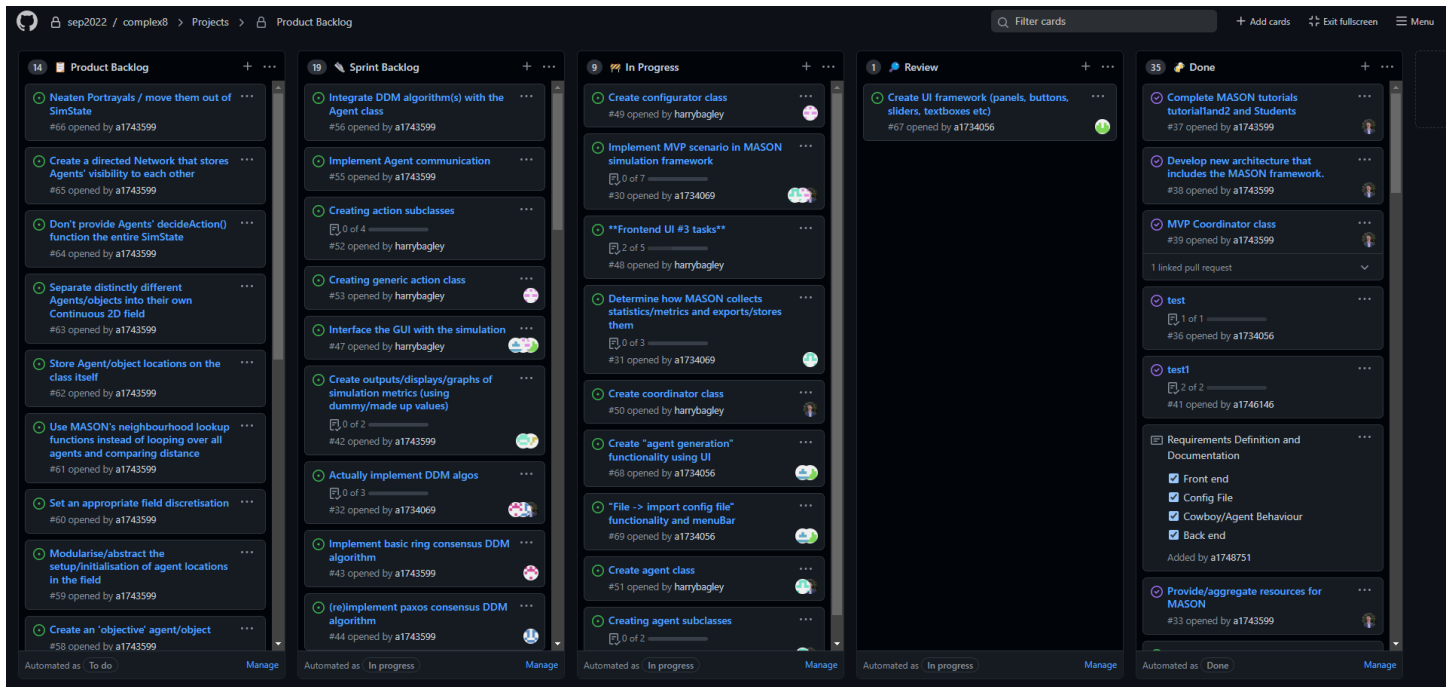


Figure 2: Task Board Screenshot

## 2. Sprint Backlog and User Stories:

19

Sprint Backlog

Integrate DDM algorithm(s) with the Agent class

#56 opened by a1743599

Implement Agent communication

#55 opened by a1743599

Creating action subclasses

0 of 4

#52 opened by harrybagley

Creating generic action class

#53 opened by harrybagley

Interface the GUI with the simulation

#47 opened by harrybagley

Create outputs/displays/graphs of simulation metrics (using dummy/made up values)

0 of 2

#42 opened by a1743599

Actually implement DDM algos

0 of 3

#32 opened by a1734069

Implement basic ring consensus DDM algorithm

#43 opened by a1743599

(re)implement paxos consensus DDM algorithm

#44 opened by a1743599

Automated as In progress Manage

19

Sprint Backlog

Brainstorm/storyboard what sort of outputs will be produced and how they will be displayed

#45 opened by a1743599

Implement generic interface for DDM algorithms

#46 opened by harrybagley

Configuration Profiles #3 Functional Reqs

☐ The UI shall generate config file after scenario parameters have been selected

☐ The UI generated config file shall be compatible with the backend simulation logic

☐ The UI shall allow the user to import a previously generated config file to load a scenario for adjustment

Added by a1748751

1 Reference

Configuration Profiles

#3 opened by a1646930 in sep2022/complex8

User Story

Algorithms and Choices #1 Functional Reqs

☒ The UI shall enable the user to select distributed algorithms to test

Automated as In progress Manage

19

Sprint Backlog

Algorithms and Choices #1 Functional Reqs

☒ The UI shall enable the user to select distributed algorithms to test

☐ Cowboys shall exhibit different behaviour dependent on the DDM algorithm employed

☐ Cowboys shall be able to communicate with other cowboys

☐ Cowboys shall detect other agents in their vicinity

☐ Cowboys shall be able to shoot and have ammo (i.e. total number of shots available)

Added by a1748751

1 Reference

Algorithms and Choices

#1 opened by a1646930 in sep2022/complex8

User Story

Scenario Parameter #2 Functional Reqs

☒ The UI shall enable the user to add agents at specified XY positions

☒ The UI shall enable the user to modify agent parameters

☐ Agents shall have several properties e.g. HP, speed, Line of sight range, shooting range, shooting damage, communication range

☐ Agents shall exhibit different behaviour depending on the agent properties

☐ Agent properties shall be changed through the UI

☐ Agents shall not change behaviour depending on the information they should not know about

Added by a1748751

1 Reference

Scenario Parameters

#2 opened by a1646930 in sep2022/complex8

User Story

Automated as

In progress

Manage

19

Sprint Backlog

Scenario Parameter #2 Functional Reqs

☒ The UI shall enable the user to add agents at specified XY positions

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☐ Agents shall not change behaviour depending on the information they should not know about

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1 Reference

Scenario Parameters

#2 opened by a1646930 in sep2022/complex8

User Story

Scenario Parameters

#2 opened by a1646930

User Story

Configuration Profiles

#3 opened by a1646930

User Story

Automated as

In progress

Manage

Configuration Profiles

#3 opened by a1646930

User Story

Algorithms and Choices

#1 opened by a1646930

User Story

Results Export

#6 opened by a1646930

User Story

Extensible Algorithm Choices

#4 opened by a1646930


User Story

Automated as

In progress

Manage

## In-progress items:

9  In Progress

Create configurator class

#49 opened by [harrybagley](#)

Implement MVP scenario in MASON simulation framework

0 of 7

#30 opened by [a1734069](#)

\*\*Frontend UI #3 tasks\*\*

2 of 5

#48 opened by [harrybagley](#)

Determine how MASON collects statistics/metrics and exports/stores them

0 of 3

#31 opened by [a1734069](#)

Create coordinator class

#50 opened by [harrybagley](#)

Create "agent generation" functionality using UI

#68 opened by [a1734056](#)

"File -> import config file" functionality and menuBar

#69 opened by [a1734056](#)

Create agent class

#51 opened by [harrybagley](#)

Creating agent subclasses

0 of 2

#54 opened by [harrybagley](#)

Automated as In progress

[Manage](#)

Figure 3: Sprint 4 in-progress items

The current user stories and their descriptions for this sprint are:

1. **Configuration Profiles:** saving configuration settings in some manner such that to re-run an experiment, all the parameters do not need to be manually input again.
2. **Scenario Parameters:** providing the user with control over the experimental parameters before the simulation begins.
3. **Algorithms and Choices:** allowing the user to select a type of distributed decision-making algorithm to experiment with.
4. **Results Export:** moving the logs of the simulation into a results format which are useful to the experimenter in comparing distributed decision-making algorithms.
5. **Extensible Algorithm Choices:** allowing the user to easily add new decision-making algorithms to the pre-defined list provided by “Algorithms and Choices”

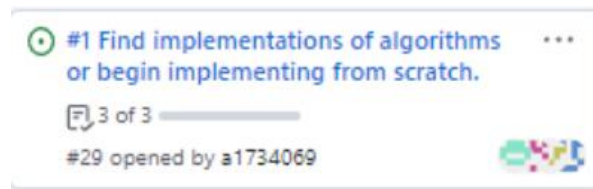
**There have been no additional user stories added mid-sprint.**

### 3. Definition of Done:

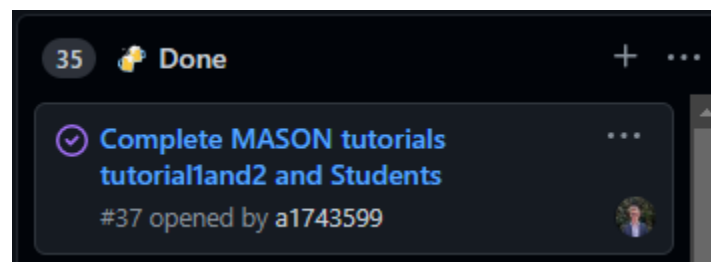
- Code written and commented
- Documentation written and updated
- Code peer-reviewed
- Documentation peer-reviewed
- Code architecture conforms to specified design pattern.
- Tests written and passing
- Non-functional requirements met (UX, performance, availability)
- Acceptance criteria fulfilled

### 4. Summary of Changes:

Since the last team snapshot, these items from 'Review' were moved to 'Done'.



Since the last team snapshot, these items on the sprint backlog were moved to 'Done':



Last sprint was the end of “preparing” for software development and the decision has been made to start programming and developing the core of the distributed decision-making experimentation capability. About half of the group who was assigned to investigate MASON was able to get it running on their personal machines. Those who did get MASON running have been assigned to a dedicated “backend programming” sub-team whilst those who were not able to get MASON running have been assigned to a higher-level backend programming sub-team where they are still able to create code yet doing so outside of the MASON environment. The front-end sub-team (Dan and Hayden) are still working to integrate their work before looking to integrate with the backend sub-team(s).



Hayley and Patrick will be working on implementing the PAXOS and Ring distributed decision-making algorithms, respectively. To increase the speed of implementation, Hayley and Patrick won't try to integrate their algorithm's operations but instead propose whichever is finished first to the backend programming sub-team for them to try and integrate it (the other algorithm will be available as redundancy). Whilst Sarah and Sam will be working on the export of results tasks and doing so in a forward-thinking manner such that results will be useful to experimenters for a range of different types of algorithms (e.g., for consensus vs. consensus, and perhaps in the future, consensus vs. non-consensus).

Harry, Vinh, and Nathan are working on the backend programming section to integrate the algorithms found by Hayley and Patrick, and to setup basic classes for all agents.