Defence Science and Technology Group (DSTG) and Swordfish Computing Project

Distributed Decision-Making

THE UNIVERSITY
of ADELAIDE

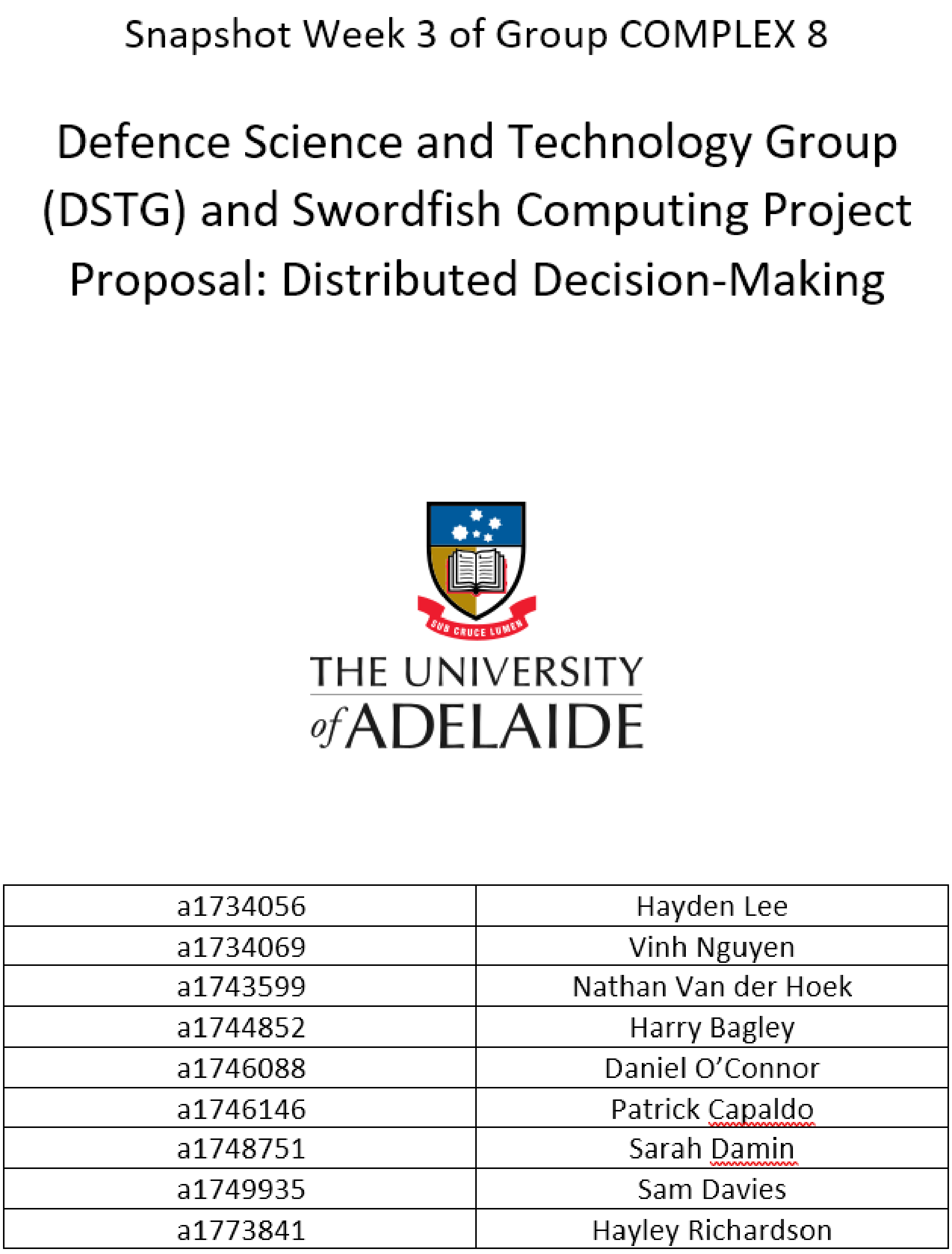
Sprint Retrospective – a1734056

Group COMPLEX 8

a1734056	Hayden Lee
a1734069	Vinh Nguyen
a1743599	Nathan Van der Hoek
a1744852	Harrison Bagley
a1746088	Daniel O'Connor
a1746146	Patrick Capaldo
a1748751	Sarah Damin
a1749935	Sam Davies
a1773841	Hayley Richardson

Snapshots:

I attended the sprint review/planning meeting on 22/08/22 with the tutor James Caddy



Snapshot Week 3 of Group COMPLEX 8

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

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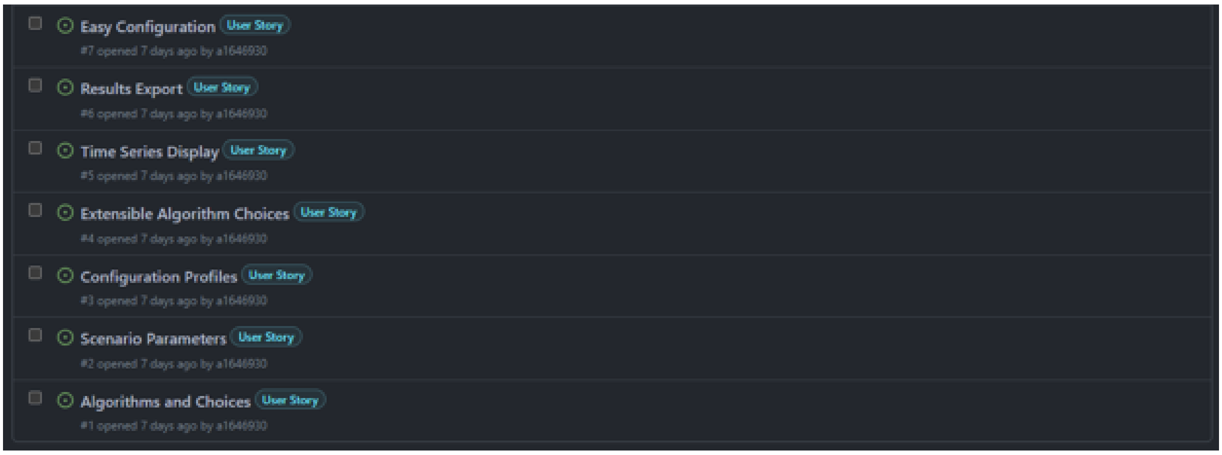
Product Backlog and Task Board:



☐ ⊙ Easy Configuration User Story
#7 opened 7 days ago by a1646930

☐ ⊙ Results Export User Story
#6 opened 7 days ago by a1646930

☐ ⊙ Time Series Display User Story
#5 opened 7 days ago by a1646930

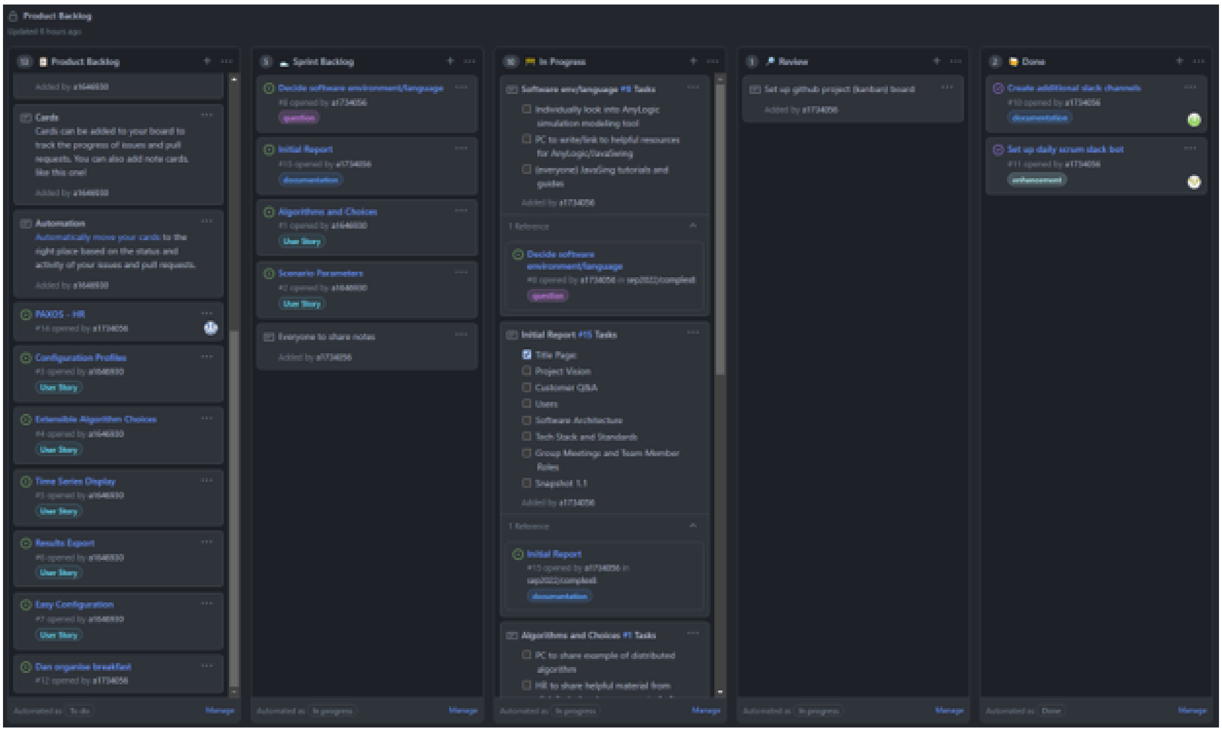
☐ ⊙ Extensible Algorithm Choices User Story
#4 opened 7 days ago by a1646930

☐ ⊙ Configuration Profiles User Story
#3 opened 7 days ago by a1646930

☐ ⊙ Scenario Parameters User Story
#2 opened 7 days ago by a1646930

☐ ⊙ Algorithms and Choices User Story
#1 opened 7 days ago by a1646930

Figure 1: Product Backlog Screenshot



Product Backlog
Updated 8 hours ago

13 Product Backlog

Added by a1646930

Cards
Cards can be added to your board to track the progress of issues and pull requests. You can also add note cards, like this one!
Added by a1646930

Automation
Automatically move your cards to the right place based on the status and activity of your issues and pull requests.
Added by a1646930

⊙ PAXOS - HR
#14 opened by a1734056

⊙ Configuration Profiles
#3 opened by a1646930
User Story

⊙ Extensible Algorithm Choices
#4 opened by a1646930
User Story

⊙ Time Series Display
#5 opened by a1646930
User Story

⊙ Results Export
#6 opened by a1646930
User Story

⊙ Easy Configuration
#7 opened by a1646930
User Story

⊙ Dan organise breakfast
#12 opened by a1734056

Automated as To do — Manage

5 Sprint Backlog

⊙ Decide software environment/language
#8 opened by a1734056
question

⊙ Initial Report
#15 opened by a1734056
documentation

⊙ Algorithms and Choices
#1 opened by a1646930
User Story

⊙ Scenario Parameters
#2 opened by a1646930
User Story

Everyone to share notes
Added by a1734056

Automated as In progress — Manage

10 In Progress

Software env/language #8 Tasks
☐ Individually look into AnyLogic simulation modeling tool
☐ PC to write/link to helpful resources for AnyLogic/JavaSwing
☐ (everyone) JavaSwing tutorials and guides
Added by a1734056

1 Reference
⊙ Decide software environment/language
#8 opened by a1734056 in sep2022/complexd
question

Initial Report #15 Tasks
☑ Title Page
☐ Project Vision
☐ Customer Q&A
☐ Users
☐ Software Architecture
☐ Tech Stack and Standards
☐ Group Meetings and Team Member Roles
☐ Snapshot 1.1
Added by a1734056

1 Reference
⊙ Initial Report
#15 opened by a1734056 in sep2022/complexd
documentation

Algorithms and Choices #1 Tasks
☐ PC to share example of distributed algorithm
☐ HR to share helpful material from

Automated as In progress — Manage

1 Review

Set up github project (kanban) board
Added by a1734056

Automated as In progress — Manage

2 Done

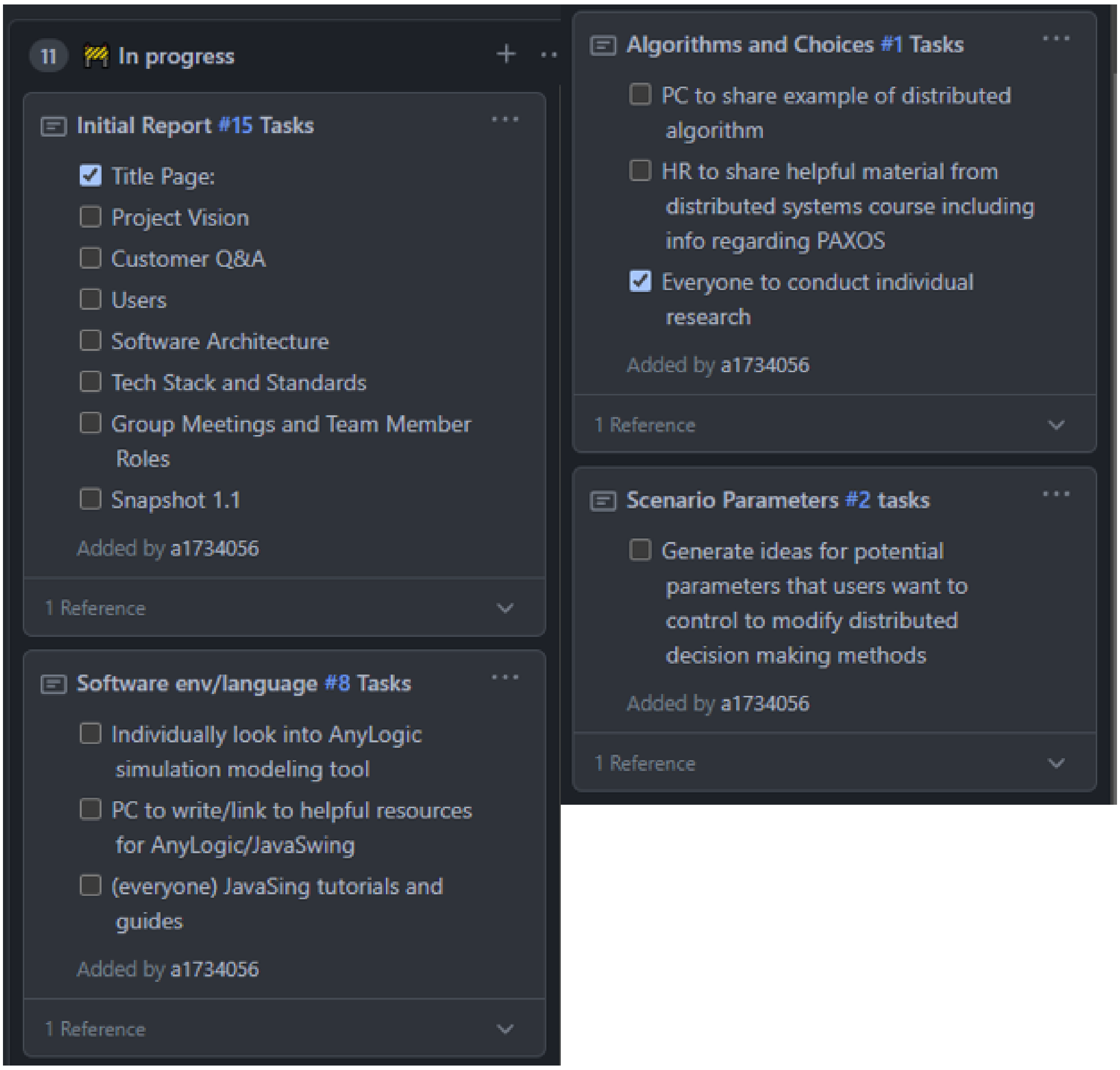
Create additional slack channels
#10 opened by a1734056
documentation

Set up daily scrum slack bot
#11 opened by a1734056
enhancement

Automated as Done — Manage

Figure 2: Task Board Screenshot

Sprint Backlog and User Stories:



11 In progress

Initial Report #15 Tasks

- ☑ Title Page:
- □ Project Vision
- □ Customer Q&A
- □ Users
- □ Software Architecture
- □ Tech Stack and Standards
- □ Group Meetings and Team Member Roles
- □ Snapshot 1.1

Added by a1734056

1 Reference

Software env/language #8 Tasks

- □ Individually look into AnyLogic simulation modeling tool
- □ PC to write/link to helpful resources for AnyLogic/JavaSwing
- □ (everyone) JavaSing tutorials and guides

Added by a1734056

1 Reference

Algorithms and Choices #1 Tasks

- □ PC to share example of distributed algorithm
- □ HR to share helpful material from distributed systems course including info regarding PAXOS
- ☑ Everyone to conduct individual research

Added by a1734056

1 Reference

Scenario Parameters #2 tasks

- □ Generate ideas for potential parameters that users want to control to modify distributed decision making methods

Added by a1734056

1 Reference

Figure 3: Sprint 1 backlog

The selected user stories for the current sprint are **Algorithms and Choices (Issue #1)** and **Scenario Parameters (Issue #2).** The Algorithms and Choices user story is described by *"As a typical user, I want to be able to choose at least one algorithm to test, so that I can see how effectively it performs"*. The Scenario Parameters user story is described by *"As a user interested in experimental scenarios, I want to control the parameters of the scenario, so that I can better contrast the results of different algorithms"*.

Definition of Done:

- Code written and commented
- Documentation written and updated
- Code peer-reviewed
- Documentation peer-reviewed
- Tests written and passing
- Non-functional requirements met (UX, performance, availability)
- Acceptance criteria fulfilled

Summary of Changes:

In the sprint planning meeting with the product owner, the team reviewed the project brief in detail and broke down what the client wanted. The project scenario was also discussed, specifically the information and guidelines that were given about the cowboys (friendly agents) and aliens (unfriendly agents). Since this meeting, the team has performed individual preliminary research and literature reviews on distributed decision making methods. Several additional project oriented aspects were also considered, including what the user may wish to control/modify in their use cases, and ways in which scenario can be paramaterised. A potential software architecture described by 'Design Patterns', a popular framework for building extensible and maintainable object oriented code, was also examined. In the week 3 team meeting individual work and research was consolidated, past experiences in related software fields were shared, and future actions for the sprint, including the initial report sections for the upcoming milestone, were allocated.

Snapshot Week 4 of Group COMPLEX 8

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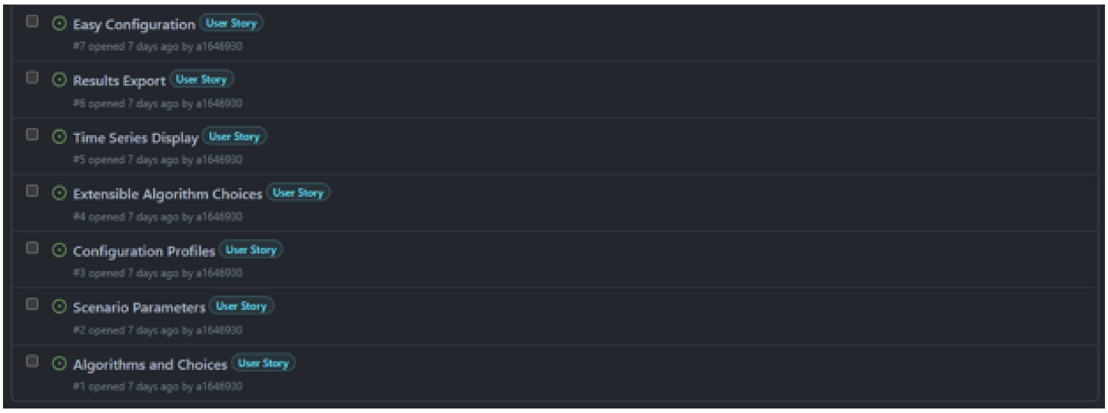
Product Backlog and Task Board:



□ Easy Configuration User Story
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□ Algorithms and Choices User Story
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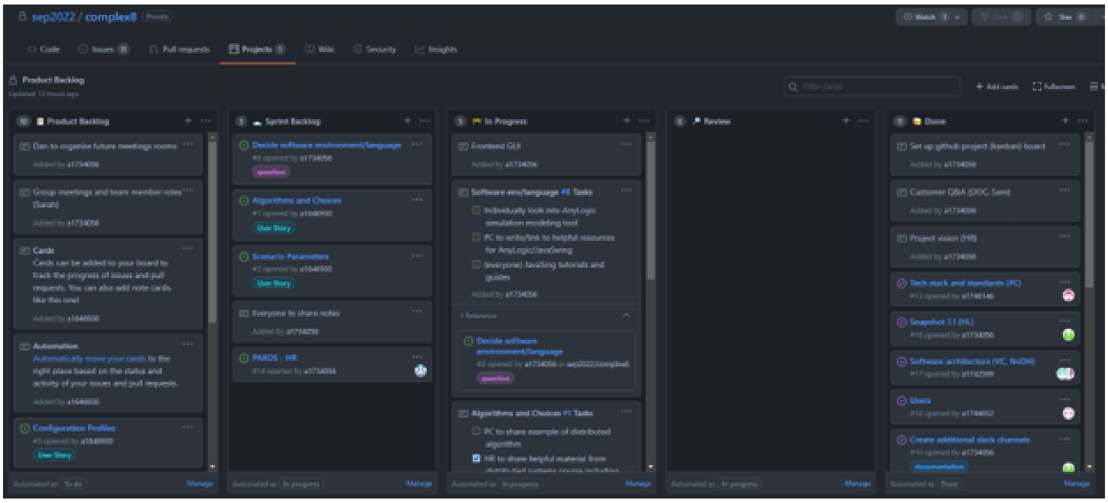
Figure 1: Product Backlog Screenshot



sep2022 / complex8 Private

Product Backlog
Updated 13 hours ago

Product Backlog

- Dan to organise future meetings rooms
  Added by a1734056
- Group meetings and team member roles (Sarah)
  Added by a1734056
- Cards
  Cards can be added to your board to track the progress of issues and pull requests. You can also add note cards, like this one!
  Added by a1646930
- Automation
  Automatically move your cards to the right place based on the status and activity of your issues and pull requests.
  Added by a1646930
- Configuration Profiles
  #3 opened by a1646930
  User Story

Automated as To do

Sprint Backlog

- Decide software environment/language
  #8 opened by a1734056
  question
- Algorithms and Choices
  #1 opened by a1646930
  User Story
- Scenario Parameters
  #2 opened by a1646930
  User Story
- Everyone to share notes
  Added by a1734056
- PAXOS - HR
  #14 opened by a1734056

Automated as In progress

In Progress

- Frontend GUI
  Added by a1734056
- Software env/language #8 Tasks
  □ Individually look into AnyLogic simulation modeling tool
  □ PC to write/link to helpful resources for AnyLogic/JavaSwing
  □ (everyone) JavaSing tutorials and guides
  Added by a1734056
  1 Reference
  Decide software environment/language
  #8 opened by a1734056 in sep2022/complex8
  question
- Algorithms and Choices #1 Tasks
  □ PC to share example of distributed algorithm
  ☑ HR to share helpful material from

Automated as In progress

Review

Automated as In progress

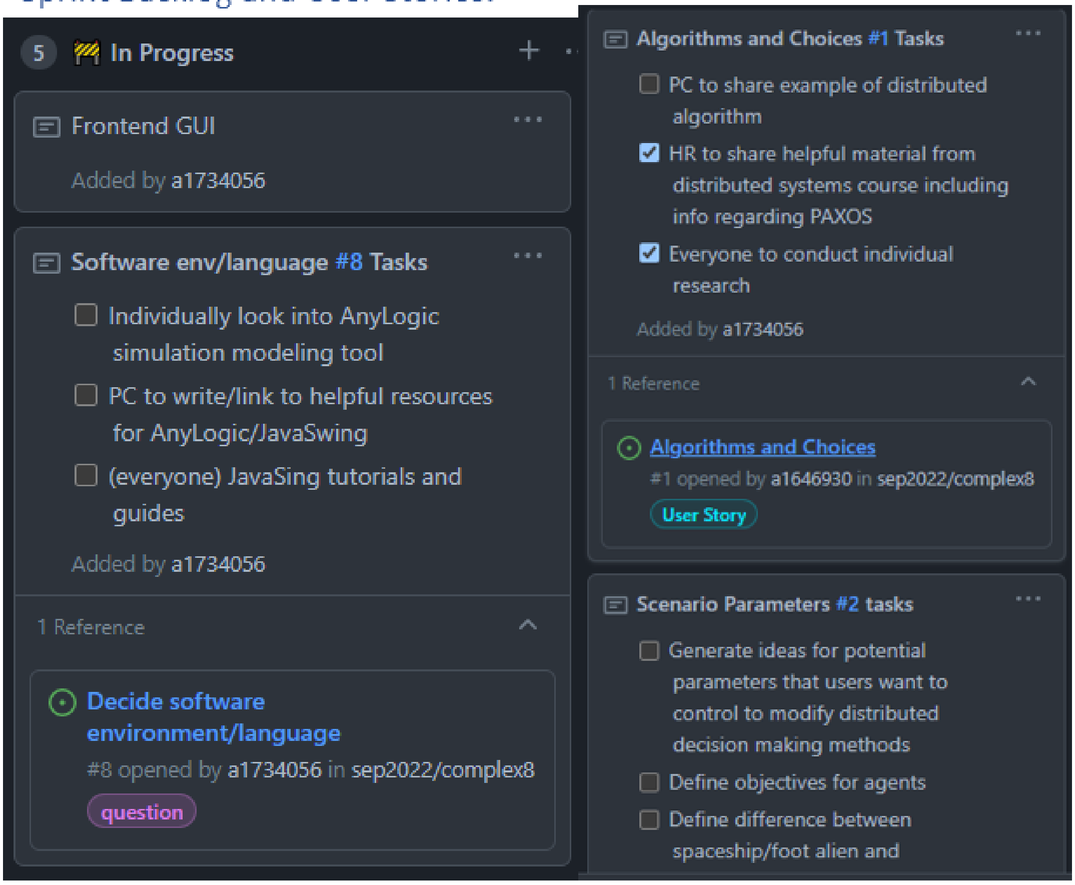
Done

- Set up github project (kanban) board
  Added by a1734056
- Customer Q&A (DOC, Sam)
  Added by a1734056
- Project vision (HR)
  Added by a1734056
- Tech stack and standards (PC)
  #13 opened by a1740140
- Snapshot 1.1 (HL)
  #16 opened by a1734056
- Software architecture (VC, NvDH)
  #17 opened by a1702599
- Users
  #18 opened by a1744652
- Create additional slack channels
  #10 opened by a1734056
  documentation

Automated as Done

Figure 2: Task Board Screenshot

Sprint Backlog and User Stories:



Frontend GUI

Added by a1734056

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1 Reference

Algorithms and Choices

#1 opened by a1646930 in sep2022/complex8

User Story

Scenario Parameters #2 tasks

□ Generate ideas for potential parameters that users want to control to modify distributed decision making methods

□ Define objectives for agents

□ Define difference between spaceship/foot alien and

Figure 3: Sprint 1 backlog

The selected user stories for the current sprint are Algorithms and Choices (Issue #1) and Scenario Parameters (Issue #2). The Algorithms and Choices user story is described by *"As a typical user, I want to be able to choose at least one algorithm to test, so that I can see how effectively it performs".* The Scenario Parameters user story is described by *"As a user interested in experimental scenarios, I want to control the parameters of the scenario, so that I can better contrast the results of different algorithms"*. As a part of this, the "Frontend GUI" card was added this week so the team can start understanding how these user stories will eventually interface.

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

Summary of Changes:

Since the last team snapshot, the team has collectively accomplished the first initial report milestone. The team has solidified their understanding of our project vision and discussed how to accomplish our project goals. Our code architecture, which focuses on leveraging the advantages of 'design patterns' to ensure extensibility and scalability into the future, has been designed and communicated to team members. The tech stack and framework for the software system has also been written. Details of all these items were included in the initial report. In the week 4 meeting, the team's ideas for consensus problems in distributed systems were discussed, which was very helpful in aiding team members who did not have as much experience in these areas. In preparation for the sprint review meeting next week, the team has divided work into four areas to focus on, so that feedback and approval can be sought from the product owner. These areas are scenario design, backend distributed decision making framework, frontend GUI, and requirements documentation.

What went well in the sprint?

In this first sprint, the team worked really well in gaining familiarity with the agile project management framework. All team members shared a strong work ethic, so there was a lot of individual enthusiasm in learning about the project and the related field of distributed systems. This enthusiasm also translated to our regular team meetings, where everyone was prepared and eager to share thoughts and ideas. In these discussions, the team exercised great initiative and cooperation, especially when distributing tasks for each week as everyone was happy to work on their assigned tasks and offered to pick work that wouldn't double up on another individual's. Throughout the sprint, all team members worked well together and there have been no conflicts due to the shared open-minded mentality of the group. Overall this will help build better software as the shared knowledge base will be wider, and many more perspectives can be considered when making design decisions. A healthy team culture also encourages cooperation and facilitates discussion.

What could be improved?

An agreed consensus was that the regular team meetings should be more action oriented. Despite wanting to hear from each individual, too much time was spent on round the table progress/status updates. As a result, some team members were not entirely clear on what they should work on over the course of the week. This was detrimental to software development, as the lack of a clear work goal for the duration of the working period makes it difficult to focus and direct efforts on making measurable progress. Another aspect that could be improved was creating work that could be more independently managed and efficiently integrated. Ideally each team member can be issued certain tasks to work on independently over a sprint, and then it could be integrated/synchronised at regular intervals so that our project outcome could grow incrementally. Additionally, the GitHub project board was not used often, which meant that it was difficult to keep track of tasks and progress throughout the sprint.

What will the group commit to improve in the next sprint?

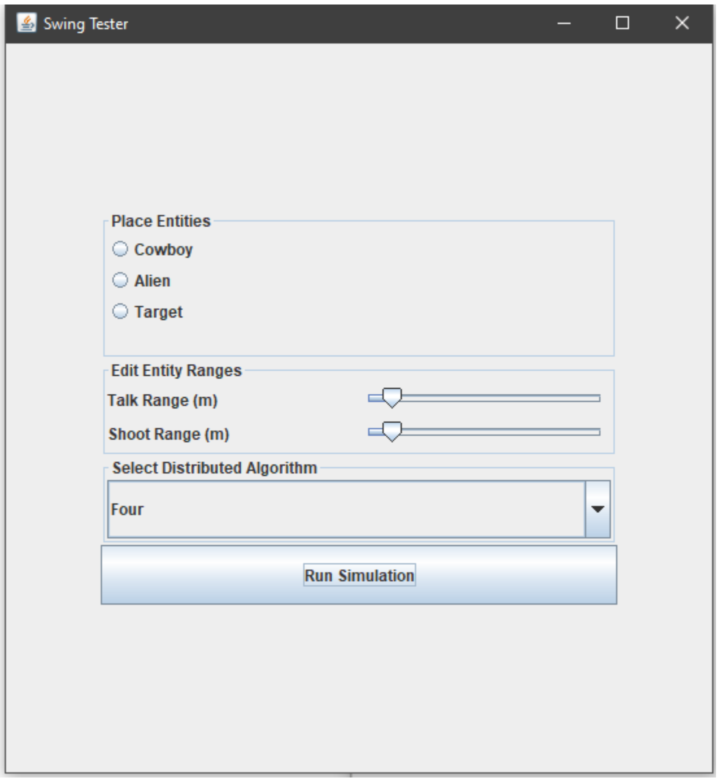
Efforts will be made to keep up to date with each team member's activities and progress to cut down on time spent in meetings updating each other. The team will be more committed to reading and reacting to daily standups of other team members, specifically those in the same subteam. Furthermore, it was decided that each team member would commit to writing a paragraph about their work accomplished in each week, so that everyone can read and catch up on their progress prior to each weekly meeting. This way more time in the meeting can be used for defining upcoming actionable tasks for future goals, which should improve the streamlining of software development. Additionally, the group will make more use of the GitHub project board in the next sprint. Everybody will be in charge of their own GitHub cards by immediately creating the relevant cards on the project board as soon as a relevant task is started. This will help software development as tasks can be tracked more efficiently throughout sprints.

Comment on your progress this sprint

My tasks:

- Metrics / outputs
- Cowboy behaviours
- Snapshot 1.1, 1.2
- Initial Report
- Frontend GUI

This sprint I was the scrummaster for the group. I focused my efforts on project administration, such as facilitating meetings, distributing work, group management, and updating the GitHub project board in the first few weeks of the project. The complexity of these responsibilities was fairly moderate, since there were no associated technical challenges, but I had to think critically about what was required to build good momentum within the team for the current sprint and the future. Away from project management, I also did my own research on distributed algorithms to stay as up to date as possible with the subteam focusing on that area. I also had regular meetings with the scenario design team who were responsible for the specifying details about the alien and cowboy parameters, where I was also able to work on and present my own ideas. The complexity of these tasks was relatively low, as I only contributed at a high level. Additionally, I have met a few times with the frontend GUI team to discuss their ideas on how the end user should interact with the software system, and I have independently created a mockup of the front end to seek approval from the product owner. This is shown below.



Select Distributed Algorithm: Four

The complexity here was much higher, as this was the first time I had really programmed in Java. It took me a few days to become familiar with JavaSwing after setting up in my coding environment, but I was able to produce an outcome that gives us a good baseline for the future.