# Product Planning

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## 1 Introduction

”Productivity is never an accident. It is always the result of a commitment to excellence, intelligent planning, and focused effort.” is what Paul J. Meyer, one of the world’s most outstanding authorities in the fields of goal setting, motivation, time management, and personal and professional development, said about productivity in groups and it is exactly what we aim to accomplish during this project. by carefully planning the steps that we will take during the upcoming weeks we try to be as productive as possible. In this document we will go over many of the planning properties that we will use to describe the steps that we will take during the time of the project.

# 2 Product

In this section we willl describe the agent for the role of TU Delft in the Tygron game. First we will give an overview of the high level product backlog. After that we will describe our planning for this product with a roadmap.

## 2.1 High-level product backlog

In this section we will describe the different features of our agent for the role of TU Delft in the Tygron game. To describe these features we are going to use MoSCoW.

### 2.1.1 Must have's

The following features are critical to the deliverable, if these features are not included, the project deliverable should be considered as failure.

- The agent must make decisions based on his goals.
- The agent must be able to build buildings.
- The agent must be able to destroy buildings.
- The agent must be able to buy and sell land.

### 2.1.2 Should have's

The following features can be as much important as the must haves but are not necessary for the deliverable.

- The agent must be able to negotiate with other agents.
- The agent should be able to transfer money to another stakeholder.
- The agent should never get stuck and always try to achieve his goals.
- The agent should not go bankrupt.
- The agent should act as any other human player.
- The agent should make for other players understandable decisions based on his goals.

### 2.1.3 Could have's

The following features are desirable but not necessary, and could improve user experience or customer satisfaction.

- The agent could build parking space for each faculty according to the required amount.
- The agent could acquire green and water at the campus area according to the required amount.

### 2.1.4 Wont have's

The following features are undesirable, and will not be implemented for the agent.

- The agent won't have the ability to grant permits to other stakeholders.
- The agent won't be able to build any kind of housing.

## 2.2 Roadmap

The planning for the project is shown in this table.

- **Design phase**
  In this phase we will mostly be playing the Tygron game and discussing with other groups in order to construct a game which is interesting enough for the agents to function in.
- **Sprint 1**
  - Practice with the Tygron engine
  - Think about possible roles for agents
  - Discuss roles with the other groups
  - Visit Tygron
- **Sprint 2**
  - Make project vision and planning
  - Select an area for the game
  - Edit the area to make it fit for the project
  - Distribute the roles among the groups
  - Start implementing basic functionalities for role
  - Prepare the demo for the game together with the other groups

- **Sprint 3**
  - Start implementing functionalities for role
  - Test the added functionalities
  - Write tests for the connector changes
  - If needed, make changes and additions to the connector
- **Sprint 4**
  - Add or change functionalities for the agent
  - Test the added functionalities
  - If needed, make changes and additions to the connector
  - Write tests for the connector changes
- **Sprint 5**
  - Prepare the demo for the agent
  - Add or change functionalities for the agent
  - Test the added functionalities
  - If needed, make changes and/or additions to the connector
  - Write tests for the connector changes
- **Sprint 6**
  - Add or change functionalities for the agent
  - Test the added functionalities
  - If needed, make changes and additions to the connector
  - Write tests for the connector changes
- **Sprint 7**
  - Prepare the demo for the agent
  - Add or change functionalities for the agent
  - Test the added functionalities
  - If needed, make changes and additions to the connector
  - Write tests for the connector changes
- **Sprint 8**
  - Make final changes to the project
  - Make final changes to the agent
  - Prepare the final demo and assessment

# 3 Product Backlog

The following section describes our product backlog in the form of user stories. These user stories give us a way to see some of the requirements for our agent and help us in estimating the amount of work that will be required to create a good agent, by giving us a visual indication of all the things that need to be done.

## 3.1 User stories of features

In this section we will describe the user stories of the features of the project. This section aims to clarify what the different actors want to be able to do during a session of the game. The prioritization goes from high priority to low, based on the essential functions that the system should have.

As a user
When I start the environment
I want to be able to easily start a simulation.

As a user
When running a simulation
I can see an agent trying to achieve its goals and eventually come as close to its goals as possible in the environment.
To be able to monitor the agent.

As a user
When running a simulation
I can understand why an agent would make a certain decision if I know the goals of this agent.

As a user
When running a simulation
It becomes clear to me what the TU Delft wants to happen to the TU-wijk and how the TU Delft makes this happen.
To understand the choices that the agent in a current situation will make.

As an agent
When in a simulation
I am able to make decisions based on my goals and based on the possible outcomes of this decision.
To be able to reach the goals that were set.

As an agent
When in a simulation
I am able to buy ground if I think this is benificial for me.
To construct things that are part of my goals.

As an agent
When in a simulation
I am able to destroy stuff if I think this is benificial for me.
To make room for construction or to optimize a certain indicator.

As an agent
When in a simulation
I am able to give other agents money if I think this is benificial for me.
To optimize a certain indicator or to make a good deal.

As an agent
When in a simulation
I am able to build stuff if I think this is benificial for me.
To optimize a certain indicator or to reach a construction goal.

As an agent
When in a simulation
I am able to send requests to other agents to negotiate about things I need.
To try to receive things that I need for reaching a certain goal.

As an agent
When in a simulation
My goals are to build new faculties, renovate old faculties, keep a healthy financial state and have enough parking space and trees on the campus.
To optimize all my indicators.

As an agent
When in a simulation
I will not get stuck when a request is denied and I will make a new request or start another plan to achieve my goals.

As an agent
When I get stuck in a simulation
I will drop all my goals at that moment and try to work on something else.
To be able to continue trying to reach my goals.

## 3.2 User stories of defects

There are no user stories yet, because for now we do not have any defects.

## 3.3 User stories of technical improvements

As a developer
When the connector doesn't support my needs
I will improve the connector in a way that it will support my needs.

As a developer
When the tygron engine doesn't support my needs
I will ask tygron to add something to the engine.

## 3.4 User stories of know-how acquisition

As a developer
When I need to know something about the tygron sdk
I look it up on the wiki or ask someone from tygron.

As a developer
When I need to know something about goal
I look into the documentation or look on the github page.

## 3.5 Initial release plan

This section contains the schedule of all our releases over the coming weeks. We divided this period in 3 stages. Every stage roughly represents 2 weeks, starting in week 4. The last stage represents only one week, in this week we will optimize our agent and finish it. Because we are not sure yet how much work every part is and what will be difficult our schedule is somewhat loose at the moment. This will change when we start writing code, because we will get a better view of the items that take a lot of time at that point.

**Stage #1**

- Make a very simple agent.
- ability to build

**Stage #2**

- ability to send messages
- ability to receive messages

**Stage #3**

- ability to respond to messages
- ability to negotiate

**Stage #4**

- finalize agent

# 4 Definition of done

This section will describe when we will consider a backlog item, sprint or release as done.

## 4.1 Backlog items

Backlog items will be done when the item is finished according to the responsible team member and at least one other member reviewed the work done and merged the code with the branch of the current sprint. In case of documents, at least one other member should have read the document.

## 4.2 Sprints

We'll consider a sprint as done when all items in the backlog are finished. When an item for some reason isn't finished it should be discussed with all group members, if necessary the item can move on to the next sprint. At the end of the sprint there should be at least a running version, with properly documented code that passes all tests.

## 4.3 Releases

A release is considered done when we handed in all deliverables and have done the demo for that release. At least the must-haves should be implemented and all tests should pass.