# Product planning

WhySoSerious

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# 1 Introduction

Tygron is an online 3D multiplayer game engine for urban communities. A community can design and maintain a very detailed simulation of their area. In this simulation different stakeholders are able to interact and change the simulated environments to see how this effects the community. The local government of a city for example could use this simulation to see if their plan to renew the infrastructure would cause a significant change in noise pollution for the affected area's.

Just like in real life, the simulation contains a set of stakeholders each with their own goals and permissions. When one or more of these stakeholders is not willing or able to participate in Tygron's simulation the other stakeholders are required to fulfill those parts of the simulation. Since this is a lot of unnecessary work for them, Tygron has decided to simulate the actions of the missing stakeholders with artificial intelligence.

This is where we come in. We are working together with 4 other groups from the TU Delft to create a simulation with different stakeholders who compete and cooperate with each other to fulfill their goals. Afterwards we will use the GOAL language to create virtual agents that can simulate these stakeholders. These agents should be able to communicate with each other through the game to trade assets and reach certain compromises.

# 2 Product

## High-level Product backlog

As a user I want the Tygron game to have multiple competing stakeholders, each with their own permissions and goals.

As a user I want the Virtual agent to achieve his goals using his permissions.

As a user I want the Virtual agent to communicate with the other virtual agents.

## Roadmap

In this section we discuss per week our release goals and what we want to implement.

### Week 1 sprint

In this sprint we will be collaborating with the other teams on what kind of game we want to build. Besides this we are going to explore the Tygron Engine and make sure we are familiar with it.

### Week 2 sprint sprint

In this phase we should be done with designing the game. We begin discussing with the over vh-teams who is assigned which stakeholder.

### Week 3 sprint

We start developing our DUWO agent. Our primary goal here is to make sure there are enough houses for students. To achieve this the agent must also be able to build houses on owned land.

### Week 4 sprint

Since we do not want to go bankrupt it is important to implement this kind of functionality for our agent.

**Week 5 sprint**

Now it is time to show what we have developed so far. There is a demo where we connect all agents and show the result to Tygron. If everything is working we start implementing trading pieces of land with other agents.

**Week 6 sprint**

This week the code is send to SIG for evaluation. This means that we will mainly focus on removing bugs and software engineering anti-patterns. Implementing useful patterns and making sure everything is properly tested.

**Week 7 sprint**

In this phase we begin implementing smarter trading. We want the buildings closer to the TU Delft.

**Week 8 sprint**

In this week there is a second demo so it is important to remove any bugs and implementing the last necessary features.

**Week 9 sprint**

This is the last sprint what means we must deliver the final product. The code must also be uploaded to SIG. So we will be removing bugs and software engineering anti-patterns. Also we must make sure our Architecture design paper is up to date.

# 3 Product Backlog

## Features

### Tygron game

**Must have:**

As a user I want the Tygron game to represent a part of Delft containing the TU Delft and it's campus.

As a user I want the Tygron game to have multiple competing stakeholders each with it's own goals.

As a user I want the Tygron game to have multiple competing stakeholders each with it's own permissions.

**Should have:**

As a user I want the Tygron game to have the goals and permissions of the stakeholders defined in such a way that it is necessary for each stakeholder to communicate with other stakeholders to achieve its goal.

### Virtual agent

**Must have:** As a user I want the virtual agent to be able to build student housing on owned land.

As a user I want the virtual agent to be able trade land with other stakeholders.

**Should have:**

As a user I want the virtual agent to consider trading land so that it is closer to the TU Delft buildings.

As a user I want the virtual agent to make sure it doesn't exceed his allocated budget.

As a user I want the virtual agent to make sure that it always has enough houses available to students.

As a user I want the virtual agent to be able to communicate to the other virtual agents representing stakeholders in the game.

**Could have:**

As a user I want the virtual agent to consider the difference between long and short term student housing.

## Technical work

As a developer I need to have the latest version of GOAL installed.

As a developer I need to have github set up properly

As a developer I need to have the tygron engine preview installed

### Know-how acquisition

As a developer I need to know how the Tygron EIS Connector works

As a developer I need to know the GOAL language and it's new features

As a developer I need to plan the development of the Tygron game with the other vh-context teams

### Initial release plan

In the second week we would like to release the game. In the game it should be clear what kind of stakeholders there are and what they care about.
After this it is time to create a virtual human. From this moment we want to release a working virtual human every sprint (thus every week). Every sprint we want to add new features.
In week five and eight there is a demo of all virtual humans. This demo will be held at Tygron. In week ten we release our final version of our virtual human.

# 4 Definition of Done

In this section we will be taking a close look at when the product is considered to be done. To determine this we will discuss when backlog item and sprints are considered to be done. After this we will conclude when a release is done.

A backlog item (or a feature) is considered done when the code has been tested and has been reviewed by at least two other developers. With being tested we mean: a feature is tested when it does not fail any tests. Since we use two different programming languages, we use different kind of testing methods for each language. For GOAL we use the Unit Testing Framework and for Java we use unit testing, regression testing and integration testing.
The code should also be properly be documented.

A sprint is considered done when of course all the tests of all backlog items do not fail. A system test should also pass. This should make sure our product is still working properly. Besides this all documentation should be updated/reviewed to see if it is still correct.

A release is considered done if at first all the test pass (including a system test). As second the behavior of the agent is correct. All code of a release can be found at our github, the code should also be properly documented.

# 5 Glossary

- Stakeholder

  A stakeholder in the simulation is one of the following: municipality, TU Delft, DUWO (student housing), companies and housing cooperation.

- Virtual human

  Virtual human is another term for the agent that we are creating.