VIRTUAL HUMANS
FOR SERIOUS GAMING
PRODUCT VISION

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Delft May 4, 2016

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1 Introduction

This project is build around the Tygron Engine; an urban planning 3D software product. It requires different stakeholders to work together in real life locations. This allows all parties to simulate how certain decisions, might influence everyone participating. All planning is done in real time, which makes the simulation more real, but creates problems requiring every stakeholder to be physically present during the simulation. This is commonly done through Charretes(Todd & Lindsey, 2013). To combat this problem teams from the Delft University of Technology are asked to create a virtual human, which simulates a real stakeholder by the use of artificial intelligence programming.

In the next sections a couple of questions will be answered about our product and the vision we have as a group.

- Who is going to buy the product? Who is the target customer?
- Which customer needs will the product address?
- Which product attributes are crucial to satisfy the selected needs, and therefore to the success of the product?
- How does the product compare against existing products, both from competitors and the same company? What are the products unique selling points?
- What is the target timeframe and budget to develop and launch the product?

2 The customer

This product is an extension of the Tygron Engine created by Tygron. The Tygron Engine is bought and used by municipalities, educational institutions, property developers and companies. These customers use the Tygron Engine to plan urban or rural environments in real-time.

2.1 Who is going to buy the Product?

The product is designed for the customers of the tygron engine. This means that the end users will see the product in action in their own sessions of the game. The project team will create this product for the company Tygron.

2.2 Who is the target customer?

Tygron is a The Hague based company consisting of ten employees. Its product is the Tygron Engine. The Tygron Engine is an online 3D project software for urban planners, architects and engineers.

3 Which customer needs will the product address?

The Tygron Engine can be used to create serious games in urban planning. In urban planning, many stakeholders are involved such as the mayor, housing corporation and the inhabitants. This means that it requires multiple users to play a game in the engine. It is imaginable that users want to be able to play the game independently of other users. Our product provides a single-player mode. There are still multiple stakeholders, but those that can not be played by actual players are replaced by virtual humans. Specifically our product will imitate the behavior of an organisation that provides services to the inhabitants of the area. The users need to interact with this agent as if with a human. When a user plays the game it must feel realistic as if it is a multi-player mode game.

So in general the customer need to play the game individually will be adressed by the product by imitating the role of a service provider in the urban area.

4 Which product attributes are crucial to satisfy the selected needs, and therefore to the success of the product?

For the agent to imitate the behavior of a service provider it has to fulfill certain requirements. These requirements contain the ability to perform the basic actions of the Tygron Engine and complex thinking on its own specific to a service provider. The requirements and are as follows:

1. The agent must be able to perform he basic actions of the Tygron Engine.
   (a) Construct buildings
   (b) Demolish buildings
   (c) Buy land
   (d) Sell land
   (e) Consult indicators
2. The agent must be able to compute an effective strategy to reach the targets set.
   (a) Interpret indicators and use the information to adjust strategy
   (b) Interact with other stakeholders
   (c) Calculate optimal placing of buildings

So by being able to perform those actions the agent will be fully functional as an imitator.

5 Comparable products

In this section all comparable products in the field are layed out next to our product. Comparable products are urban planning software and implementations of virtual humans.

5.1 Own product

How does our product compare to Tygrons own product? The Tygron Engine currently is only playable through human interaction. There are at the time no available programs that simulate real life stakeholders, virtual humans.

5.2 Competitive products

How does our product compare to competitors of Tygron? Urban planning software used in current day scenarios are not based on the ability to collaborate and compete with different stakeholders in the same session. Virtual humans, who actually plan urban spaces following specified casi, are not yet commercially available.

5.2.1 Urban planning software

Over the years there has been a substantial amount of games related to urban planning(Poplin, 2011), but only recently serious games have been up and coming. The Environmental Systems Research Institute is the developer of the Geographic Information System(ESRI, 2006). Based on this system, a lot of applications are build which allow users to plan urban environments and share these plans with other urban planners. An example of such an extension is iCity(Stevens, Dragicevic, & Rothley, 2007). This tool allows users to import geodata and simulate a 3d world. The big difference with the Tygron Engine is that the focus is more on modelling than on simulating conflicts between different stakeholders.

5.2.2 Virtual human implementations

5.3 Unique selling points

Our product allows customers of the Tygron Engine to simulate urban planning scenarios on a more regular basis. Customers are not bound by strict schedules of all different stakeholders and are able to replace certain stakeholders if need be.

6 Timeframe and budget

The project is done by a group of five students from the Delft University of Technology commissioned by Tygron. The group is given a timeframe of ten weeks, of which the first two weeks are meant for creating a game in which the virtual humans are to work in. The following eight weeks are spent on designing and coding the virtual human for the Tygron Engine. Each week is organised as a sprint following the SCRUM (Rising & Janoff, 2000) methodology.

The students do not have or need a budget to succesfully complete the project.

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