**Project plan**

***Table Talk***

*Rudy Schuurmans*

***Tilburg***

#### Version

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| **Version** | **Date** | **Author(s)** | **Amendments** | **Status** |
| 0.1 | 2-7-2023 | Rens Vlooswijk |  |  |
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**Communication**

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| **Version** | **Date** | **To** |
| 1 | 28-2-2023 | Rudy Schuurmans |
| 1 | 28-2-2023 | Lisette Penterman-Overkamp |

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# Project Assignment

## Context

Practoraat interactieve technologie is an institution within ROC Tilburg that focuses on interactive technology. The company provides education and training in various fields related to technology, including virtual and augmented reality. Rudy, my stakeholder, and client, is a Dutch teacher at ROC Tilburg for refugee students. The reason for the assignment is that the students of the Dutch teacher have trouble speaking Dutch. They practice this by having conversations with each other, but the teacher needs to be present to correct and help them. This makes it impossible for multiple people to practice at the same time. A VR would help students practice conversations on their own. Since they could practice at home, and it is more interesting. The students have also had a previous VR experience which was received very well.

## Goal of the project

The goal of the project is to provide a virtual environment for students to practice their Dutch language skills in a restaurant setting. The problem that needs to be solved is that students require a teacher's presence to correct them during their language practice sessions. This results in limited opportunities for multiple students to practice speaking Dutch at the same time. The desired situation is to have a virtual environment where students can practice their language skills on their own and receive feedback in real-time.

The benefits of the project include improved language skills, increased confidence while speaking, and the ability to practice speaking Dutch anytime and anywhere. The VR restaurant game will offer students the possibility of having realistic conversations with a virtual waiter and provide an immersive learning experience. The product or project result will offer the capability of practicing language skills in a virtual environment and provide the facility of real-time feedback and improvement.

## The assignment

Develop a virtual reality game to teach Dutch language to refugees at ROC Tilburg, improving language proficiency, engagement, motivation, and success, aging 18 to 50.

Functional Requirements:

* The VR game should be able to teach the Dutch language effectively to the students
* The game should be interactive and engaging.
* The game should be tailored to the specific needs of the target audience.
* The game should improve language proficiency, engagement, motivation, and chances of success among the targeted student population.
* The game should be able to integrate into the language instruction curriculum at ROC Tilburg.

Non-Functional Requirements:

* The VR game should be user-friendly and easy to navigate.
* The game should be designed to minimize motion sickness and other adverse effects.
* The game should be compatible with commonly used VR headsets and controllers.
* The game should be reliable and stable, with minimal technical issues or bugs.
* The game should be accessible and inclusive to all students, regardless of their background or abilities.

## Scope

|  |  |
| --- | --- |
| **The project includes:** | **The project does not include:** |
| 1. Developing and implementing a virtual reality game to teach Dutch language to refugees. | 1. Developing a fully polished, commercial-grade VR game for widespread distribution. |
| 1. Conducting research on the effectiveness of virtual reality in language learning, as well as best practices and guidelines for designing and developing virtual reality games for language learning. | 1. Implementation and maintenance of the VR game beyond the scope of the internship. |
| 1. Piloting the VR game with a small group of students to gather feedback and make necessary adjustments. |  |
| 1. Evaluating the effectiveness of the game in terms of language proficiency and engagement, and producing a report on the research, development, and testing process. |  |

## Conditions

* *Using a Meta Quest 2 VR headset as hardware*
* *Using software that is compatible with the Oculus Quest 2 VR headset (Unity)*
* *Using software that allows for voice recognition and speech, which will require research to find a suitable package or software.*

## Finished products.

Diagram

Description automatically generated

\*Research also includes test reports and other documents such as class diagrams, use cases, test cases, user stories and functional/non-functional requirements\*.

Scene:

For the game I will need to create a scenery, in this case I will be making a restaurant environment, using either blender or the unity asset store.

Talking Character:

For this game to work I will need to create a character that can speak using text to speech and hopefully an AI. If the Ai version is impossible, I will use a script.

Voice Recognition:

I will also use voice recognition to perform voice commands so that you can talk to the in-game character.

Script:

My client Rudy will create the script to include important learning aspects. This however will only be necessary if an AI version deems impossible.

Portfolio:

During this project I will also create a portfolio to keep track of everything I make.

## Research questions

Main Question: How effective is virtual reality technology in teaching Dutch language to the students, and what are the best practices for designing and developing a virtual reality game for this purpose?

1. What is the current state of research on the use of virtual reality technology in language learning, and how does it compare to traditional language learning methods in terms of effectiveness and engagement?
2. What are the specific challenges and considerations when using virtual reality technology for language learning, particularly for the students?
3. How can we evaluate the effectiveness of the virtual reality game in terms of language proficiency and engagement, and what are the best practices for gathering feedback from the students?
4. What are the key steps and best practices for creating a successful proof of concept for a new product or technology?

# Approach and Planning

## Approach

For my internship project, I will use the Scrum methodology with 4-week sprints, which will involve daily stand-up meetings and retrospectives. To keep track of my progress, I will be using Trello as a project management tool.

### Test approach

I will visit the refugee part of the ROC a couple of times this internship to perform live demos with the students. These will test the effectiveness of the product. And check if the students like this teaching method better than regular ones. After a demo the students will be able to rate the product in a forms document.

The code will be reviewed, when necessary, by Fontys teachers and other students at PIT.

## Research methods

All research will be done using different parts of the DOT framework.

Question: What is the current state of research on the use of virtual reality technology in language learning, and how does it compare to traditional language learning methods in terms of effectiveness and engagement?

Research strategy: library (literature review) and Field (observation)

Method: Review academic literature on the use of VR in language learning and observe classes that use VR and traditional methods for language learning.

Why: This will provide an understanding of the current state of research on VR in language learning and allow for a comparison of effectiveness and engagement between VR and traditional methods.

Question: What are the specific challenges and considerations when using virtual reality technology for language learning, particularly for the students?

Research strategy: Field (observation) and Field (interviews)

Method: Observe VR language learning classes for the students and conduct interviews with both teachers and students.

Why: This will provide insight into the specific challenges and considerations of using VR technology for language learning for the students.

Question: How can we evaluate the effectiveness of the virtual reality game in terms of language proficiency and engagement, and what are the best practices for gathering feedback from the students?

Research strategy: library (data analysis) and Field (feedback gathering).

Method: Analyze language proficiency data of students who use VR language learning games and gather feedback from the through surveys and focus groups.

Why: This will allow for an evaluation of the effectiveness of VR games in terms of language proficiency and engagement, and best practices for gathering feedback from the students.

Question: What are the key steps and best practices for creating a successful proof of concept for a new product or technology?

Research strategy: Workshop (case studies and Library (expert interviews).

Method: Conduct case studies of successful proof of concepts for new products or technology and interview experts in the field.

Why: This will provide an understanding of the key steps and best practices for creating a successful proof of concept.

## Breakdown of the project

Sprint 1:

Problem analysis and orientation of the project. Plus setting up the project in GitHub and Trello.

Sprint 2:

Research into a text to speech voice ai to use and implementation of the best one. Plus research into an ai to interpret voice commands and its implementation.

Sprint 3:

Scene creation with learning and using blender if necessary. This sprint I will also focus on fixing bugs.

Sprint 4:

This sprint I will focus on performing live demos with the students and using the feedback to improve the product. I will also be finalizing the product in this sprint and creating the required documentation.

## Time plan

|  |  |  |  |
| --- | --- | --- | --- |
| **Phasing** | **Effort** | **Start** | **Ready** |
| 1. Problem analysis + Orientation phase + setup portfolio | Sprint 1 | 6-2-2023 | 26-2-2023 |
| 1. Research + implementation voice ai’s (text to speech) | Sprint 2 | 27-2-2023 | 12-3-2023 |
| 1. Research + implementation Voice control | Sprint 2 | 13-3-2023 | 24-3-2023 |
| 1. Environment creation | Sprint 3 | 27-3-2023 | 12-4-2023 |
| 1. Bug fixing | Sprint 3 | 20-3-2023 | 2-4-2023 |
| 1. Live demo + feedback implementation | Sprint 4 | 15-4-2023 | 5-5-2023 |
| 1. Finalizing product + finishing portfolio | Sprint 4 | 6-5-2023 | 12-6-2023 |

# Project Organization

## Team members

|  |  |  |  |
| --- | --- | --- | --- |
| **Name + Phone + e-mail** | **Abbr.** | **Role/tasks** | **Availability** |
| *Erdinç Saçan*  *0638501002*  [*e.sacan@fontys.nl*](mailto:e.sacan@fontys.nl) | *Practor, internship organiser* | *Coaching + organising* | *2 days a week. (Wednesday + Tuesday)* |
| *Daan Rutjens*  *0639350760* | *Internship coordinator* | *Coaching + all around help* | *5 days a week* |
| *Rudy Schuurmans*  *rschuurmans03@roctilburg.nl*  *0636310977* | *Stakeholder* |  |  |

## Communication

Stakeholders

Every Tuesday I will be in contact with my stakeholder (Rudy). We will both be in Tilburg, and if not I can contact her via WhatsApp.

Fontys Guide

I have a meeting with Lisette every week on Monday to keep her up to date. If I have any questions that can’t wait, I can contact her via teams.

Company Manger

I will see Erdinc 2 days in the week, on Tuesday and Wednesday. Daan however will be at the location in Tilburg 5 days a week for questions. If I have urgent questions I can also mail Erdinc.

## Test environment

For version control I use GitHub. I will also use GitHub to run tests. I won’t however be using it to implement CI/CD since it won’t be publicly launched.

So, the test environment will be on GitHub on the computer. I will also perform real life user tests with the students. To test the product rather than its code.

## Configuration management

In GitHub I will have a Main branch, and for each specific feature or addition I will create a branch. After each day I will commit to the branch I am working on. And whenever a feature is finished, I will merge it with my Main branch.

# Finance and Risks

## Cost budget

If I really need something for my project and it will be usable for PIT after I leave, I can request that they buy it. But I don’t see it very likely that this will be necessary.

## Risks and fall-back activities

|  |  |  |
| --- | --- | --- |
| **Risk** | **Prevention activities included in plan** | **Fall-back Activities** |
| 1. Erdinc and Daan unavailble | Stay in contact with other PIT interns | Contact ROC |
| 1. Rudy unavailable | Contact Marja, stakeholder of a similar project / target audience | Ask Erdinc for a new stakeholder |
|  |  |  |