Technology Project Plan – Ambient Student House

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Team members:

*Stefan Andonov, Chiem Dings,*

*July Trendafilov, Nick Mulders, Misha Rozkvas*

CEO – Oswald Figaroa

Product Owner – Tech Prodigy

Tutor – Gerald Hilderink

Signature of CEO:

Signature of Product Owner:

*Table of contents*

|  |
| --- |
| 1. *Introduction 3* |
| 1. *Project Description 3* |
| 1. *Project Scope 4* |
| 1. *Stakeholders 5* |
| 1. *Milestones 5* |
| 1. *Communication Plan 6* |
| 1. *Risk Management 7* |
| 1. *Software Configuration Management 7* |
| 1. *User stories 8* |

1. Introduction

This project plan describes the systems we want to implement and the milestones we want to achieve, as well as how the tasks are handled. The project takes place in the period between the 29th of November and the 18th of January.

1. Project description

The reason of this project is to be the first on the market with a renewing smart student house, and because we are the first on the market the demand will be high. The reason for the automation is to enable the user to have more control over their house by using their student card. By adding useful automations and smart devices, the user won’t have to deal with turning on lights or flushing the toilet manually. For students this would be the ideal home since in most cases students are lazy and leave their home in a mess. The goal of this project is to provide the user with a modern and easy to use home, even when they are not present.

1. Project Scope

To know what the boundaries of this project are, a scope is needed. With a clear scope it is easy to tell which goals and project deliverables will be worked towards. With this tool, reaching the goals is ensured. Below you can find the scope with the goals.

***Fire alert system***

In the event of a fire the fire alert system will be triggered. The system has two distinct features. The first feature is fire prediction. If it detects a high risk of a fire, the students will be alerted by a blue blinking light.

The second feature is fire alert. The students will be alerted by a red blinking light as well as a buzzer alarm.

Both systems are placed in every room, including the hallway.

***Smart lights***

The automatically dimmable lights will turn on as a student enters the room.

The default mode of the light system is 'ambient'. The smart lights will always keep the illumination in the room constant, dimming the LED based on the natural light level.

The light system also has a second and third mode. The 2nd mode is 'manual'. The user will be able to manually dim or brighten the lights on demand.

The third mode is 'party'. When in party mode the lights blink in intricate patterns.

***Microwave***

The user will be able to select timer and power, start and stop. Once the timer reaches 0, the buzzer goes off and the red LED blinks 3 times.

***Toilet and faucet***

If students slide their hand in front of the motion sensor, the toilet flushes and the faucet activates automatically.

***Vending machine***

The user will first have to authorize themselves via the tag before they can select an item.

***Reception***

The student can register and deregister with their student card. Their information will be stored in a list. We also take note once they check in or check out.

***Security system*** If a student fails to authorize 3 times in a row, the reception will come and take a look. In case the door is locked, but open - we notify the reception again. This is possible if either the chip or the reader is broken and in the worst case if someone is trying to break in.

1. Stakeholders

* Guests - the guest is going to enjoy the features in the student house and adapt the system to their desire
* Product owner - determines the direction of the development by providing feedback and giving new ideas
* Police and fire department – the security system will alert them, they will then react to the emergency
* Receptionist – accommodating the student and interacting with our app, registering and deregistering the student
* Housekeeper – tests and reports issues with the system
* Maintenance - fixes reported issues with the system

\**Sorted in descending order by priority*

The stakeholders are crucial for the project. For example, the consumer is the end-user of the system and the job of the team is to design the system for their needs. Also, the receptionist is important for the project because he gets the feedback from the customers/consumers. The product owner manages the direction of the project, so he is equally as important as the developers and the end-users. In general, the stakeholders are involved in the production, management and maintenance of the system.

1. Milestones

|  |  |  |  |
| --- | --- | --- | --- |
| Weeks | Description | Submission date | Presentation day |
| Week 15 | Sprint demo | 14.12.2021 | 14.12.2021 |
| Week 16 | Sprint demo | 20.12.2021 | 21.12.2021 |
| Week 17 | Sprint demo | 08.12.2021 | 09.12.2021 |
| 17. January | Showcase prototype | --------------- | --------------- |

1. Communication plan

Various tools will be used to communicate and share information within the team. They are as follows:

|  |  |  |
| --- | --- | --- |
| Tool | Purpose | Frequency of usage |
| WhatsApp | Group chat and direct messaging | Daily |
| GitLab | Version control | Daily |
| Trello | Task management | Daily |
| Outlook | Scheduling appointments with important stakeholders | On business days |
| Fontys R10 building |

We are going to meet on a weekly basis. Tutors are to be seen daily on business days. Meetings with tutors provide us meaningful feedback on our current progress.

We only meet the CEO if a meeting has been scheduled to discuss potential features or changes.

1. Risk management

A project’s progress can be hindered for many reasons, of which the human factor is to be considered the most unpredictable. The table below reveals all the solutions to mitigate potential risks. Also, the risks evaluated by priority and impact:

|  |  |  |  |
| --- | --- | --- | --- |
| Risks | Solution | Priority | Impact |
| Employees burn out | Provide flexible working hours | High | High |
| Getting sick | Report sick leave and recovery to the company doctor or safety agency | Medium | High |
| Communication problems | Using Git and other applications to share work and discuss it with the partners. Also reply in time | High | High |
| Low activity | Set award for the best employee of the month | Low | Medium |
| Breaking stuff | Ask ISSD for the new equipment | Low | Medium |

Dealing with issues on time in order to avoid dealing with bigger problems later.

1. Software configuration management

To prevent mishaps from occurring our team is going to use the services of the reliable platform for sharing code – GitLab. To further ensure the safety of our code we will be saving a local copy of our work on personal devices, as well as storing the data in the cloud, using Google Drive. We are synchronizing our work with git and having an online backup. Each feature has its smaller tasks split between the developers for more productivity. Furthermore, the code is being monitored and checked regularly by the others.

1. User stories

***Fire alert system***

As a student I would like to feel safe in my house by having a fire alarm so that I can relax better.

Given a high level of particles in the air, the alarm goes off, alerting the student.

***Smart lights***

As a student I would like to be in a good mood to study or have fun with my friends by having smart and adjustable lights.

The student will be able to change between different light modes, choosing the appropriate one for the situation.

***Microwave***

As a student I would like to easily warm up simple meals without too much effort with the use of a microwave.

If the students are hungry and busy, they will be able to quickly heat up food.

As a CEO I would like only guests to be able to use the microwave with their student card.

If students want to make use of the microwave, they first must use their student card.

***Toilet***

As a housekeeper I would like to have more time to clean the rooms by the implementation of an automatic toilet.

Since the toilet flushes automatically, the housekeeper will be able to focus on other duties.

***Vending machine***

As a student I would like to have access to a quick snack if I am too lazy to use the microwave by making use of a vending machine.

When a student feels hungry, they can get access to the vending machine with their student card.

As a CEO I would like only guests to be able to use the vending machine with their student card.

If students want to make use of the vending machine, they first must use their student card and this way the CEO can easily keep track of which products are consumed most.

***Reception***

As a student I would like to spend less time during the accommodation process by using a tag scanner.

As a receptionist I would like to have a quicker procedure when welcoming guests to the student house

By using our smart reception, guests and reception staff will have an easier time during the accommodation process.