

SMART MUSIC PLAYER

Project plan

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**VERSION HISTORY**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Change description** | **Person** | **Date** |
| 1.0.0 | Initial draft | Nguyen Hoang | 20.10.2019 |
| 1.1.0 | Many errors fixed | Nguyen Hoang | 21.10.2019 |
| 1.2.0 | Change resource allocation plan figure | Nguyen Minh | 04.11.2019 |
| 1.2.1 | Remove inactive member | Nguyen Minh | 28.01.2020 |

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# Introduction

## General Description of the Project

This project using UDOO NEO FULL to play music based on the location of the user. Users will use an app with user interface to control the speaker using Bluetooth.

This project is done for Vaasa University of Applied Sciences (VAMK)

## The Aim of the Project

The finalized product will be a music player with mobile app, so that it can be access from any device that has internet and Bluetooth connection.

The system using GPS to track user’s location and uses that data to play songs that available in the database that match the longitude and latitude of the user. The connection between mobile app and speaker as well as the connection between client and server are secured by different methods.

## Project team

The table below contains a list of the contact information of the customer and all project members:

Table 1. Contact information

|  |  |  |  |
| --- | --- | --- | --- |
| **Role** | **Name** | **Tel** | **E-mail** |
| Client |  |  | [@vamk.fi](mailto:antti.virtanen@vamk.fi) |
| Supervisor |  |  | [@vamk.fi](mailto:timo.kankaanpaa@vamk.fi) |
| Manager | Tran Hien | 0417493701 | [e1601125@edu.vamk.fi](mailto:e1601125@edu.vamk.fi) |
| Design Architect | Nguyen Minh | 0465632702 | [e1601116@edu.vamk.fi](mailto:e1601116@edu.vamk.fi) |
| Developer | Nguyen Hoang | 0469458419 | [e1601111@edu.vamk.fi](mailto:e1601111@edu.vamk.fi) |
| Product Owner | Nguyen Duc | 0449351413 | [e1601145@edu.vamk.fi](file:///C:\Users\minh.nguyen\Downloads\e1601145@edu.vamk.fi) |
| Quality Assurance | Do Vy |  | [e1801589@edu.vamk.fi](file:///C:\Users\minh.nguyen\Downloads\e1801589@edu.vamk.fi) |
| Developer | Nguyen Linh | 0469452578 | [e1500972@edu.vamk.fi](file:///C:\Users\minh.nguyen\Downloads\e1500972@edu.vamk.fi) |
| Developer | Nguyen Huy |  | [e1601119@edu.vamk.fi](file:///C:\Users\minh.nguyen\Downloads\e1601119@edu.vamk.fi) |

The common file area of the project is located at:

[https://github.com/VAMK-embedded-project-2019A](https://github.com/VAMK-embedded-project-2019A%20)

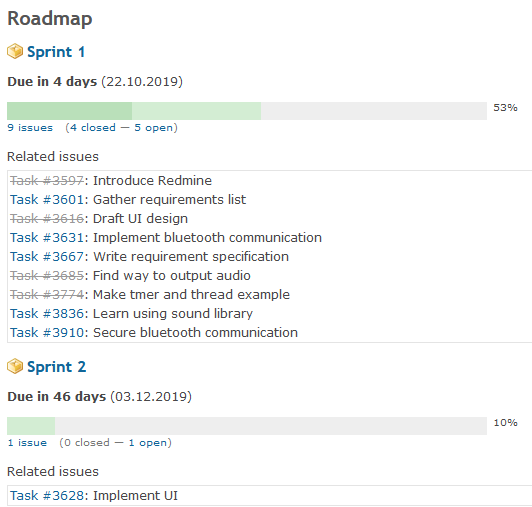
## Right to the Deliverables of the Project

VAMK will hold all the rights for the developed system to be used as non-commercial ways, e.g. to be used for educational purposes without fees.

# Phases of the Project

The project is divided into two sprints of one and a half month as describes in figure 1 below. Each sprint will contain several issues that the project team should resolved.

At the end of every sprint, there will be a demo held with the client to present what is done and receive feedbacks.



**Figure 1.** Roadmap

# Resources and Time Allocation Plan

The figure below illustrates how the resources are allocated throughout the project



**Figure 2.** Resouce allocation pl

# Working Methods and Tools

## Tools and Devices

UDOO NEO FULL:

* Processor: NXP i.MX 6SoloX
* Memory: 1GB
* Power supply: 5V DC Micro USB, 6-15V DC power jack
* Wireless connection: Wi-Fi 802.11 b/g/n & Bluetooth 4.0
* Operating system: Linux UDOObuntu2 (14.04 LTS)

User interface developing environment

* Android Pi
* Qt 5.12.5 LTS

Libraries for UDOO application

* CryptoPP 8.2.0

Client developing environment

* OpenSSL 1.1.01

Version control system: Github

Test environment

* Google Test Version 1.8.1

Project management application: Redmine at <https://omega.cc.puv.fi> (Smart music player)

## Documentation Methods and Tools

Templates for the documentation are given by the supervisor. The documents are reviewed with the supervisor before being delivered to the client. The documents include:

* A requirement specification
* A project plan
* A test plan

There will be a documentation on the application design after the project.

## Working Methods

The working method will follow the [Scrum](https://en.wikipedia.org/wiki/Scrum_(software_development)) software development method.

## Risk Management

The table below describes the possible risks and how the team should react to those

Table 2. Risk analysis

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Probability** | **Impact** | **Analysis** | **Action** |
| The project manager and planner are inexperience | 3 | 2 | 6 | Create new plan and estimation during project. |
| Major changes of requirements during project | 2 | 3 | 6 | Record, prioritize and discuss with customer before making changes to the requirement |
| Productivity issues (failing deadlines) | 3 | 2 | 6 | Define concise and reachable project schedule with milestones to keep track of productivity  Holding daily meetings to keep up with schedule |
| Breakdown of specification (changes in internal specification due to unforeseeable obstacles) | 2 | 2 | 4 | Modularize the project into more manageable part  Enhance communication between developers |
| Miscommunication | 2 | 2 | 4 | Make sure every developer understands the overall planning of the project  Encourage developers to reviewing teammates’ code |
| Subpar code quality (code bugs, security issues) | 2 | 2 | 4 | Use automated testing tools (static code analyzer, linter)  Having a comprehensive testing plan |
| Data loss (accidental deletion of code and data, hard drive failure, etc.) | 1 | 3 | 3 | Use version control software (git, etc.)  Back up data to secondary drive and server |
| Developers are unfamiliar with platforms and tools used in the project | 3 | 1 | 3 | Developers do more research on platforms and tools before and during the designing steps |
| Developer unable to work on the project temporarily or permanently | 1 | 2 | 2 |  |

## Work roles and Areas of Responsibility

The table below describes the responsibility of each member of the team

**Table 3.** Area of responsibility

|  |  |
| --- | --- |
| **Name** | **Areas of responsibility** |
| Nguyen Minh | * + - Design Architect     - Designing User Interface     - Building mobile app     - Implement secure Bluetooth connection |
| Nguyen Hoang | * + - Developer     - Implementing client-side data processing     - Documenting project plan |
| Tran Hien | * + - Project Manager & DevOps     - Implementing secure communication between client app and production server     - Implementing sever-side data processing |
| Nguyen Duc | * + - Product Owner     - Communicating with customers     - Documenting requirement and specification |
| Do Vy | * + - Quality Assurance     - Designing test cases     - Implementing GPS tracking feature |
| Nguyen Linh | * + - Developer     - Implementing features for the speaker. |
| Nguyen Huy | * + - Final documentation     - Gathering information to write final reports for the project |

# Project Control Plan

## Following the Status of the Project

* + - Meeting between developers and manager occurs twice a week to keep track of project schedule and finished work.
    - 3-4 days’ progress update on Discord server
    - At the end of each sprint there will be meeting with customer to demonstrate progress and receive feedback
    - Responsibilities and work are distributed dynamically based on the project progress to keep up with project milestones

## Schedule

22.10.2019: Scrum sprint 1 is due.

03.12.2019: Scrum sprint 2 is due.

# Reference Documents

https://en.wikipedia.org/wiki/Scrum\_(software\_development)