# Project Plan

## Diabetes Care

## By

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## Document History

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| Document | | | | | | |
| diabetes -Project plan-V.0.1.docx | Add : Chapter One Introduction<br>Add: Chapter Two Acronym and definition<br>Add: Chapter Three Infrastructure | Draft | February 27, 2016 | JC, PS | JC, PS | JC, PS |
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| diabetes -Project plan-V.0.1.docx | Update All | Release | July 25,2016 | JC, PS | JC, PS | JC, PS |

*PS: Dr. Prompong Sugunnasil
*JC: Mr. Jirayu Chinpongsuwan

# Table Content

# Chapter One | Introduction

## 1.1. Project Overview

"Diabetes Care Web Application" development to help patient to be convenient manage and protect the body from complication are caused by diabetes or control blood sugar to normal levels. By observation from glycemic graph and follow recommend from system analyze glycemic last time are input to the system. And user can control consumption foods and control activity to appropriate with body mass of user that the system calculate from info of user and display to user. In addition the user can analyze to find fault to consumption per day in first page that user login every time.

## 1.2. Project Scope

"Diabetes Care" can help to control and follow the blood sugar level and get the recommend about the symptom, warning in each level of blood sugar from this application.

Diabetes Care is a Web application that can support all devices (desktops, tablets, and phones). "Diabetes Care" supports all devices are mean the web application can run on program web browser from desktops, tablets, and phones

The main feature of "Diabetes Care" are as follows:
- Authentication system.
- Account management.
- Nutrition management.
- Activity management.
- Activity plan and recommend system.
- Nutrition plan.
- Health monitor system.
- Behavior monitor system.

## 1.3. Document Overview

"Diabetes Care Web application" have separated the whole project to two processes. The description is shown below:

**Process 1: Proposal and Project Plan**

**Process 2(Progress I)**

4.6.1 Features

**Feature#1:** Authentication system.

Description: This feature supports the user to login to system and to log out of the system. The system shall provide UI to enter username and password for user need to login. And system shall provide logout button for user need to sign out.

User: Patient, Nutritionists, Admin, Nurse, Doctor
Detail:

1-1 The patient can login to the system using username and password.

1-2 The patient logout when stop uses the system by clicking logout button.

1-3 The nutritionists can log in to manage the nutrition by using username and password.

1-4 Nutritionists can log out when finish the process by clicking logout button.

1-5 Admin can login to manage nutritionists and nurse account by using username and password.

1-6 Admin can log out when finish the process by clicking logout button.

1-7 The nurse can login to manage patient account and activity by using username and password.

1-8 The nurse can logout when to finish the process by clicking logout button.

**Feature#2:** Account management.

Description: This feature supports to manage the account. The nurse can enter patient to the system, and the patient can view personal information. Which is information that about (name, age, gender, weight, height, diabetes type and date that start treatment). And support admin can manage nutritionists and nurse. When the admin has requested from nutritionists and nurse, need to register to the system. The system shall provide an interface to admin for add nutritionists (username, password, and name), edit username, password, and name of nutritionists and admin can delete nutritionists from the system

User: Patient, Admin, Nurse

Detail:

2-1 The nurse can enter patient (username, password, name, age, gender, weight, height, diabetes type and date that start treatment) to the database server.

2-2 The patient can view name, age, gender, weight, height, diabetes type, and date that start treatment of his on profile page.

2-3 The patient can update name, age, gender, weight, height, diabetes type, and date that start treatment on his profile page.

2-4 The patient can change the password by input current password and new password.

2-5 Admin can add nutritionists to the system by input username, password, and nutritionist's name.

2-6 Admin can edit username, password, and name of nutritionists.

2-7 Admin can delete nutritionists from the system.

2-8 Admin can add the nurse to the system by input username, password, and nurse's name.

2-9 Admin can edit username, password, and name of nurse.

2-10 Admin can delete nurse from the system.

**Feature#3**: Nutrition management.

Description: This feature supports to manage nutrition. Help the nutritionists to manage food name, the glycemic index of food, and food calorie. When the nutritionists need to add food to database or update in the database or delete from the database. The system shall provide UI to nutritionists for add/update/delete food list on the database.

User: Nutritionists

Detail:

3-1 The nutritionists can add food by input food name, the glycemic index of food, and food calorie to the database.

3-2 The nutritionists can edit/update food name, the glycemic index of food, and food calorie on the database.

3-3 The nutritionists can delete the food from the database.

**Feature#4**: Activity management

Description: This feature supports to manage activity. Help the nurse to management exercise for the patient. When nurse needs to add exercise by input patient symptom and exercise advice to the database or update/edit in the database or delete from the database. The system requests input patient symptom and exercises advice to create new exercise. The system shall provide UI to updating patient symptom and exercises advice. The system provides delete button to remove exercise from a database.

User: Doctor, Nurse

Detail:

4-1 The nurse and doctor can add exercise suggestion by input patient symptom and exercise advice to a database

4-2 The nurse and doctor can update patient symptom and exercise advice.

4-3 The nurse and doctor can delete exercise from a database by clicking delete button.

**Feature#5**: Activity plan and recommend system.

Description: This feature supports the plan to exercise on each day of the patient. The patient will get the suggestion about precautions exercise from the system. The patient can select symptoms that show on the body. And the system will provide the advice about appropriate exercise.

User: Patient

Details:

5-2 The patient can select the symptoms that show on the body from database.

5-3 The patient can view the suggestion about precautions exercise using the information from https://www.doctor.or.th/article/detail/11496.

**Feature#6**: Nutrition plan system.

Description: This feature supports to plan about nutrition in each day. The patient can select foods name from database and record in the plan. The system brings food chosen to calculate calorie and glycemic index. After system calculated the system will display data to the patient.

User: Patient

Details:

6-1 The patient can select the foods name from the database.

6-2 The patient can record food name in a plan.

6-2 The patient can view the average of glycemic index and calorie of food in the selected plan.

**Feature#7**: Health monitors system.

Description: This feature supports to monitor the blood sugar. The patient can record blood sugar value, and the view is a statistic line graph. And the system provides the recommended about a level of blood sugar to the patient. This feature helps the patient can monitor blood sugar to the level that doctor admit. And this feature supports to track BMI value. The system shall bring weight data and height data from patient profile to calculated BMI and return value to a patient.

User: Patient

Detail:

7-1 The patient can record blood sugar value.

7-2 The patient can view body mass value that calculated by using BMI = weight (Kg) / (height (m) * height (m)).

7-3 The patient can view statistic line graph of blood sugar and body mass.

7-4 The patient can view interpretation about blood sugar level from system.

**Feature#8**: Behavior monitors system.

Description: This feature supports to monitor the behavior of patient on each day. When the patient login the system will redirect to behavior page. The system shall request the patient to select food and medicine that eats in that day. The system brings the data from the patient to analyze about the glycemic index of the food. And the system shall display analyze result like the traffic light to patient

User: Patient

Detail:

8-1 The patient can select food name from the database.

8-2 The patient can check the list of medicine.

8-3 The patient can view the daily graph of glycemic level.

### 1.4. Objectives

- To develop the web application that has a function to support patient can planning the nutrition in each day for control the glycemic index and body mass.
- To develop the web application that has a function to support patient can planning the exercise in each day for monitor the body mass.
- To develop the web application that has a function to support patient can monitor the status of blood sugar value and get a suggestion from a system.
- To develop the web application that has a function to support patient can control the behavior of patient living.

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# Chapter Two | Acronym and definition

## 2.1.1 Acronyms

- SRS Software Requirement Specification
- SDD Software Design Document
- VSE Very Small Entity

## 2.1.2 Definition

### 2.1.2.1 Acceptance

An acceptance test confirms that a story is complete by matching a user action scenario with a desired outcome.

### 2.1.2.2 Accuracy

The condition or quality of being true, correct, or exact

### 2.1.2.3 Activity

A number of individual tasks, which must be completed before the deliverables can be consider completed. Activity definitions rely on a number of specific input processes.

### 2.1.2.4 Change Management

Defining and implementing procedures and or technologies to deal with changes in the business environment and to profit from changing opportunities.

### 2.1.2.5 Feasibility study

An analysis and evaluation of a proposed project to determine if it (1) is technically feasible, (2) is feasible within the estimated cost, and (3) will be profitable. Feasibility studies are almost always conducted where large sums are at stake. Also called feasibility analysis. See also cost benefit analysis.

### 2.1.2.6 Functional Analysis

It is performed in systems engineering, software systems engineering, and business process reengineering as a portion of the design process. These design processes typically involve the steps of requirements definition and analysis, functional analysis, physical or resource definition, and operational analysis.

### 2.1.2.7 Objective

Purpose of the project.

### 2.1.2.8 Project Plan

Systematic sequencing and scheduling of the tasks comprising a project. Also called work planning.

### 2.1.2.9 Quality assurance

Any systematic process of checking to see whether a product or service being developed is meeting specified requirements.

### 2.1.2.10 Requirement Analysis

As software engineering, encompasses those tasks that go into determining the needs or conditions to meet for a new or altered product, taking account of the possibly conflicting requirements of the various stakeholders, such as beneficiaries or users.

### 2.1.2.11 Risk Management

A process for identifying, assessing, and prioritizing risks of different kinds. Once the risks are identified, the risk manager will create a plan to minimize the impact of negative events.

### 2.1.2.12 Unit Testing

To take the smallest piece of testable software in the application, isolate it from the remainder of the code, and determine whether it behaves exactly as you expect. Each unit is tested separately before integrating them into modules to test the interfaces between modules. Unit testing has proven its value in that a large percentage of defects are identified    during its use.

### 2.1.2.13 Validation

Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled ("doing the right thing"). Part of quality control.

### 2.1.2.14 Verification

Confirmation at the end of the process by examination and provision of objective evidence that specified requirements to the process have been fulfilled ("doing things right"). Part of quality control.

### 2.1.3 Dependency Document

This software project management plan is depended on the following documents

- Software Requirement Specification version 0.1
- Software Design document version 0.1
- Test Plan version 0.1
- Test record version 0.1
- Traceability record version 0.1

# Chapter Three | Infrastructure

## 3.1 ISO29110 for Very Small Entity (VSE)

ISO29110 is a guide applies to a Very Small Entity (VSE), enterprise, organization, department or project up to 25 people, dedicated to software development. The Guide provides Project Management and Software Implementation processes which integrate practices based on the selection of ISO/IEC 12207- Systems and Software Engineering — Software Life Cycle Processes and ISO/IEC 15289 Software Engineering – Software Life Cycle Process – guidelines for the content of software life cycle process information products (documentation) standards elements.

### 3.1.1 Project Management process

The purpose of the Project Management process is to establish and carry out in a systematic way the tasks of the software implementation project, which allows    complying with the project's objectives in the expected quality, time and cost.

Selected process
1. Project Planning Process
2. Project Plan Execution Process
3. Project Assessment and Control Process
4. Project Closer Process

### 3.1.2 Software Implementation process

The purpose of the Software Implementation process is the systematic performance of the analysis, design, construction, integration and tests activities for new or modified software products according to the specified requirements.

Selected process
1. Software Implementation Initiation Process
2. Software Requirements Analysis Process
3. Software Architectural Design Process
4. Software Construction Process
5. Software Integration and Test Process
6. Software Delivery Process

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## 3.2 Materials Resources

### 3.2.1 Hardware and Material Resources
**Laptops**
    **Dell inspiron 5530**
    **Processor:** 2.4 GHz Intel Core i5
    **Memory:** 4.00 GB DDR3
    **Graphics:** AMD Radeon 4GB

## 3.3 Software Development Tools

### 3.3.1 Microsoft Visual studio

**Tool Description**

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web applications and web services. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code.

**Alternative Technology**
- non

**The selection tools**
- Visual Studio provides the features to create the web application and mobile application with ASP.NET MVC technology.
- Visual Studio provides tools to develop web application and mobile application.
- Visual Studio is have error checker and auto-correct.

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## 3.4 Software Development Life Cycle
### 3.4.1 Software Process
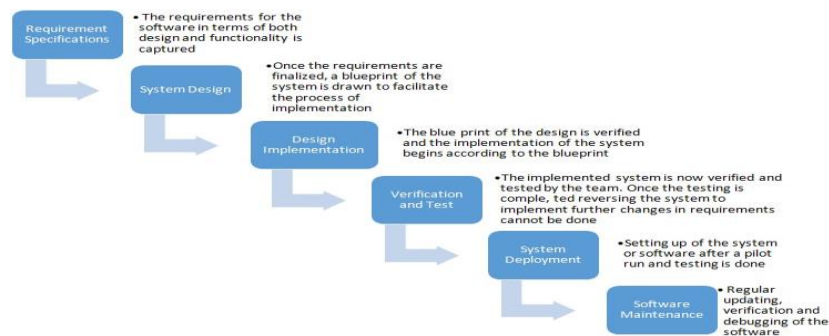


**Figure 02: Waterfall Model**

**The waterfall model** is a sequential design process, used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of conception, initiation, analysis, design, construction, testing, production/implementation and maintenance. [14]

The waterfall development model originates in the manufacturing and construction industries: highly structured physical environments in which after-the-fact changes are prohibitively costly, if not impossible. Because no formal software development methodologies existed at the time, this hardware-oriented model was simply adapted for software development. [13]

> **Requirement Analysis:** All possible requirements of the system to be developed are captured in this phase and documented in a requirement specification doc.
> **System Design:** The requirement specifications from first phase are studied in this phase and system design is prepared. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture.
> **Implementation:** With inputs from system design, the system is first developed in small programs called units, which are integrated in the next phase. Each unit is developed and tested for its functionality which is referred to as Unit Testing.
> **Testing:** All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
> **Deployment:** Once the functional and non-functional testing is done, the product is deployed in the customer environment or released into the market.
> **Maintenance:** There are some issues which come up in the client environment. To fix those issues patches are released. Also to enhance the product some better versions are released. Maintenance is done to deliver these changes in the customer environment.

## 3.5 Project Constraints

### 3.5.1 Operating System

- Web browser   (desktops, tablets, and phones)

### 3.5.2 Database Server

- Microsoft server

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# Chapter Four | Management Procedures

## 4.1 Project Team Structure

| Staff | Activity |
|---|---|
| Mr. Jirayu Chinpongsuwan | 1. Feasibility Study |
| | 2. Project Proposal |
| | 3. Project Requirement Specification |
| | 4. Project Plan and Design |
| | 5. Testing |
| | 6. Maintenance |
| | 7. Implementation |

**Table 1**: Project Team Structure

## 4.2 Monitoring and Controlling Mechanisms

| Staff | Activity |
|---|---|
| Dr. Prompong Sugunnasil | Advisor |
| Mr. Jirayu Chinpongsuwan | Team Development Team |

**Table 2**: Project Team Structure

## 4.3 Milestone

- **Progress1**
  - **Document**
    - Project Plan
    - Software Requirement Specification
    - Software Design Architecture
      - Feature#1: Authentication system. (URS 01- 02)
      - Feature#2: Account management. (URS 03- 10)
      - Feature#3: Nutritionists management. (URS 11- 14)
      - Feature#4: Activity management. (URS 15- 18)
      - Feature#5: Activity plan and recommend system. (URS 19- 20)
      - Feature#6: Nutrition plan. (URS 21- 22)
      - Feature#7: Health monitor system. (URS 23- 26)
      - Feature#8: Behavior monitor system. (URS 27-32)
    - Test Plan
      - Unit Test
      - System Test
    - Test Record
      - Unit Test
      - System Test
    - Traceability Record
  - **Software** Feature 1, 2, 3, 4, 5, 6, 7, 8

## 4.4 Deliverable

| No. | Deliverables/Release | Media | No. of Copies | Date |
|---|---|---|---|---|
| 1 | Project Proposal<br>• Diabetes (v.0.1) | Hard Copy | 3 Hard Copies | 4 March 2016 |
| 2 | The Progress Report 1<br>• Document<br>    o Project Plan (v.0.1)<br>    o Software Requirement Specification (v.0.1)<br>    o Software Design Document (v.0.1)<br>    o Test Plan (v.0.1)<br>    o Test Record (v.0.1)<br>    o Traceability Record (v.0.1)<br>• Software<br>Diabetes web App (v.0.1) | Hard Copy & Software | 3 Hard Copies | 4 March 2016 |

**Table 3**: The project Deliverable

## 4.5 Change Management

The way to management project for the case of project not following the plan or there are some problems occur while developing for example:

- Requirement changes
- Feature change
- Schedule change
- Design change
- Document change

Development team has strategies to manage that problem by:

- Make a discussion between partners.
- Analysis the problem.
- Estimate and create an appropriate new plan, also with the risk that may be occurs.
- Record every changing.

The change will execute by the development team and advisor agreement.

## 4.6 Project Risk

| Risk | Solution |
|---|---|
| Human Risks | |
| Group members are lack of skill and knowledge. | Learn from a textbook and websites. |
| There is bad communication between group members. | Try to understand each other and exchanges more information together. |
| One of group members has a lot of duty to do. | Reduce a project's work and give   easier work to do instead. |
| Process Risks | |
| Scope of the project should be changed. | Create change request form and then sent to project's advisor for   suggestion. |
| Project's item cannot trace to its source. | Create traceability record. |
| Process flow is slower than we estimated early. | Try to speed up and do important work at first. |

**Table 4**: Project Risk

# Chapter Five | Quality Planning

## 5.1 Quality Planning [V&V]

### 5.1.1 Quality Factors

- Correctness

    The expect output and actual output is the same. It has every output that user require. It has the standard for coding and documenting of software system. It must to create the measurement or test. In this project is using unit testing and system testing to measure in the document of "Diabetes care web application-test record.0.1.docx"

- Reliability

    Reliability requirements deal with failure to provide service or when the application failure. In this project is provides the backup all of materials in Dropbox which can make sure that the data will not damage whenever have accident situation occur, also develop the application follow the Standard ISO 29110 for Very Small Entity (VSE).

- Usability

    Usability requirement deal with the ability of use when user use the application. In our project provide a characteristic of operability, understandability, also Learnability that user can be able to operate, understand, and learn on all application functions.

- Efficiency

    Efficiency requirements deal with the resources needed to perform all the functions of the application system in conformance to all other requirements.

- Integrity

    Integrity requirements deal with the system security. In this project there are events information system that are mange all of event information such as add, edit and delete event information in database.

- Maintainability

    Maintainability requirements determine the efforts that will be needed by users. In this project we provide the sub characteristic of maintainability from testability matric by effort to maintain the software after test process to be more stable.

### 5.1.2 Review/Responsibility

| Stage | Review Item | Responsibility |
|-------|-------------|----------------|
| The Progress Report 1 | Software Project Management Plan | Jirayu Chinpongsuwan |
| | Software Specification System | Jirayu Chinpongsuwan |
| | Software Design Document | Jirayu Chinpongsuwan |
| | Test Plan | Jirayu Chinpongsuwan |
| | Test Record | Jirayu Chinpongsuwan |
| | Traceability Record | Jirayu Chinpongsuwan |

**Table 5**: Review/Responsibility

### 5.2 Testing

| Test Process | | | |
|------|------|-------------|----------------|
| No. | Test | Verification | Responsibility |
| 1 | Unit Test | Link to Test Record document  version 0.2 | Jirayu Chinpongsuwan |
| 2 | System Test | Link to Test Record document  version 0.2 | Jirayu Chinpongsuwan |

**Table 6**: Testing

# Chapter Six | Version Control Strategy

### 6.1 Naming Conversion

Diabetes Care Web application – [File name]_[Version].[File format]

### 6.2 Project Repository

- Google Docs: For create and save all documents.

### 6.3 Configuration Item Table

***Proposal***

| No. | Item | File Name | File Type | Owner | Path | Baseline version |
|-----|------|-----------|-----------|-------|------|------------------|
| 1 | Proposal | Diabetes -Project Proposal-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes /Proposal | Version 0.1 |

**Table 7**: Proposal Configuration Item

*Progress I*

| No. | Item | File Name | File Type | Owner | Path | Baseline version |
|---|---|---|---|---|---|---|
| 1 | Project Plan | Diabetes -Project Plan-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Project Plan | Version 0.1 |
| 2 | SRS | Diabetes - SRS-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / SRS | Version 0.1 |
| 3 | SDD | Diabetes -SDD-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / SDD | Version 0.1 |
| 4 | Test Plan | Diabetes -Test Plan-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Test Plan | Version 0.1 |
| 5 | Test Record | Diabetes -Test record-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Test Record | Version 0.1 |
| 6 | Traceability Record | Diabetes - Tracebility record-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Traceability record | Version 0.1 |
| 7 | Software Code | Diabetes -Test Plan-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Code | Version 0.1 |
| 8 | Unit Test Record | Diabetes -Test record-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Testing | Version 0.1 |
| 9 | System Test Record | Diabetes - Tracebility record-0.1.docx | .docx | Jirayu Chinpongsuwan | / Diabetes / Testing | Version 0.1 |

**Table 8**: Progress I Configuration Item

# Chapter Seven | Estimated Duration

## 7.1 Estimated Duration of Task

| Task and Estimated Duration | | |
|:---:|:---:|:---:|
| **No.** | **Phase** | **Estimated Duration (Days)** |
| 1 | Project Proposal | 60 |
| 2 | Progress report #1 | 60 |

**Table 9**: Estimate Duration

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## 7.2 Scheduling
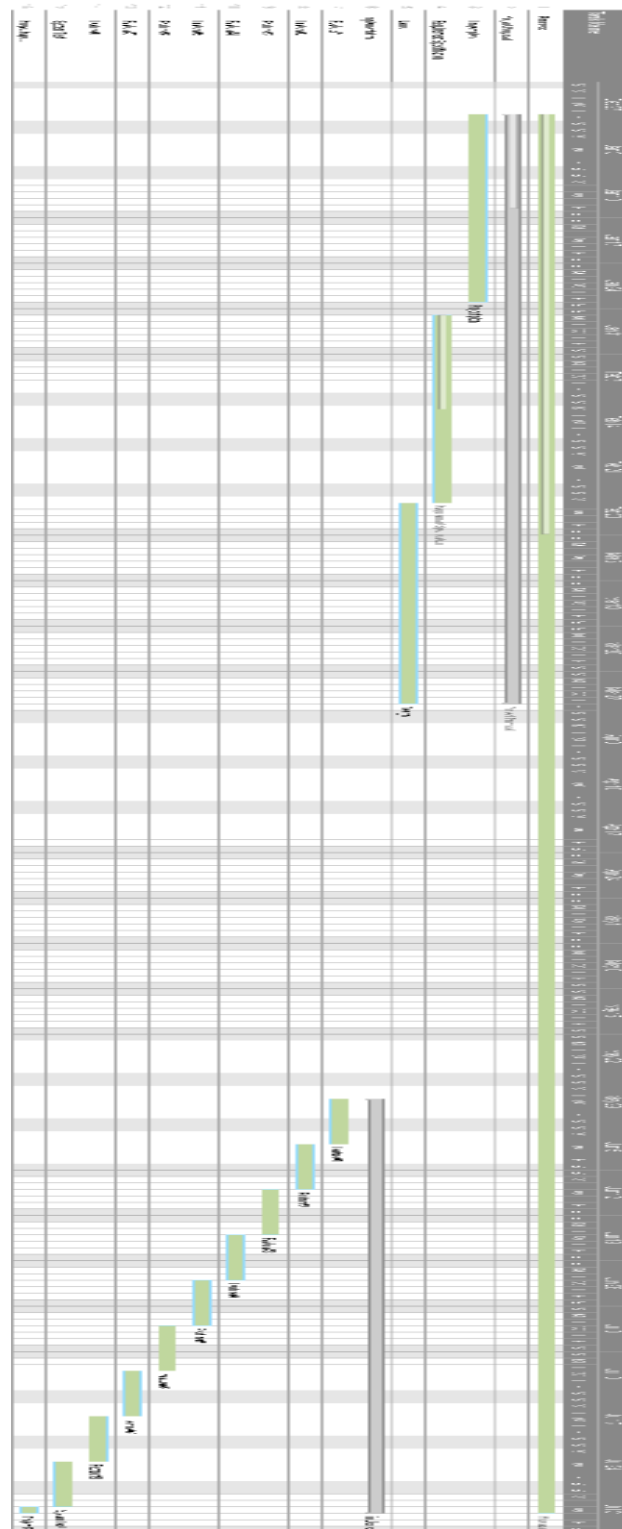


**Figure 3 Milestone**

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