
MONASH University

# FIT3163 Data Science Project Part 1

Mind Map and Project Management

Automated Health Information System

## Team MDS2

Foo Kai Yan - 33085625

Alicia Quek Chik Wen - 33045240

Eunice Lee Wen Jing - 33250979

Jesse Yow San Gene - 32794649

# Introduction

## Project Overview

Our project focuses on developing an Automated Health Information System, aimed at revolutionising healthcare data management and access. By creating a web-based system seamlessly integrated with a mobile app, we seek to improve the efficiency of data entry through the incorporation of a handwritten text recognition module. This smart data entry approach allows healthcare workers to input doctor diagnostic, patient data and prescriptions using handwritten notes, accelerating the data entry process and enhancing user experience and productivity. Ultimately, this leads to better patient care, benefiting both healthcare workers and patients.

## Importance of Project Management

Project management ensures that tasks are organised, deadlines are met, resources are allocated efficiently, and risks are mitigated. It provides a framework for coordinating the efforts of team members, stakeholders and external partners involved in the project. It can help us to keep track of our progress and also keep stakeholders informed of the project progress. Thus, with good project management, we can avoid any teammates falling behind which may cause delays and in the worst case, cause project failure.

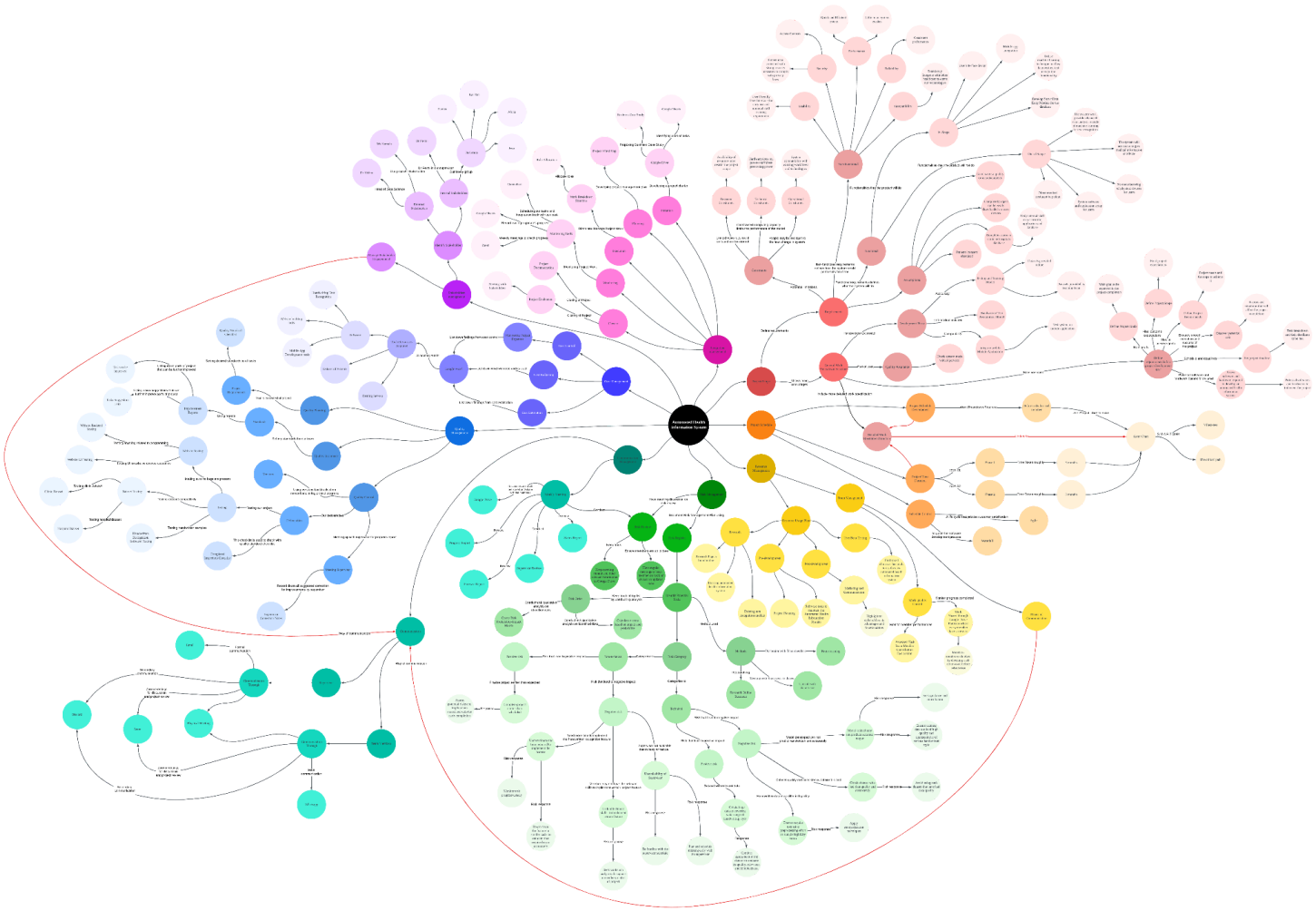
## Purpose of Mind-Map

A mind map serves as an effective instrument for brainstorming, strategizing and structuring ideas in a hierarchical manner, rendering it as an optimal choice for illustrating the intricate connections within our project. It encompasses nine main factors, including project scope, schedule, resource, risk, communication, quality, cost, stakeholder and integration management. Through visual representation of these factors and their interdependencies, the mind map furnishes a comprehensive overview of the project, facilitating decision-making and progress monitoring. By breaking down the project into manageable segments, the mind map aids the team in navigating through complexities, fostering a deeper and clearer comprehension of the project's relevance and components.

## General Structure Overview

Following this introduction, we'll present a mind map diagram, followed by detailed explanations of each node and link. The mind map will be structured around core concepts branching outwards, providing a clear visualisation of project components. Additionally, we'll discuss project scheduling and management processes, including a Gantt Chart and Work Breakdown Structure (WBS), to further illustrate our project's organisation and timeline.

# Mind-Map Diagram



## Mind-Map Explanation

### Project Scope

The project scope outlines what is included in the project and what is excluded in the project. The project scope assists the team to attain the intended end result or product for the project.

The project scope is split into two main sections which are the requirements and a WBS that note down the type and details of the tasks that need to be completed. Requirements are then further classified into functional, non-functional, assumptions and constraints.

Functional requirements outline what the project's system will achieve and they are further classified into "In Scope" or "Out of Scope" to establish the limitations of the project. "In Scope" includes all the functions that would be achieved for the project, while "Out of Scope" pertains to requirements that are not implemented but will still be seen as functional requirements of the project. Non-functional requirements specify the manner in which the project's system's functions are executed. The mind map above clearly indicates the functional and non-functional requirements of the project's system.

Assumptions are established when creating project requirements. Assumptions are important as it helps the team in identifying potential problems and risks that might

impact the project's outcome. Furthermore, assumptions influence the decision making process in the team as it illustrates the framework that guides the decision-making.

Constraints are the limitations that restrict a project's completion. The main constraints of this project are Resource, Technical and Operational Constraints. The existing healthcare systems compatibility may restrict the project scope as if it has used any obsolete or old technology or systems, it may have existing bugs and errors that would affect the handwritten text-recognition model developed by the team.

A WBS is developed to assign tasks. It offers a detailed look at project activities for team members and stakeholders. Our team has chosen to use the top-down method by dividing tasks into smaller, more manageable parts, making it simpler to assign them to each individual team member to complete.

## Project Schedule

The project schedule outlines every task, objective, and their anticipated timeframes within the project. The team will use a Gantt chart to visually map out the timeline of the project tasks with SMART criterias against a calendar. Upon constructing a Gantt Chart using the software 'Project Libre' , it becomes a visual guide detailing the necessary actions and their timelines, thereby providing the team with required guidance and concentration.

Within the team, we employ the agile methodology due to its adaptability and responsiveness to unexpected schedule alterations. This method divides the project into brief iterative periods known as sprints, during which we regularly re-evaluate and modify the project timeline in response to the team's advancements and stakeholder input. Additionally, we would also implement the waterfall method for the software development process.

## Resource Management

Resource management involves carefully planning, scheduling, and distributing resources to successfully finish a project. It involves overseeing various resources like time, people, software or hardware equipment, cost and data. In regards to the project, resource management includes organizing resource allocation and managing the team.

Monitoring work progress and performance in the team is an essential part of team management. Once the tasks have been allocated in the Gantt Chart, Google Drive data would be used to track the productivity of team members. Moreover, job efficiency for each member will be evaluated by using the team contribution spreadsheet given by the teaching team. The Mind map clearly displays the means of communication used in the team for easy reference.

## Risk Management

Risk management is a critical component that involves identifying, analysing, and managing risks, which will be detailed in the risk register and subject to continuous review and updates throughout the project lifecycle. As risks may arise or be resolved at a later time, regular meetings will be conducted to keep the team informed of the current risks. To identify potential risks for our project, brainstorming, minor online research, and

discussion with the supervisor will be utilised to pinpoint risks, simultaneously classifying them into two categories: technical and non-technical. Subsequently, we will analyse the potential impacts of each risk and strategize risk responses using the TARA approach. Furthermore, we will conduct a qualitative or quantitative risk analysis on identified risks to prioritize the top risks by monitoring them closely.

## Communication Management

In communicating with our supervisor, email and Discord are utilised for prompt responses to general inquiries and to schedule meetings. While within the team, Discord and mainly WhatsApp are used to communicate our day-to-day progress and any other relevant information. To ensure the team and supervisor are up to date with the project's current progress, weekly meetings are conducted to review progress reports, status reports, forecast reports, risk reviews, and supervisor reviews to ensure the project is on the right track and not astray. Such meetings are generally held online via Zoom or physically on campus. Additionally, any relevant documentation and project-related information will be stored in Google Drive, which the team can access easily.

## Quality Management

Quality management is the act of ensuring all tasks in a project are completed and maintaining a level of desired quality. In our project, it can be divided into quality planning, quality assurance and quality control. Quality planning is important to a team as it is the overall strategic plan that highlights the steps to achieve the customers' desired quality experience. For example, team members are encouraged to use a quality standard checklist.

Quality assurance is the process of ensuring all tasks have achieved the desired quality. Having improvement reports helps teams to log tasks that require further improvement as well as listing down suggestions for improvement. This helps identify weaknesses of projects and allocates sufficient resources. Lastly, quality control is where teams are testing and improving their project. Once tasks are completed, a completed inspection checklist is made and used to compare with the quality standard checklist. If all tasks are up to quality standards, the project is ready to be delivered to the client.

## Cost Management

Cost management is the process of planning, controlling and optimizing the costs of the team. Processes like cost budgeting, cost control and cost estimation are fundamentals components within project management frameworks. Budgeting cost is the first step where the team has to discuss and determine the financial resources needed to deliver the project within the timeframe. The team will then start to research the cost of tools and resources and come up with a cost estimation. The team is required to also monitor project expenses to ensure they align with the approved budget.

After completing all research, all results are recorded in Google Excel. Google Excel assists in arranging our discoveries to enable teamwork and offers a tool for effectively monitoring and overseeing project expenses. Once all factors are taken into account, the team can purchase the necessary tools and resources for the project.

## Stakeholders Management

Stakeholders management is the process of identifying, engaging and prioritizing stakeholders throughout the project development process. Firstly, identifying all stakeholders who have an impact on the project like our team. There are two types of stakeholders which are internal and external stakeholders. Internal stakeholders are the people directly involved with the project. Where else external stakeholders are stakeholders who are not involved with the project like Ms Kamala and our head of data science, Dr Vishnu but affected by the project. We engage our stakeholders using communication channels such as Discord, Email and Zoom. This helps us understand our stakeholders expectations and gather valuable input from them. We recognized the importance of communication so we connected this to our communication management to show their interconnectedness in our mind map.

## Integration Management

Integration management involves organizing all project components. It can be divided into five steps: initiation, planning, execution, monitoring and closure. project initiation involves outlining the goals, extent and parties involved. The team can establish the project's groundwork by utilizing a business case study and a checklist of tasks. Project planning includes comprehensive project plans that address budget, resources, quality, and timeline. Mind maps are an effective tool for visualizing structuring information and facilitating brainstorming sessions.

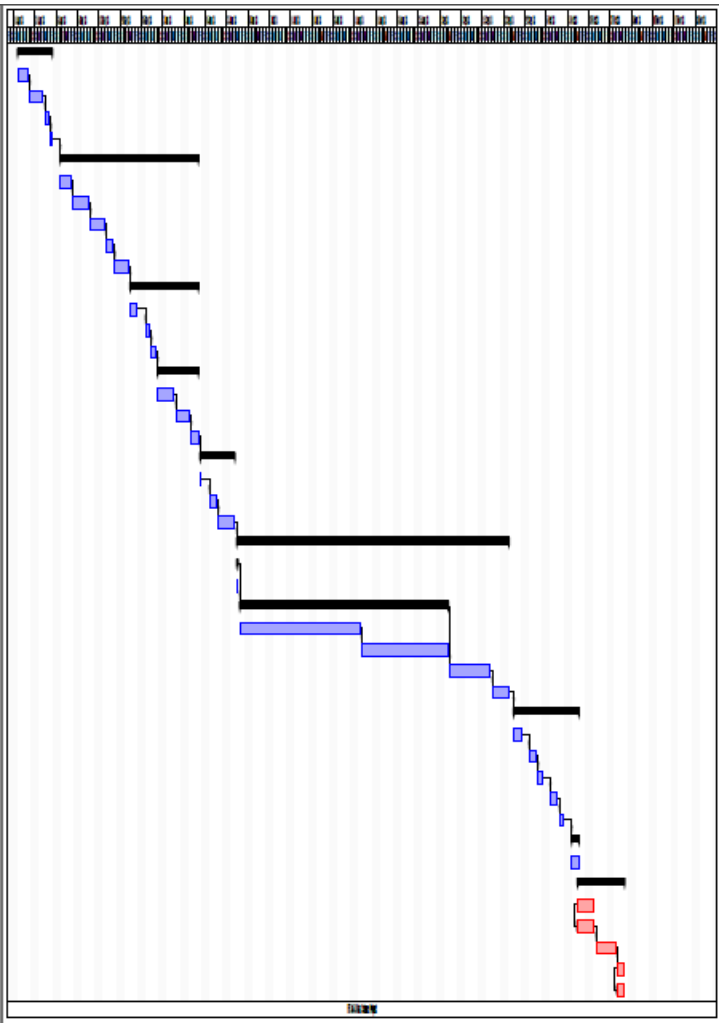
Project execution occurs when the team implements the activities outlined in the project management plan. Roles can be assigned to teams using a Work Breakdown Structure whereas project monitoring involves the team making sure that the project is able to finish on time. The team can effectively manage their work schedules and stay on track using tools such as Gantt charts and Google Sheets. Closure occurs when the project is finished and deliverables are given to the stakeholders. This concludes with the team assessing the project and holding a final meeting with the stakeholders.

# Scheduling

## Gantt Chart

| | Name | Duration | Start | Finish | Predecessors | Resource Names |
|---|---|---|---|---|---|---|
| 1 | Project Initialization | 10 days? | 4/15/24 8:00 AM | 4/26/24 5:00 PM | | |
| 2 | Research on the project topic | 4 days? | 4/15/24 8:00 AM | 4/18/24 5:00 PM | | |
| 3 | Define project objectives and project scope | 3 days? | 4/19/24 8:00 AM | 4/23/24 5:00 PM | 2 | |
| 4 | Identify limitations and potential risk | 2 days? | 4/24/24 8:00 AM | 4/25/24 5:00 PM | 3 | |
| 5 | Discuss the project with team members and supervisor | 1 day? | 4/26/24 8:00 AM | 4/26/24 5:00 PM | 4 | |
| 6 | Research and Planing | 34 days? | 4/29/24 8:00 AM | 6/13/24 5:00 PM | 5 | |
| 7 | Study current existing health information system | 4 days? | 4/29/24 8:00 AM | 5/2/24 5:00 PM | | |
| 8 | Investigate on exising handwritten recognition tools | 4 days? | 5/3/24 8:00 AM | 5/8/24 5:00 PM | 7 | |
| 9 | Find related and/or relevant dataset | 3 days? | 5/9/24 8:00 AM | 5/13/24 5:00 PM | 8 | |
| 10 | Find machine learning model | 3 days? | 5/14/24 8:00 AM | 5/16/24 5:00 PM | 9 | |
| 11 | Plan integration strategy | 3 days? | 5/17/24 8:00 AM | 5/21/24 5:00 PM | 10 | |
| 12 | Initial Design Concept | 17 days? | 5/22/24 8:00 AM | 6/13/24 5:00 PM | 11 | |
| 13 | Gather User Requirements | 3 days? | 5/22/24 8:00 AM | 5/24/24 5:00 PM | | |
| 14 | Identify functional requirements | 2 days | 5/27/24 8:00 AM | 5/28/24 5:00 PM | 13 | |
| 15 | Identify technical requirements | 2 days | 5/29/24 8:00 AM | 5/30/24 5:00 PM | 14 | |
| 16 | Design project architecture | 10 days? | 5/31/24 8:00 AM | 6/13/24 5:00 PM | 15 | |
| 17 | Design web-based health information system | 4 days? | 5/31/24 8:00 AM | 6/5/24 5:00 PM | | |
| 18 | Design Handwritten Recognition Module | 3 days? | 6/6/24 8:00 AM | 6/10/24 5:00 PM | 17 | |
| 19 | User Interface Design | 3 days? | 6/11/24 8:00 AM | 6/13/24 5:00 PM | 18 | |
| 20 | Project Proposal | 8 days? | 6/14/24 8:00 AM | 6/25/24 5:00 PM | 19 | |
| 21 | Create Project Overview | 1 day? | 6/14/24 8:00 AM | 6/14/24 5:00 PM | | |
| 22 | Create Project Management Plan | 3 days? | 6/17/24 8:00 AM | 6/19/24 5:00 PM | 21 | |
| 23 | Create Project Methodology | 4 days? | 6/20/24 8:00 AM | 6/25/24 5:00 PM | 22 | |
| 24 | Project Implementation | 64 days? | 6/26/24 8:00 AM | 9/23/24 5:00 PM | 23 | |
| 25 | Setup development environment | 1 day? | 6/26/24 8:00 AM | 6/26/24 5:00 PM | | |
| 26 | Install required software | 1 day? | 6/26/24 8:00 AM | 6/26/24 5:00 PM | | |
| 27 | Implement Web-based System | 48 days? | 6/27/24 8:00 AM | 9/3/24 5:00 PM | 25 | |
| 28 | Backend Development | 28 days? | 6/27/24 8:00 AM | 8/5/24 5:00 PM | | |
| 29 | Frontend Development | 21 days? | 8/6/24 8:00 AM | 9/3/24 5:00 PM | 28 | |
| 30 | Integrate Handwritten text recognition | 10 days? | 9/4/24 8:00 AM | 9/17/24 5:00 PM | 27 | |
| 31 | Implement the web-based system to be compatible wit... | 4 days? | 9/19/24 8:00 AM | 9/23/24 5:00 PM | 30 | |
| 32 | Testing and Evaluation | 16 days? | 9/25/24 8:00 AM | 10/16/24 5:00 PM | 31 | |
| 33 | Conduct Unit Testing | 3 days? | 9/25/24 8:00 AM | 9/27/24 5:00 PM | | |
| 34 | Perform Integration Testing | 3 days? | 9/30/24 8:00 AM | 10/2/24 5:00 PM | 33 | |
| 35 | User Acceptance Testing | 2 days? | 10/3/24 8:00 AM | 10/4/24 5:00 PM | 34 | |
| 36 | Monitor system performance | 3 days? | 10/7/24 8:00 AM | 10/9/24 5:00 PM | 35 | |
| 37 | Address User Feedback | 2 days | 10/10/24 8:00 AM | 10/11/24 5:00 PM | 36 | |
| 38 | Regular maintenace | 5 days | 10/14/24 8:00 AM | 10/18/24 5:00 PM | 37 | |
| 39 | Bug Fixing and Issue Resolution | 3 days | 10/14/24 8:00 AM | 10/16/24 5:00 PM | | |
| 40 | Project Presentation | 12 days? | 10/16/24 8:00 AM | 10/31/24 5:00 PM | | |
| 41 | Prepare User Guide | 4 days? | 10/16/24 8:00 AM | 10/21/24 5:00 PM | | |
| 42 | Complete code documentation | 4 days? | 10/16/24 8:00 AM | 10/21/24 5:00 PM | 41SS | |
| 43 | Generate Project Report | 5 days? | 10/22/24 8:00 AM | 10/28/24 5:00 PM | 42 | |
| 44 | Prepare project presentation slides | 3 days? | 10/25/24 8:00 AM | 10/31/24 5:00 PM | 43 | |
| 45 | Create speaker notes | 3 days? | 10/25/24 8:00 AM | 10/31/24 5:00 PM | 44SS | |

FIT3163 Data Science Project



A link to the pdf file of the Gantt Chart is attached below for clearer view.

MDS2 - Gantt Chart.pdf

## Work Breakdown Structure

A link to the pdf file of the Work Breakdown Structure is attached below.

MDS2 - WBS.pdf

## Scheduling Explanation

In the section above, we have presented both a Gantt chart and a WBS to illustrate the project timeline and task breakdown of the team. The team will start by organizing the project activities using goals and milestone setting as they will be utilizing Agile methodology. These goals and milestones will be divided into six phases, with each phase being further segmented into sprints that include specific project tasks and milestones for the team to accomplish. Our project is divided into six phases where each of the phases comprises their individual goals, milestones and sprints.

To determine the duration of the activity, we will seek input from supervisors, seniors, and the teaching team, utilizing their knowledge and experience to coordinate the team's

efforts according to our abilities and strengths. The timing of our schedule and the duration of task progress will be established through a Gantt chart, while Google Drive statistics will be utilized to track the entire period. This method will enable us to efficiently monitor the progress of individuals, especially for tasks that rely on each other.

Meetings will take place with team members as needed for progress updates and reviews. Furthermore, a meeting with the project supervisor will be scheduled if there are any questions or need for clarification on the project content.

### Phase 1: Understanding Project Topic and Requirements

This phase is one sprint that typically lasts 2 weeks whereby the team members will familiarize themselves with the project topic and its requirements. At the conclusion of this sprint, all team members are expected to have a solid understanding of the project topic and a preliminary grasp of the project schedule.

### Phase 2: Research and Choosing the best model

Following the first phase, the team will carry out extensive research, participate in meetings and potentially set up meetings with stakeholders to clarify any doubts that rise during the research process. This is the first sprint which guarantees that all team members are informed and able to make valuable contributions to the project's achievements. During the second sprint, the team will split into two groups. One group is responsible for obtaining valid and existing health information systems as well as training and testing datasets to train and improve the handwritten text recognition model. The other group will research and gather additional details about current existing models for handwritten text recognition. After that, there would be a meeting to choose one for the project after making necessary enhancements.

### Phase 3: Model implementation and improvement

This phase will be during the winter break, and before the commencement of the subsequent unit, FIT3164. This phase will have 2 sprints with an estimated duration of 3-4 weeks each. The first sprint involves the implementation of the handwritten text recognition model. Team members will revise and refer to the previous research done regarding the handwritten text recognition model. The next sprint will be on testing and improving the handwritten text recognition to have a higher accuracy and precision in detecting handwritten texts with the use of the testing and training models.

### Phase 4: Model integration and smart database implementation

This phase will be set to commence in FIT3164 where the handwritten text recognition model would be then integrated to the health information system chosen by the team. This would be the first sprint. The second sprint would be the period where the team will improve the health information system to have a stable, appropriate and scalable database design.

### Phase 5: Enhance system compatibility with mobile devices

After the previous phase, the team would then do further improvement on the health information system so that healthcare workers could access the health information

system even on their own personal devices in case of hardware failures or other emergencies that might happen.

Phase 6: Presentation

This phase will begin at the end of the subsequent unit which is FIT3164 where the team would summarise the project into presentation slides to present the project to the teaching team, supervisors and potential clients.

# Reference

Mind Map & WBS LucidChart Link