Project *Charter*

1. Project Information

Project Name: Predictive Maintenance For HVAC Systems In A Commercial Building

Project Description: The purpose of this project is to develop and implement a predictive maintenance model for HVAC systems in a commercial building. The expected outcome is to enhance the reliability, efficiency, and performance of the HVAC systems by leveraging advanced analytical models, including machine learning algorithms and neural networks. The primary goal is to proactively identify and address maintenance needs, optimize energy consumption, minimize downtime, and improve occupant comfort.

Project Manager: Marrylind Grace Ann

Project Sponsor: Lisa Idayu

2. Project Objectives

- To train a classifier model to analyze data from HVAC systems and predict maintenance needs.
- To implement the Multilayer Perceptron (MLP) algorithm using Weka for model development.
- Achieve a high level of accuracy, precision, recall, and F1 score in predicting maintenance requirements.
- Optimize energy efficiency by detecting and addressing inefficiencies in HVAC systems.

3. Project Specification:

- Utilize data collected from sensors and automation systems of the HVAC system.
- Clean, preprocess, and transform raw data into a structured form.
- Select feature variables such as temperature, humidity, power consumption, and energy usage.
- Configure the MLP algorithm in Weka, specifying relevant options and hyperparameters.
- Train the neural network model and iteratively adjust weights based on learning rates to minimize prediction error.
- Analyze the relationships between input variables and predicted output for insights.

4. Project Deliverables

- Trained MLP predictive maintenance model.
- Weka configuration files and documentation.
- Analysis reports detailing model performance, evaluation metrics, and insights.
- Recommendations for proactive maintenance strategies and energy optimization.

5. Project Risks

- Data quality issues may affect the model's accuracy.
- Lack of domain expertise in HVAC systems could impact feature selection.
- Unforeseen technical challenges in configuring and training the MLP algorithm.
- Resistance to change or adoption of predictive maintenance strategies by maintenance teams.
- Budget constraints and resource limitations.

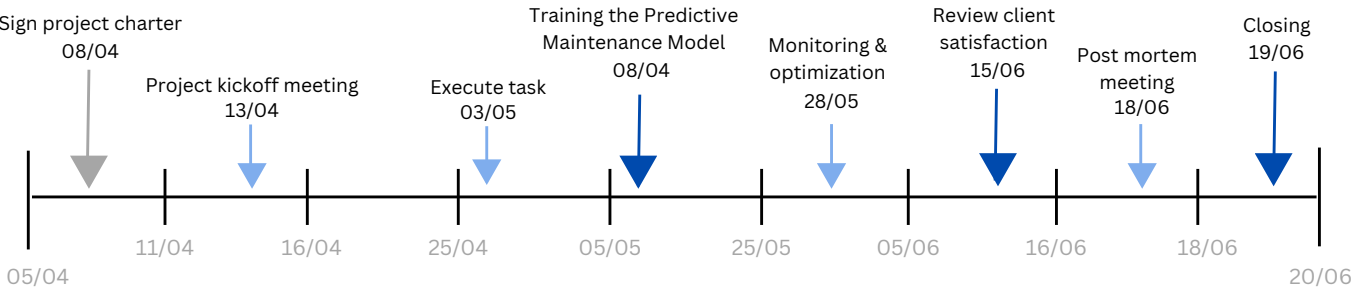| 6. Project Budget	7. Project Benefit
The project has a budget of RM14,000.	- Minimized downtime through proactive maintenance. - Improved energy efficiency and reduced consumption. - Increased occupant comfort and satisfaction. - Cost-effectiveness in resource allocation and system management.

8. Key Stakeholders

	Jackson William	CEO of Brain Tech
	Lisa Idayu	Project Sponsor
	Marrylind Grace Ann Anak John	Project Manager
	Project Team, Data Science Team, Maintenance Team, Energy Management Team.
	Brain Tech

Milestone review:

Sign project charter 08/04

Project kickoff meeting 13/04

Execute task 03/05

Training the Predictive Maintenance Model 08/04

Monitoring & optimization 28/05

Review client satisfaction 15/06

Post mortem meeting 18/06

Closing 19/06

05/04   11/04   16/04   25/04   05/05   25/05   05/06   16/06   18/06   20/06

9. Roles and Responsibilities

Brain Tech	**Marrylind Grace Ann	Project manager** Responsible for overseeing the entire project, ensuring it aligns with the organizational goals, and delivering results within the defined scope, timeline, and budget.
Brain Tech	**Saedatul Izzah Azizul Rahman	Project assistant manager** Responsible for supporting the Project Manager in various tasks to facilitate smooth project execution and management.
Brain Tech	**Iffah Nafisah Azizan	Team member** Responsible for documenting current processes and recommending new processes.
Brain Tech	**Muhammad Arif Zaqwan Mohd Zaki	Developer** Responsible for designing, implementing, and testing software components, ensuring the functionality and reliability of the model.

10. Project approval requirements	Signature of project sponsor	Date approved
Clear scope, budget, timeline, stakeholders, and approval criteria.	*Lisa Idayu*	08/04/2023