Position: Project Manager

Appliance: Smart Vacuum Cleaner in HACS

1. Introduction

In every software project, there must be proper planning before development begins. Without planning, even a small project can face delays, confusion, and incomplete work. In our HACS project, my role was the Project Manager, and my contribution was to plan and coordinate the Smart Vacuum Cleaner module.

The smart vacuum cleaner is an important part of a modern smart home. It can clean automatically, save human effort, and even be controlled remotely by mobile phones or computers. Since our project aimed to integrate home appliances into one system, it was necessary to plan how this appliance should work inside HACS. As a Project Manager, I was not directly writing code or designing diagrams, but I was responsible for making sure that everything was well organized and that the team worked smoothly.

2. Role of Project Manager

The Project Manager in a software engineering project plays a very critical role. According to software engineering theory, a Project Manager is the person who ensures that the project objectives are met within time, cost, and quality limits. Unlike a developer or a designer, the Project Manager focuses more on coordination, communication, and management.

In our project, I acted as the link between all other members. My duty was to:

Plan the features that the vacuum cleaner should support.

Prepare a timeline so that requirements, design, development, and testing were completed step by step.

Assign responsibilities to each member according to their role.

Monitor the progress of the project.

Coordinate meetings and solve problems faced by team members.

This role is very important because without planning, different members may do the same task twice or skip an important task. My aim was to avoid such confusion.

3. Purpose of My Contribution

The purpose of my work was to provide a clear structure for the vacuum cleaner module. Planning is like a roadmap: it shows where we are starting, the steps we will follow, and the goal we want to reach. My plan included identifying features such as auto cleaning, spot cleaning, and scheduling, and then making sure that these features were implemented by the team within the given timeline.

Another purpose was to ensure that communication between members was regular. Many times, technical projects fail not because of lack of skills but because of poor communication. As a Project Manager, I tried to make sure that everyone was updated and no member was left behind.

4. Scope of My Work

My scope was limited to planning and coordination, but this does not mean it was simple. I worked on deciding what features of the vacuum cleaner should be included in the HACS system, preparing the order of tasks, and guiding the team to complete them.

I also took care that the project did not become too complicated by adding unnecessary features. For example, some team members suggested adding voice control, but I decided that it would make the system too large for this assignment. Instead, I kept the scope simple: ON/OFF, auto clean, spot clean, scheduled clean, pause, resume, cancel, and alerts.

5. Planning Features

The first theoretical step in project management is requirements prioritization. A project cannot implement all possible features, so the manager must choose the most important ones. Based on discussions with my team, I selected the following features for the vacuum cleaner:

Remote ON/OFF

Auto cleaning mode

Spot cleaning mode

Scheduling cleaning at a set time

Pause and resume

Cancel operation anytime

Low battery and dust bin full alerts

These features were chosen because they are both useful for users and realistic for our project timeline.

6. Scheduling and Task Division

After deciding the features, I prepared a timeline. According to project management theory, scheduling is important because it ensures that all phases of software development—requirements, design, coding, and testing—are completed in order.

I divided the project into weeks: the first week for requirements gathering, the second for design, two weeks for development, and the final week for testing. Each team member was given clear responsibilities: one member focused on requirements, one on design, one on coding, and one on testing. I was responsible for overseeing everything.

This division made sure that no two members were doing the same work and no step was skipped.

7. Coordination and Meetings

Another important duty of a Project Manager is team coordination. Theory suggests that regular meetings are necessary for project success. In our project, I arranged weekly meetings. In these meetings, members updated their progress. If a member faced a problem, we discussed it together.

For example, when the developer faced difficulty in coding the cancel operation, we discussed the possible solutions and the tester also gave ideas about how it should be tested. This type of coordination improved the quality of our work.

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8. Functional and Non-Functional Requirements

Part of my planning also included checking that both functional and non-functional requirements were properly considered.

Functional requirements describe what the system must do. For the vacuum cleaner, the functional requirements included ON/OFF, cleaning modes, scheduling, and alerts. Non-functional requirements describe how the system should work. I made sure we considered performance, reliability, usability, and security. For example, the system should respond to commands within two seconds, and only authorized users should be able to operate it.

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9. Challenges Faced

As a Project Manager, I faced some challenges. One was deciding the correct scope. Some features were interesting but would take too much time. Another challenge was scheduling meetings because all team members had different free times. I solved this by creating an online group where members could post updates anytime.

Another challenge was handling different opinions. For example, some members wanted more advanced features, while others wanted to keep it simple. I made the decision to keep the scope simple but useful, so that we could complete it within the deadline.

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10. Outcome of My Contribution

Because of my planning, the vacuum cleaner module was completed smoothly. Each member knew what they had to do, the timeline was followed, and the features were implemented successfully. The final outcome was a working vacuum cleaner control system in HACS with all the planned functions.

11. Learning and Reflection

From this project, I learned both theoretical and practical lessons. In theory, I learned how project management is explained in software engineering: planning, scheduling, task division, and coordination. In practice, I learned that communication and teamwork are equally important.

I also learned that being a Project Manager is not about giving orders, but about guiding the team and helping them when needed. Sometimes I had to motivate the members when the work felt difficult. This experience showed me the value of leadership in technical projects.

12. Conclusion

In conclusion, my role as Project Manager was to plan and coordinate the Smart Vacuum Cleaner module in HACS. I identified the features, divided the tasks, prepared the timeline, and guided the team. By doing this, I made sure the work was completed on time and with good quality.

This project taught me that planning is not just the first step but the most important step of software development. With proper planning and coordination, even a complex system like HACS can be managed successfully.