Project Plan

Intelligent Charging & Discharging of Electric Shared Cars

GoodMoovs

Date	**:**	**11 Feb 2025**
Version	**:**	**1.0**
State	**:**	**Draft**
Author	**:**	**Dimitar Georgiev**

Version History

Version	Date	Author(s)	Changes	State
1.0	11 Feb 2025	Dimitar Georgiev	Initial Draft	Draft
1.1	27 Feb 2025	Dimitar Georgiev	Sprint Planning	Draft

Distribution

Version	Date	Receivers

1. Project Assignment

1.1. Context

This project investigates the intelligent control of the charging and discharging of electric shared cars to support the energy transition by optimizing energy storage and grid balance. It aligns with the increasing use of renewable energy sources and the growing adoption of electric vehicles.

1.2. Goal of the Project

- Optimize the charging and discharging process of electric shared cars.
- Reduce grid imbalances by leveraging vehicle-to-grid (V2G) technology.
- Integrate API-driven automation to manage energy flow effectively.

1.3. Scope and Preconditions

Inside Scope:

- API integration with Wallbox, LMS, and Solaredge.
- Development of a smart charging algorithm.
- Data security and compliance with regulations.

Outside Scope:

- Creating a tool that reads energy and sends it to the cloud
- Advanced front end

1.4. Strategy

This project follows an Agile methodology with iterative development cycles. It involves continuous testing, validation and deployment to ensure the system remains scalable and reliable.

1.4.1. Definition of done

A task is considered done when it meets the following criteria based on its type:

1. Code-Related Tasks (Development, Bug Fixes, API Integration)

- Code Implementation – The functionality is developed, follows best practices, and adheres to coding standards.
- Code Review – The code has been reviewed and approved by at least one team member.
- Testing – Unit, integration, and system tests have been conducted and passed.

- Documentation – Relevant documentation (code comments, API docs, or user guides) is updated.
- Deployment Readiness – The task is merged into the main branch and successfully integrated into the CI/CD pipeline.
- Acceptance Criteria Met – The task meets all defined requirements and has been validated by the responsible team member or stakeholder.
- No Open Bugs – Any identified issues or bugs are resolved or logged for future iterations.

2. Research Tasks

- Objective Achieved – The research question or goal has been addressed.
- Findings Documented – A clear and concise report is written summarizing key insights, sources, and conclusions.
- Reviewed & Shared – The research has been reviewed by at least one team member and shared with relevant stakeholders.
- Actionable Outcomes Identified – Next steps or recommendations are clearly outlined.

1.5. Research Questions and Methodology

- How can charging and discharging be optimized based on surplus energy availability?
- What impact do dynamic electricity prices have on charging efficiency?
- How can vehicle mobility needs be balanced with energy storage demands?

1.6. End Products

- API-integrated software for intelligent charging.
- Documentation on system architecture and implementation.
- Testing and validation reports.
- Deployment guide and user manual.

2. Project Organisation

2.1. Stakeholders and Team Members

Name	Role and Functions	Availability
Bongers, Edward	*Stakeholder*	
Bollen, Didier	*Stakeholder*	
Haest, Kees	*Stakeholder*	
Bedoya Ramirez, Rodrigo	*Student (Developer)*	*Monday & Thursday - 9:00 - 16:00*

Brugman, Joris J.A.	*Student (Developer)*	*Monday & Thursday - 9:00 - 16:00*
Georgiev, Dimitar D.I.	*Student (Developer)*	*Monday & Thursday - 9:00 - 16:00*
Hannessen, Morris M.B.	*Student (Developer, SCRUM master)*	*Monday & Thursday - 9:00 - 16:00*
Hristev, Martin M.D.	*Student (Developer)*	*Monday & Thursday - 9:00 - 16:00*
Yordanov, Anton	*Student (Developer)*	*Monday & Thursday - 9:00 - 16:00*
Schürgers,Frank F.P.	*Professional coach*	
Coenen,Frank F.W.J.	*Technical coach*	
Mladenovska,Ema E.	*Technical coach*	

2.2. Communication

- **Slack** – Primary communication tool for real-time team discussions, updates, and coordination. Used for quick decision-making and daily interactions.
- **WhatsApp** – Secondary communication channel for urgent messages, informal discussions, and quick check-ins.
- **Jira** – Project management tool for tracking tasks, sprints, and progress. Used for backlog management, issue tracking, and sprint planning.
- **OneDrive** – Cloud storage for document sharing and collaboration. Used for storing project files, reports, and documentation.

3. Activities and Time Plan

3.1. Phases of the Project

- Sprint 0: Research & Planning
- Sprint 1: Implementation, testing and validation
- Sprint 2: Implementation, testing and validation
- Sprint 3: Deployment and testing
- Sprint 4: Iterating based on testing
- Sprint 5: Final submission

3.2. Time Plan and Milestones

Phasing	Goal	Start date	Finish date
Sprint 0	API Research and Proof of concept	10 Feb 2025	28 Feb 2025
Sprint 1	Implementation, testing and validation	10 Mar 2025	28 Mar 2025
Sprint 2	Implementation, testing and validation	31 Mar 2025	18 Apr 2025
Sprint 3	Deployment and testing	21 Apr 2025	17 May 2025
Sprint 4	Iterating based on testing	19 May 2025	06 Jun 2025
Sprint 5	Final submission	09 Jun 2025	27 Jun 2025

4. Testing Strategy and Configuration Management

4.1. Testing Strategy

- Unit, integration, system, and acceptance testing.
- Automated and manual validation.
- Security testing for API vulnerabilities.
- Code review and quality checks

4.2. Test Environment and Required Resources

- CI/CD environment.
- DTAP (Development, Testing, Acceptance, Production) setup.

4.3. Configuration Management

- GitLab repository with branching strategy.
- CI/CD pipeline for automated deployment.

5. Finances and Risk

5.1. Risk and Mitigation

Risk	Prevention activities included in plan	Fall-back Activities
Company Supervisor Unavailability	Regularly update the company supervisor on project progress and milestones.	Identify a secondary contact within the company who can provide guidance if needed.
	Maintain clear and detailed project documentation accessible to colleagues.	Explore external resources, such as online forums or expert consultations.
	Schedule periodic check-ins with the company supervisor for guidance.	
Change in Project Scope or Direction	Clearly define project scope and objectives in the project plan.	Assess the implications of the change on project timeline and resources.
	Maintain open communication with stakeholders to identify changes early.	Collaborate with stakeholders to adjust project goals and plans accordingly.
	Document change requests and obtain approval before implementing changes.	Communicate changes to the project team and update the project plan.
Technical Challenges or Roadblocks	Conduct a thorough technical assessment before starting development.	Seek assistance from colleagues, mentors, or online technical communities.
	Allocate additional time in the schedule for unforeseen technical issues.	Adjust project milestones and timeline as necessary to accommodate delays.
	Collaborate closely with the technical team and leverage their expertise.	Prioritize critical technical tasks and reassess the project plan if needed.

5.2. Conclusion & Next Steps

- Finalize API integrations.
- Optimize charging algorithms.
- Conduct extensive system testing.
- Prepare for full deployment.