

Plan Scope Management

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Description: PMBOK Plan Scope Management

Plan Scope Management: Self-Charging Electric Vehicle (SCEV) Project

1. Introduction

This document outlines the plan for managing the scope of the Self-Charging Electric Vehicle (SCEV) project. It details the approach for defining, validating, and controlling the project scope throughout its lifecycle, ensuring alignment with project goals and stakeholder expectations. The innovative nature of the SCEV necessitates a rigorous

and adaptable scope management process to accommodate the inherent complexities of integrating multiple novel energy harvesting technologies.

2. Scope Management Approach

2.1 Methodology:

This project will employ an iterative and incremental scope management methodology. This approach is crucial due to the inherent uncertainties associated with developing cutting-edge technologies. The project will proceed through clearly defined phases, with scope refined and validated at the end of each phase based on learnings and technological advancements. This iterative process allows for flexibility and adaptation, mitigating risks associated with unforeseen technical challenges.

- **Phase 1: Feasibility and Simulation:** Focuses on validating the feasibility of core technologies through simulation and research.
- **Phase 2: Prototype Development:** Develops and tests functional prototypes of the core hardware systems.
- **Phase 3: Test Mule Integration:** Integrates prototypes into an existing EV and collects real-world data.
- **Phase 4: Energy Management Unit (EMU) Development:** Develops and tests the EMU software and hardware.
- **Phase 5: Full Vehicle Integration and Testing:** Integrates all systems into a complete SCEV prototype and performs comprehensive testing.
- **Phase 6: Pilot Production and Refinement:** Builds a small number of SCEVs for real-world testing and iterative refinement.

2.2 Key Principles:

- **Clear Scope Boundaries:** Each phase will have clearly defined deliverables and acceptance criteria, preventing scope creep.
- **Stakeholder Alignment:** Regular communication and feedback loops with stakeholders (investors, engineers, potential customers) will ensure alignment throughout the project.

- **Documented Acceptance Criteria:** Specific, measurable, achievable, relevant, and time-bound (SMART) acceptance criteria will be defined for each deliverable.
- **Proactive Change Management:** A formal change request process will be implemented to manage and control scope changes effectively. This includes impact assessments and cost-benefit analyses for all proposed changes.
- **Risk Management Integration:** Scope management will be closely integrated with the project's risk management plan, proactively addressing potential risks that could impact scope.

3. Roles and Responsibilities

Role	Responsibility
Project Manager	Overall scope management; change approval; stakeholder communication; risk management
Lead Engineer	Technical scope definition; prototype development; testing; system integration
Software Engineer	EMU development; data analysis; software integration
Business Analyst	Market research; requirements gathering; stakeholder engagement
Testing Team	Testing and validation of all system components and the integrated vehicle

4. Scope Definition Process

4.1 Requirements Gathering:

The requirements gathering process will be iterative and involve:

1. **Market Research:** Analyze the EV market, identify customer needs and preferences.
2. **Technology Assessment:** Evaluate the feasibility and potential of different solar, kinetic, and thermal energy harvesting technologies.
3. **Stakeholder Interviews:** Conduct interviews with potential investors, engineers, and customers to gather input and refine requirements.
4. **Technical Specifications:** Develop detailed technical specifications for each system component and the integrated vehicle.

4.2 Scope Documentation:

The following documentation will be created and maintained:

- **Project Scope Statement:** A formal document defining the project's objectives, deliverables, and boundaries.
- **Work Breakdown Structure (WBS):** A hierarchical decomposition of the project into manageable tasks.
- **Acceptance Criteria:** Specific criteria that must be met for each deliverable to be considered complete and acceptable.
- **Assumptions and Constraints:** A list of assumptions made during planning and any constraints that may impact the project.
- **Requirements Traceability Matrix:** Linking requirements to design specifications and test cases.

5. Validation and Control

5.1 Validation Methods:

- **Prototype Reviews:** Regular reviews of prototypes to ensure they meet the defined requirements.
- **Simulation Validation:** Verifying simulation results against real-world data collected from the test mule.

- **Stakeholder Sign-off:** Formal sign-off procedures for key deliverables to ensure stakeholder acceptance.
- **Independent Verification and Validation (IV&V):** Engaging an independent third party to verify and validate the system's functionality and performance.

5.2 Control Procedures:

- **Change Request Management:** A formal process for submitting, evaluating, approving, and tracking scope changes.
- **Configuration Management:** A system for managing and controlling the project's documents, code, and other assets.
- **Issue Tracking:** A system for tracking and resolving issues that may affect the project scope.

This plan will be regularly reviewed and updated throughout the project lifecycle to ensure it remains aligned with the project's evolving needs and circumstances. The iterative nature of the project necessitates a flexible and adaptable approach to scope management, enabling the team to respond effectively to emerging challenges and opportunities.