College of Engineering
Software Engineering Department
Software Configuration Management
Title: Intelligent parking management system
section: C

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Submission Date: Dec 30, 2025

Intelligent Parking Management System (IPMS)

Software Requirements Specification (SRS)

Introduction

Purpose

The purpose of this SRS is to provide a clear and controlled description of system requirements to support development and baselining.

The purpose of this SRS is to provide a clear and controlled description of system requirements to support development, configuration management, baselining, and auditing activities.

This document is a controlled configuration item under the Software Configuration Management Plan (SCMP).

Scope

IPMS is a simple, web-based prototype designed to demonstrate software configuration management practices.
The system supports basic parking management functionality, where vehicles are assigned parking floors based on vehicle type. The scope of implementation is intentionally limited to meet academic SCM objectives.

Intended Audience

This document is intended for the following stakeholders involved in the Intelligent Parking Management System (IPMS) project:

- **Project Team Members**: to understand the system requirements and scope of implementation
- **SCM Coordinator**: to manage configuration identification, change control, and baselining activities
- **Configuration Auditor**: to verify requirement coverage and support Functional Configuration Audits (FCA)
- **Course Instructor**: to review and assess the completeness and correctness of project requirements

Out of Scope

The following features are explicitly out of scope for implementation:

- AI-based vehicle identification
- Online booking or reservation
- Payment processing
- Real-time parking monitoring

These features will be referenced as future enhancements only.

System Overview

The Intelligent Parking Management System (IPMS) is a simple, web-based prototype system designed to demonstrate software configuration management practices within an academic environment. The system provides a basic workflow that allows a user to authenticate, access a main dashboard, and perform a core parking-related operation.

After logging into the system, the user is presented with a dashboard that lists available services. The primary implemented service is parking allocation based on vehicle type. The user selects a vehicle category (car, van, or truck), and the system assigns a predefined parking floor according to simple business rules. The allocation logic is intentionally straightforward to keep the focus on SCM processes rather than algorithmic complexity.

System data, such as vehicle types and parking floor mappings, is represented using a simple JSON file. No backend server, real database, or external integrations are used. The system operates entirely on the client side using standard web technologies and can be executed by opening the main HTML file in a web browser.

Although the conceptual system could support advanced features such as AI-based vehicle identification, online booking, and payment processing, these features are not part of the implemented system. They are documented only as future enhancements and are explicitly excluded from the current scope.

Functional Requirements

The functional requirements of the IPMS are listed below. Each requirement defines a specific behavior the system must provide.

- **FR-01: User Authentication**
  The system shall provide a basic login or authentication interface to allow users to access the system.

- **FR-02: Login Validation**
  The system shall validate user input using simple or mock credentials for demonstration purposes.
- **FR-03: Dashboard Access**
  The system shall display a main dashboard page after successful login.
- **FR-04: Service Listing**
  The dashboard shall list the available system services or actions.
- **FR-05: Vehicle Type Selection**
  The system shall allow the user to select a vehicle type, including car, van, or truck.
- **FR-06: Parking Allocation Logic**
  The system shall assign a parking floor based on the selected vehicle type using predefined rules.

- **FR-07: Data Representation**
  The system shall use a simple JSON file to store or represent parking-related data.

Non-Functional Requirements

The non-functional requirements define the quality attributes and constraints of the system.

- **NFR-01: Simplicity**
  The system shall be simple to understand, deploy, and operate, with no complex setup or dependencies.
- **NFR-02: Maintainability**
  The system artifacts shall be structured, named, and versioned according to the Software Configuration Management Plan (SCMP).
- **NFR-03: Portability**
  The system shall be executable on standard web browsers without platform-specific configuration.
- **NFR-04: Reliability**
  The system shall provide consistent behavior during normal use without crashes or unexpected termination.
- **NFR-05: Performance**
  The system shall respond to user actions within an acceptable time for a small, client-side application.
- **NFR-02: Usability -** The user interface shall be intuitive and require minimal user training.

Requirements Traceability

Each requirement defined in this document is traceable to:

- Source code files
- Change Requests (if modified)
- Functional Configuration Audit (FCA)

Approval

- **Prepared by:** Documentation Owner
  Reviewed by: SCM Coordinator
- **Approved by:** Project Team
- **Version:** v1.0
- **Date:** December 20, 2025