This report provides a user-friendly guide to the **Hardware Feature Set** module, explaining its purpose, how it works, and its practical benefits for you.

1. Executive Summary

The **Hardware Feature Set** module is your central hub for managing and monitoring all the smart devices (sensors and trackers) installed in your vehicles. It empowers you to keep a close eye on your fleet, ensuring safety, optimizing operations, and reducing costs. From tracking vehicle locations and speeds to monitoring fuel levels and driver behavior, this module puts critical information and control directly at your fingertips, all in one easy-to-use system.

2. Introduction

Managing a fleet of vehicles comes with its challenges: "Where are my vehicles right now?" "Are my drivers following speed limits?" "Is there a way to prevent theft or monitor fuel usage?" These are common questions that can lead to operational headaches, increased costs, and safety concerns.

The **Hardware Feature Set** module is designed to solve these problems. It connects your vehicles' physical devices – like GPS trackers, fuel sensors, and driver behavior monitors – directly to your tracking system. This connection allows you to:

- · Track vehicles in real-time: Always know their exact location and movement.
- Enhance safety: Monitor for over-speeding, seat belt usage, and driver performance.
- Improve efficiency: Optimize routes, manage fuel consumption, and reduce downtime.
- Increase security: Immobilize vehicles remotely and get alerts for unauthorized use.

In simple terms, the **Hardware Feature Set** transforms raw data from your vehicles into actionable insights, helping you make smarter decisions and keep your operations running smoothly.

3. Main Content

What This Means for You

This module offers tangible benefits that directly impact your daily operations and peace of mind:

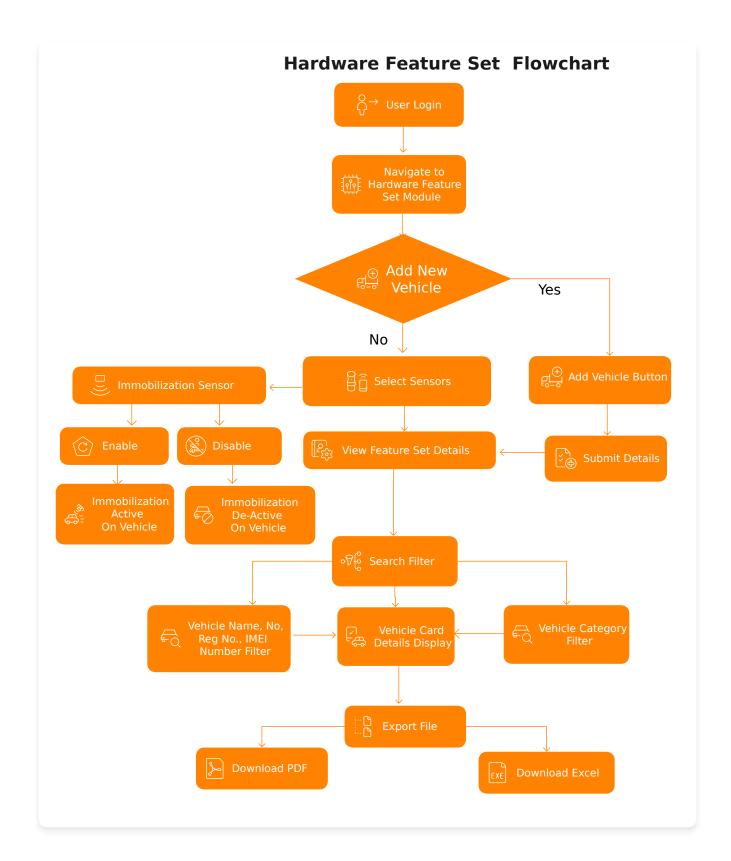
- Complete Vehicle Oversight: Get a 360-degree view of your fleet's status, location, and activity from a single dashboard.
- **Proactive Problem Solving:** Identify and address issues like over-speeding, high fuel consumption, or unusual temperature readings before they become major problems.
- **Streamlined Management:** Easily add new vehicles, configure their sensors, and update details without needing complex technical knowledge.
- Enhanced Safety & Compliance: Ensure drivers adhere to safety regulations and maintain proper documentation (e.g., insurance, registration).
- Cost Savings: Reduce fuel expenses through better monitoring and prevent theft with remote immobilization.
- Accessible Information: Download crucial reports in formats like Excel or PDF for deeper analysis or recordkeeping.

How It Works

The Hardware Feature Set works by integrating various physical sensors and devices within your vehicles with the software platform. These devices collect data (like GPS coordinates, speed, fuel levels, or temperature) and transmit it to your system in real-time. The system then processes this data, making it visible and actionable through user-friendly interfaces, reports, and alerts.

You interact with this system through a series of dedicated pages, each focused on specific hardware functionalities. For example, you can view over-speeding reports, enable or disable immobilizers, or add new vehicles with their associated sensors.

The general workflow for managing your hardware features is illustrated in the flowchart below:



Getting Started

To get started with managing your Hardware Feature Set, follow these general steps:

- 1. Log In: Open the Vehicle Tracking System and log in with your valid credentials.
- 2. Navigate to Module: Go to the "Hardware Feature Set" module in the application menu.
- 3. Add or Select Vehicle:
 - To add a new vehicle:

- Click the "+Add Vehicle" button.
- Fill in required details like Vehicle Info, Tracking Device, Hardware Feature-Set, Feature values,
 Validity Info, and Vehicle Geofence.
- Click "Save" or "Next" to complete the process.
- To manage an existing vehicle:
 - Use the **search box** (e.g., by Vehicle Name, Registration Number, or IMEI) to find your desired vehicle.
 - Select the vehicle from the displayed list.

4. Configure Sensors/Features:

- Locate the specific sensor or feature you wish to manage (e.g., Over Speeding, Fuel Sensor, Immobilization).
- Use dropdown lists to select options like Vehicle Category, Fuel Type, Make Year, or Seat Capacity.
- Upload relevant documents like Insurance Certificates or Registration Certificates, and Vehicle Images.
- Use toggle switches or "Enable"/"Disable" buttons to activate or deactivate sensors.

5. View Reports:

- Navigate to the relevant report section (e.g., Over-speeding report, Temperature Sensor report).
- Apply filters (Vehicle Name, Category, Driver) using the search boxes and dropdowns.
- Click "Download" or "Export" to get reports in Excel or PDF format.

Key Features You'll Use

The Hardware Feature Set module includes several powerful capabilities designed to give you comprehensive control:

• Over-Speeding Driver Monitoring:

- Track vehicles that exceed speed limits.
- View IMEI numbers, vehicle categories, and fuel types in reports.
- Add new vehicles and upload necessary documents like Registration Certificates and Vehicle Images for compliance.
- Export over-speeding incidents in PDF format.

• Immobilization:

- Search for vehicles by registration number or name.
- View registration details and IMEI numbers.
- Remotely disable a vehicle in case of theft or unauthorized use.
- Manage fuel types and vehicle images associated with immobilization.
- Export immobilization reports to Excel.

• Fuel Sensors:

- Monitor vehicle fuel levels and consumption.
- Search for fuel sensor data by vehicle number, engine number, or IMEI.
- Enable/Disable fuel sensors to control active monitoring.
- Upload and view insurance and registration certificates for fuel-related vehicles.
- An active fuel sensor is easily identified by a **Fuel Pump Icon**.

• IVMS (In-Vehicle Monitoring System):

- Access detailed vehicle information like vehicle number, registration number, IMEI, hardware name, and category.
- Choose between "Existing" or "New" vehicle options when adding.
- · Adjust odometer readings with up/down arrows.
- Search by model name, engine number, or registration number.
- Disable/Enable IVMS sensors.
- Upload documents such as Insurance and Registration Certificates, and Vehicle Images.

• LV CAN (Low Voltage Controller Area Network):

- Search for drivers and vehicles by category, model name, or vehicle number.
- Manage vehicle seat capacity, fuel type, and make year.
- Upload images and insurance/registration certificates for LV CAN vehicles.
- Enable/Disable LV CAN data tracking.

• Temperature Sensors:

- Monitor vehicle temperature in real-time.
- Receive alerts when temperature exceeds defined limits (indicated by a temperature sensor icon).
- Search for temperature data by vehicle name, IMEI, registration number, or hardware name.
- Enable/Disable temperature sensors for specific vehicles.
- Track real-time location updates on a map.

• Card Readers:

- View chassis and VIN numbers, engine numbers, and registration details.
- Manage vehicle categories and make years.
- Upload vehicle images and insurance certificates.
- Enable/Disable card reader functionality.
- An active card reader is represented by a Card Reader Icon and uses specific color schemes.
- Export card reader data to Excel or PDF.

• Seat Belt Sensors:

- Add vehicles to the seat belt sensor monitoring list.
- Search for drivers, engine numbers, or vehicle types associated with seat belt sensors.
- Enable/Disable seat belt sensor functionality.
- Select whether a vehicle is for "Good" (goods) or "Passengers."

Common Scenarios

Here are a few ways you might use the Hardware Feature Set in your daily operations:

• Scenario 1: Monitoring a Driver's Speeding Habits

- Your Goal: Identify drivers who frequently exceed speed limits to improve safety and avoid penalties.
- How you use it: You would navigate to the Over-Speeding report. The system instantly shows IMEI
 numbers, vehicle categories, and driver details. You can easily see all over-speeding incidents, including
 timestamps and actual speeds. If needed, you can download this report as a PDF for driver coaching or
 record-keeping.

• Scenario 2: Preventing Vehicle Theft

- Your Goal: Secure a vehicle remotely if it's reported stolen or used without authorization.
- How you use it: Access the Immobilization section. Search for the specific vehicle using its registration number or IMEI. With a single click of the "Immobilize" toggle, the system will remotely disable the vehicle, preventing it from being driven further.

• Scenario 3: Adding a New Vehicle to Your Fleet

- Your Goal: Register a new truck and ensure all its tracking and sensing capabilities are active.
- How you use it: Go to the Hardware Feature Set module and click "+Add Vehicle." You'll fill in all the details for the new truck its name, registration number, IMEI, model, make year, and select its category (e.g., "Truck"). You'll also upload its Registration Certificate and Insurance Certificate, and a vehicle image. Finally, you'll enable specific sensors like the Fuel Sensor, LV CAN, and Temperature Sensor by clicking "Enable" or toggling their switches. The truck will then appear in your fleet with all monitoring active.

Scenario 4: Checking Fuel Consumption Reports

- Your Goal: Analyze fuel efficiency for a specific vehicle or your entire fleet.
- **How you use it:** Navigate to the Fuel Sensor reports. You can search by vehicle number or engine number to narrow down the data. The report will display fuel types and consumption details. You can then download this data in Excel format for detailed analysis and planning.

• Scenario 5: Identifying Drivers for Temperature-Sensitive Shipments

- **Your Goal:** Quickly find which drivers are assigned to vehicles with active temperature sensors and track their cargo conditions.
- How you use it: In the Temperature Sensors module, select the "Temperature Sensors" option. The
 dropdown will show all available drivers handling temperature-monitored shipments. You can then filter for
 specific temperature deviations to see if any drivers are responsible for affected vehicles, allowing for
 immediate action.

What to Expect

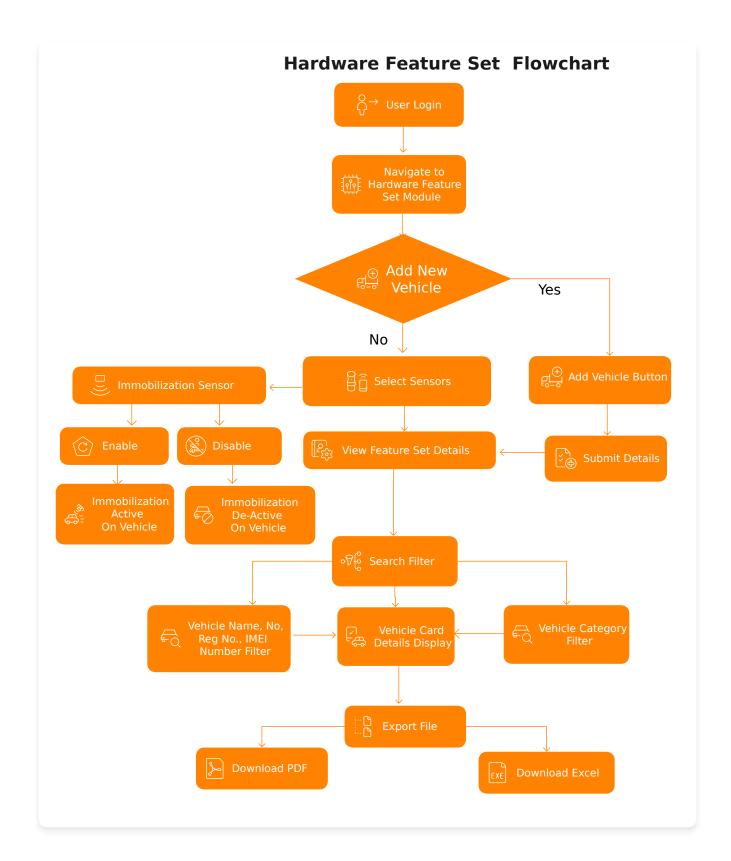
After successfully using the Hardware Feature Set module, you can expect the following outcomes:

- When adding a new vehicle: The "Add Vehicle" form will appear with interactive fields, and upon submission, the new vehicle's information will be clearly displayed in your dashboard and relevant reports.
- When enabling/disabling a sensor: A confirmation message will appear, and the sensor's icon or status will visibly change (e.g., a fuel pump icon for an active fuel sensor, or greyed-out for disabled features).
- When searching for a vehicle or report: The system will quickly display only the matching results, or show a clear "No Results Found" message if no match exists.
- When uploading documents: The uploaded file (e.g., Insurance or Registration Certificate, Vehicle Image) will be visible as a filename or icon, confirming its successful upload.
- When downloading reports: An Excel or PDF file containing the requested data will be successfully downloaded to your device's default "Downloads" folder.
- When navigating between pages: Clicking "Next" will smoothly take you to the subsequent step with your data saved, while "Cancel" will return you to the previous page without losing entered information.

4. Visual Elements & Supporting Information

Hardware Feature Set Flow Chart

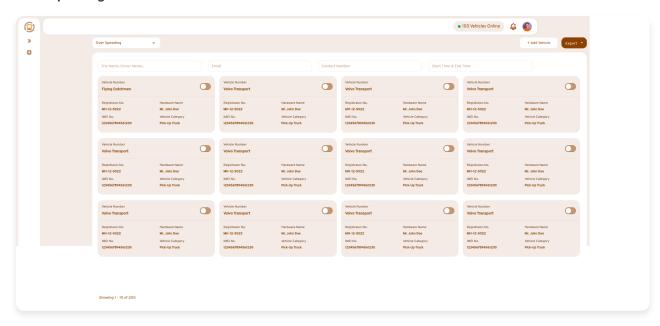
This diagram illustrates the typical workflow when interacting with the Hardware Feature Set module, from managing existing vehicles to configuring various sensors.



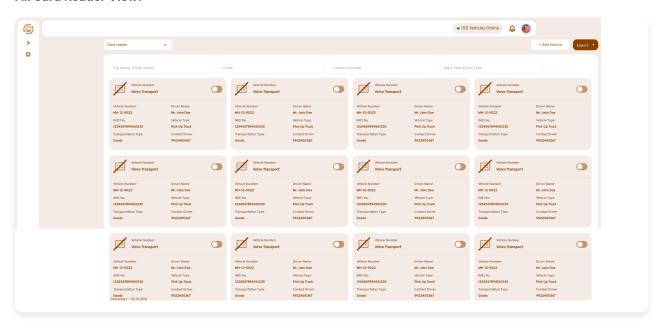
Screenshots

Here are visual examples of different sections within the Hardware Feature Set module:

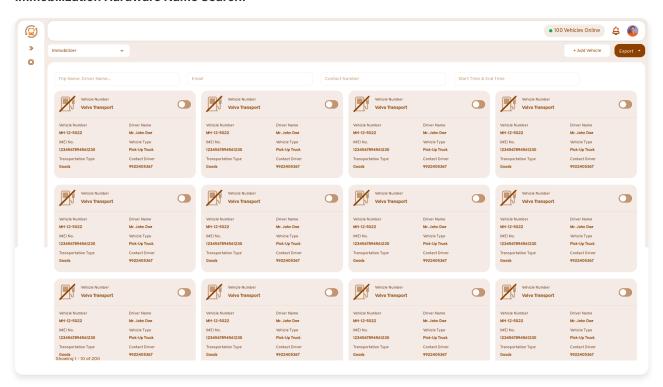
• Over-Speeding Driver View:



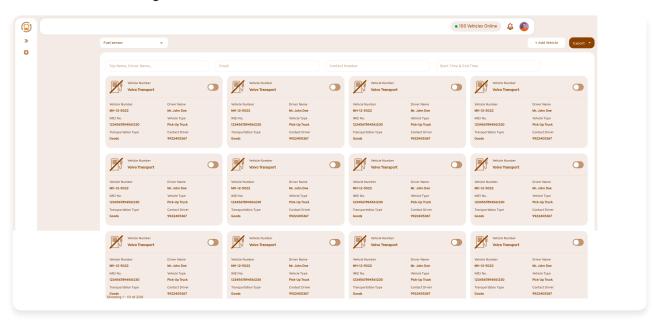
• All Card Reader View:



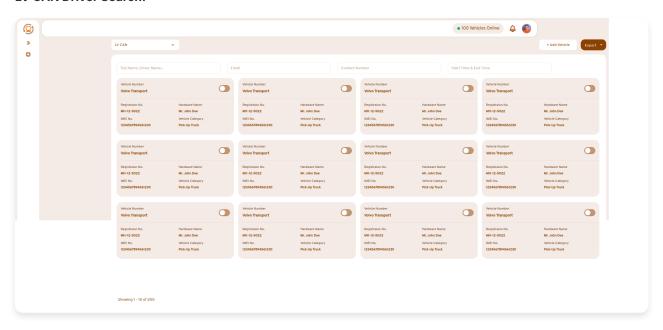
• Immobilization Hardware Name Search:



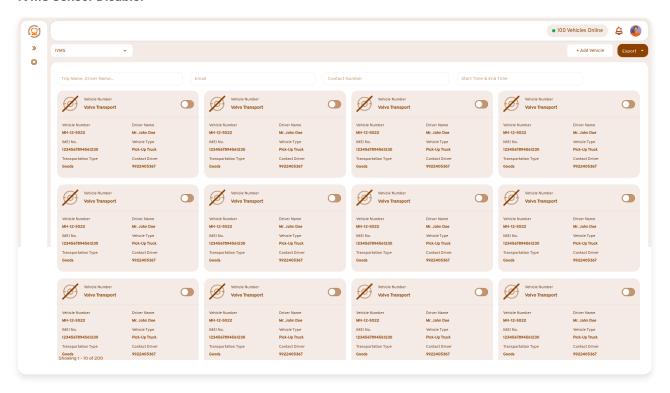
• Fuel Sensor Vehicle Image Select:



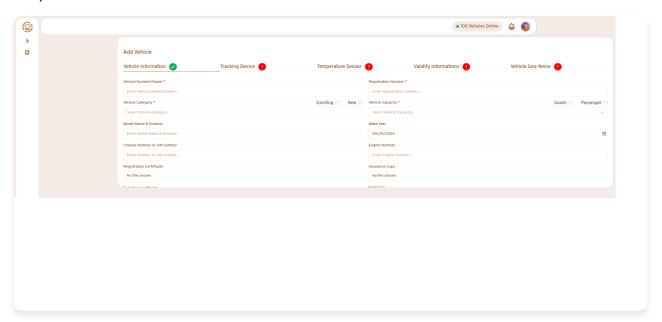
• LV CAN Driver Search:



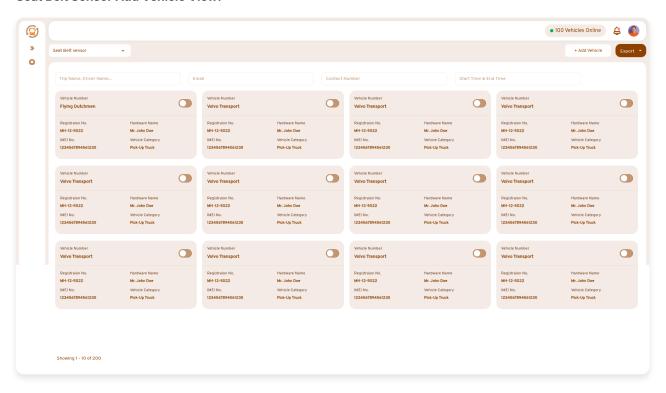
• IVMS Sensor Disable:



Temperature Sensor Enable:



• Seat Belt Sensor Add Vehicle View:



Field Validation Table

The following table outlines common input fields you'll encounter across various sections of the Hardware Feature Set module, along with their expected properties. This information helps you understand what kind of data to enter and what the system expects.

Field Name	Mandatory	Field Type	Data Type	Field Size (Max Length)	ls Editable	Description
Vehicle Number / Reg No.	Yes	Text	String	Variable	Yes	Unique identification number for the vehicle.
Vehicle Name	Yes	Text	String	Variable	Yes	A user- friendly name for the vehicle.
IMEI Number	Yes	Text	String	15 digits	Yes	Unique International Mobile Equipment Identity for the tracking device.
Hardware Name	Yes	Text	String	Variable	Yes	Name of the specific hardware device installed (e.g., GPS Tracker).
Vehicle Category	Yes	Dropdown	String	Variable	Yes	Classification of the vehicle (e.g., Truck, Sedan, Bus).
Vehicle Type	Yes	Dropdown	String	Variable	Yes	Specific type of vehicle (e.g., Cargo Van, Passenger Car).
Driver (Dropdown/Search)	No	Dropdown/Text	String	Variable	Yes	Selects or searches for an assigned driver (active drivers only).
Fuel Type	Yes	Dropdown	String	Variable	Yes	Type of fuel the vehicle uses (e.g., Petrol, Diesel, CNG, Electric).

Field Name	Mandatory	Field Type	Data Type	Field Size (Max Length)	ls Editable	Description
Seat Capacity	Yes	Dropdown/Radio	Number/String	Variable (e.g., "Good", "Passengers")	Yes	Indicates passenger capacity or "Good" for cargo.
Make Year	Yes	Dropdown	Number	4 digits	Yes	Manufacturing year of the vehicle.
Engine Number	Yes	Text	String	Variable	Yes	Unique identifier for the vehicle's engine.
Chassis Number / VIN Number	No	Text	String	Variable	Yes	Vehicle Identification Number or chassis number.
Odometer Reading	No	Number/Input	Number	Variable	Yes	Current distance recorded by the vehicle (editable via arrows).
Insurance Certificate (Upload)	No	File Upload	Document	N/A	Yes	Uploads and displays the vehicle's insurance certificate file.
Registration Certificate (Upload)	Yes	File Upload	Document	N/A	Yes	Uploads and displays the vehicle's registration certificate file.
Vehicle Image (Upload)	No	File Upload	Image	N/A	Yes	Uploads and displays a visual image of the vehicle.

Field Name	Mandatory	Field Type	Data Type	Field Size (Max Length)	ls Editable	Description
Search Box (General)	N/A	Text	String	Variable	Yes	Universal search field for various criteria (e.g., name, number).

5. Summary & Benefits

The **Hardware Feature Set** module is more than just a collection of tools; it's a comprehensive solution designed to bring efficiency, safety, and control to your vehicle operations. By seamlessly integrating physical hardware with intuitive software, it empowers you to:

- Gain Unprecedented Visibility: Know exactly what's happening with every vehicle, every moment.
- Make Data-Driven Decisions: Use real-time and historical data to optimize routes, manage fuel, and improve
 driver performance.
- Protect Your Assets: Leverage features like remote immobilization and theft alerts to safeguard your vehicles.
- Simplify Compliance: Keep track of essential vehicle documents and ensure adherence to regulations.

Ultimately, this module translates complex hardware capabilities into simple, actionable steps, giving you the peace of mind and operational edge you need to manage your fleet successfully.