



MOBILITY EMPOWERED



SMART AND SAFE MOBILITY ADAS - designed for Indian highways

Automotive-grade **Advance Driver Assistive System (ADAS)** stack designed for Indian highways that can be used in **cargo deliveries, commercial, or passenger vehicles.**

ADAS SMART & SAFE MOBILITY

A hasty call, a text, driver drowsiness, etc. that diverts your attention at the wrong time could cause disaster to occur in a matter of seconds.

We at THRSL believe it requires accuracy, timing, and years of being at the forefront of creating cutting-edge patents in computer vision, machine learning, and artificial intelligence to take care of you every second while you are driving to your destination.

Since 90% of road accidents happen due to human error, either fatigue or distraction, we have seen that with the use of our technology we can reduce the accidents by up to 80%, 20-30% reduction of Harsh Breaking, and a cumulative effect of fuel consumption saving.

Cameras, dash displays, warning signals, sensors, emergency braking, danger recognition are just a few of the safety features an ADAS equipped vehicle has. Utilizing these safety features lowers the possibility of being in an accident, potentially saving your life, money and time.



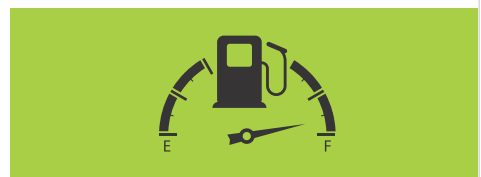
4 Major Accidents Averted per Month



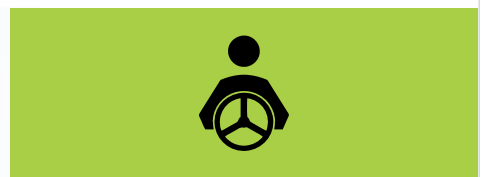
20-30% reduction in Harsh Breaking



25+ Average Near Miss Accidents Averted Per Month per Truck



1-3% Reduction in Fuel Consumption



30,000+ Drivers Protected



3.5 Billion+ Kms Run



~50% MHCV Market through OEM Customers

ADAS SMART & SAFE MOBILITY



CONNECTED VEHICLE SOLUTIONS

- ▶ Vehicle Health
- ▶ ADAS & Driver State Monitoring
- ▶ Journey Risk Management
- ▶ On-Board Voice Alerts
- ▶ 2 Way Communication

Imagine a system that allows for assistive vehicle control to be used at the appropriate time to reduce and prevent traffic accidents.

This is achieved by taking a comprehensive approach to safety **NovusFlow, our industry-agnostic technology platform for integrated intelligence and mobility value delivery**, monitors and accounts for potential human error, preventing or reducing the impact of the potential accidents while also enabling a change in driver's behaviour over time saving lives and assets.

ADAS SMART & SAFE MOBILITY



NOVUS

AWARE

Attention & Behavior
Monitoring

NOVUS FLOW™
FUTURE. NOW.

NOVUS

PILOT

External Environment
Monitoring

AUTONOMOUS & DRIVER ASSISTANCE SYSTEMS FOR LOGISTIC FLOW



Vision Sensors collecting the data about the driver and the vehicle state in order to improve efficiency of operations.


SAFETY

Average **4 accidents** averted/month/truck


VISIBILITY

Improved **real time visibility** into fleet operation for increased productivity


STRINGENT TAT COMPLIANCE

Profiling of drivers' behavior to ensure **TAT compliance**


COST REDUCTION

Reduction in **harsh breaking** and **fuel consumption**


DRIVER RETENTION

Increased driver well being and safety leading to **higher retention**


COACHING

Driving safe behaviour coaching through personalized feedback

ADAS SMART & SAFE MOBILITY

CHALLENGES with Traditional Solutions



Telematic Devices

- ▶ Unreliable, inconsistent TATs (Turnaround Time)
- ▶ No visibility of fleet operations or driver behaviour
- ▶ Higher cost of fuel and maintenance
- ▶ Only location tracking of vehicles
- ▶ No tracking of driver behavior
- ▶ No personalized training of drivers to promote safe driving behavior

ADVANTAGE NOVUS

NovusFlow, orchestrates **NOVUS AWARE**, a camera that faces inside vehicle cabin and **NOVUS PILOT**, a camera that faces outward towards road. While **NOVUS PILOT** monitors lanes, vehicles and other vulnerable road users, **NOVUS AWARE** monitors the driver drowsiness and inattention using proprietary & **PATENTED NOVUS DEEPCONSE TECHNOLOGY**.

NOVUS AWARE and **NOVUS PILOT** are international standards compliant and have already been commissioned by various renowned Indian Commercial Vehicle OEMs and fleet operators providing logistic services to **E-Commerce, Petrochemical, Mining and 3PL**, etc.

External Environment Monitoring Sensor



Road
4
Wheeler
2
Wheeler
Person

ADAS SMART & SAFE MOBILITY

In-Vehicle Hardware

NOVUS AWARE/DSM ▶

- IP65
- 4G/LTE
- Voice Alerts
- Drowsiness Detection
- Fatigue Detection
- Compliant to Applicable AIS & ISO Standards
- Facial Recognition
- Seat belt status
- CAN compatible
- Over-The-Air Programmable
- Distraction Detection



NOVUS PILOT ▶



- Forward Collision Warning
- Lane Departure Warning
- Pedestrian Collision Warning
- Cross traffic Alert
- Over-The-Air Programmable
- CAN compatible
- Ip65
- Compliant to Applicable AIS & ISO Standards

Add-on Integratable Devices ▶

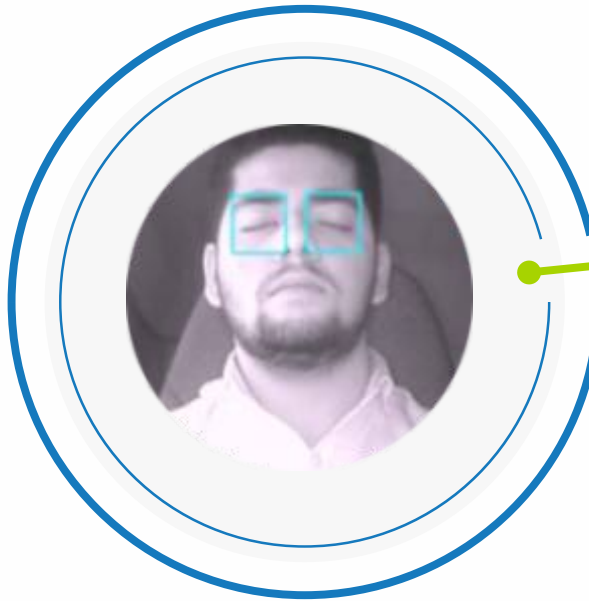
- AIS-140 Devices
- 2- Way Voice Communication
- Tyre Pressure Monitoring System
- Fuel Sensor
- E-Lock



ADAS SMART & SAFE MOBILITY

Specification & Key Features

Features



Hardware



Driver

- :: Occlusion Detection
- :: In-Attention Alert
- :: Drowsiness Alert

Fleet Owners

- :: Complete Driver Analytics
- :: Driver Profiling And Score
- :: Enabling Safe Driving Behavior

- :: Certified Automotive Grade
- :: Vision Sensor
- :: Add-on Sensors*
- :: CAN Interface For Vehicle Connectivity*
- :: Connectivity (3G/4G)*
- :: A-pillar Mounting
- :: Split Design

* (optional)



Trained for most Ethnicity



Multiple facial poses/orientations



Works in day/night Conditions



Acts as a black box for the vehicle



Turban/cap Other headgears



Spectacles & other eyewear



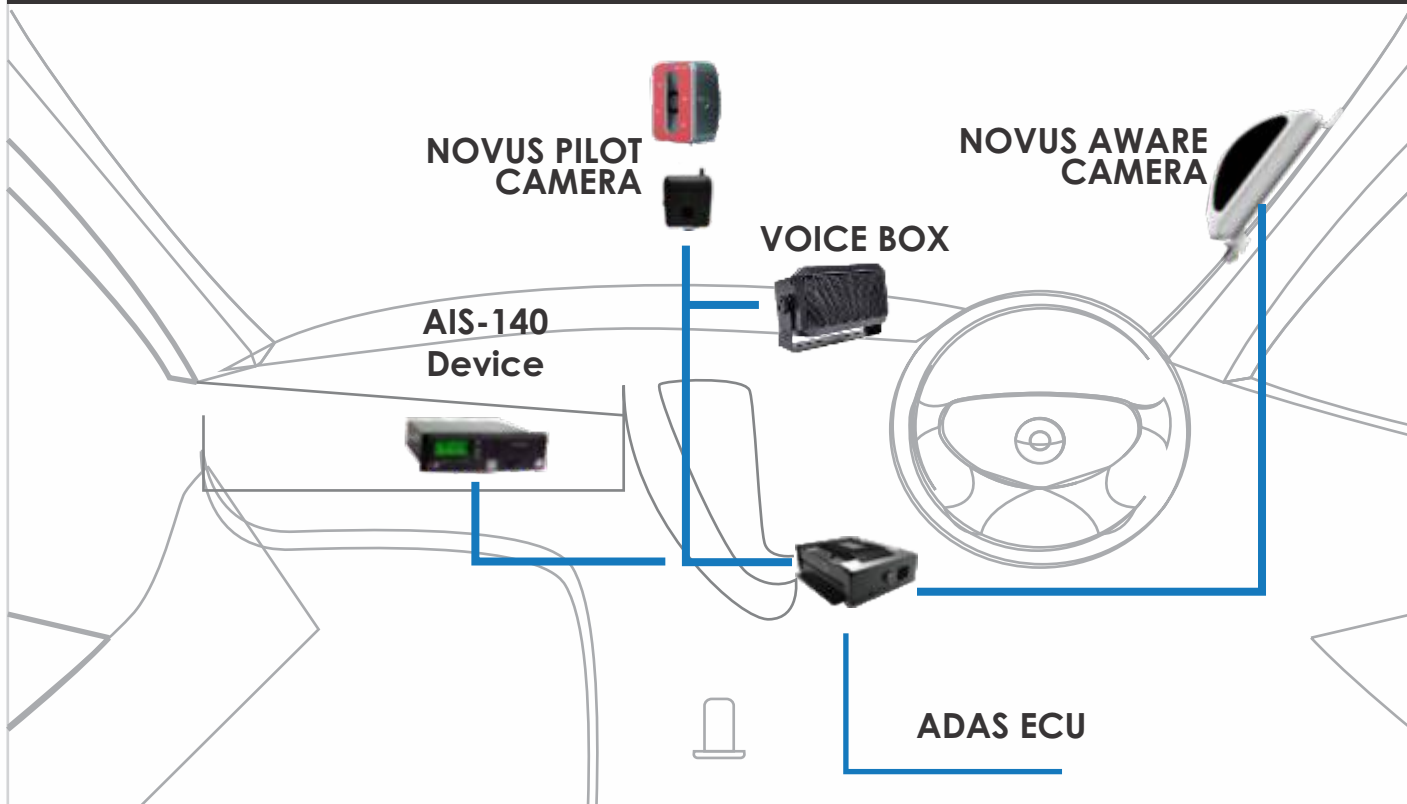
Machine learning Capability



Safe L3 Handover capability

ADAS SMART & SAFE MOBILITY

In-Vehicle Setup



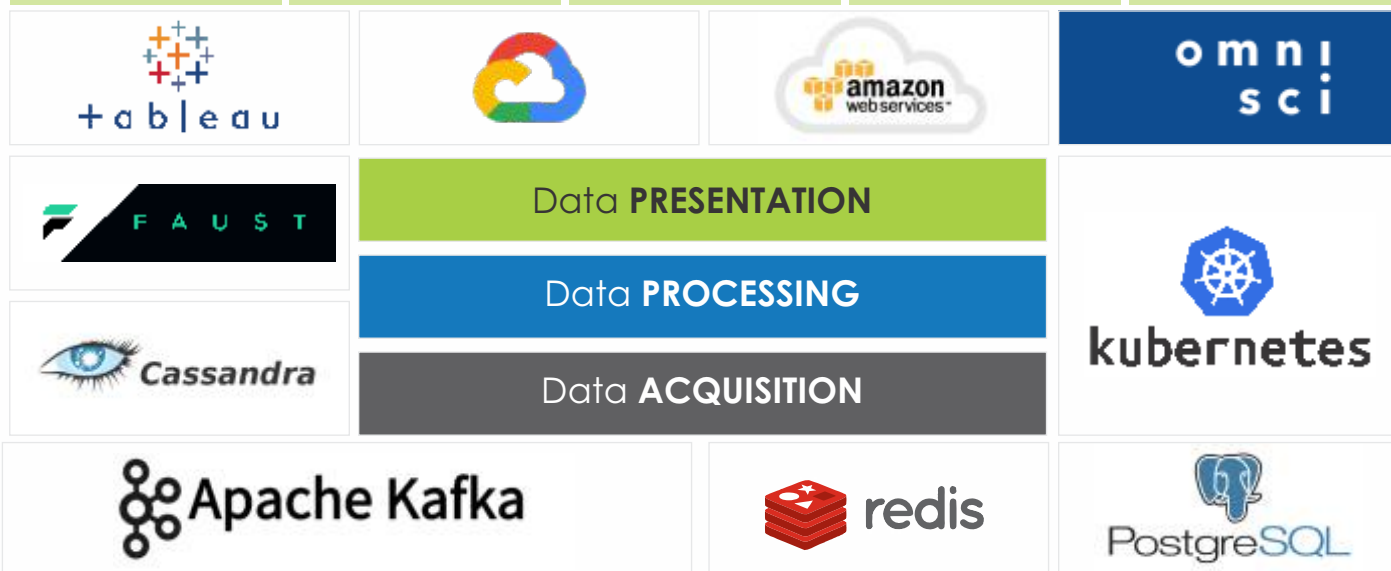
Use Case:

- :: Driver Authentication
- :: Driver Fatigue
- :: Driver Drowsiness
- :: Driver Distraction
- :: Drinking while driving
- :: Phone usage while driving
- :: Seat Belt Detection
- :: Collision Warning
- :: Accident Reconstruction
- :: 2-Way Voice Communication




ADAS SMART & SAFE MOBILITY

End-to-End Infrastructure




AIS-140, 3rd party Telematics Device, Accessories



ADAS & DSM

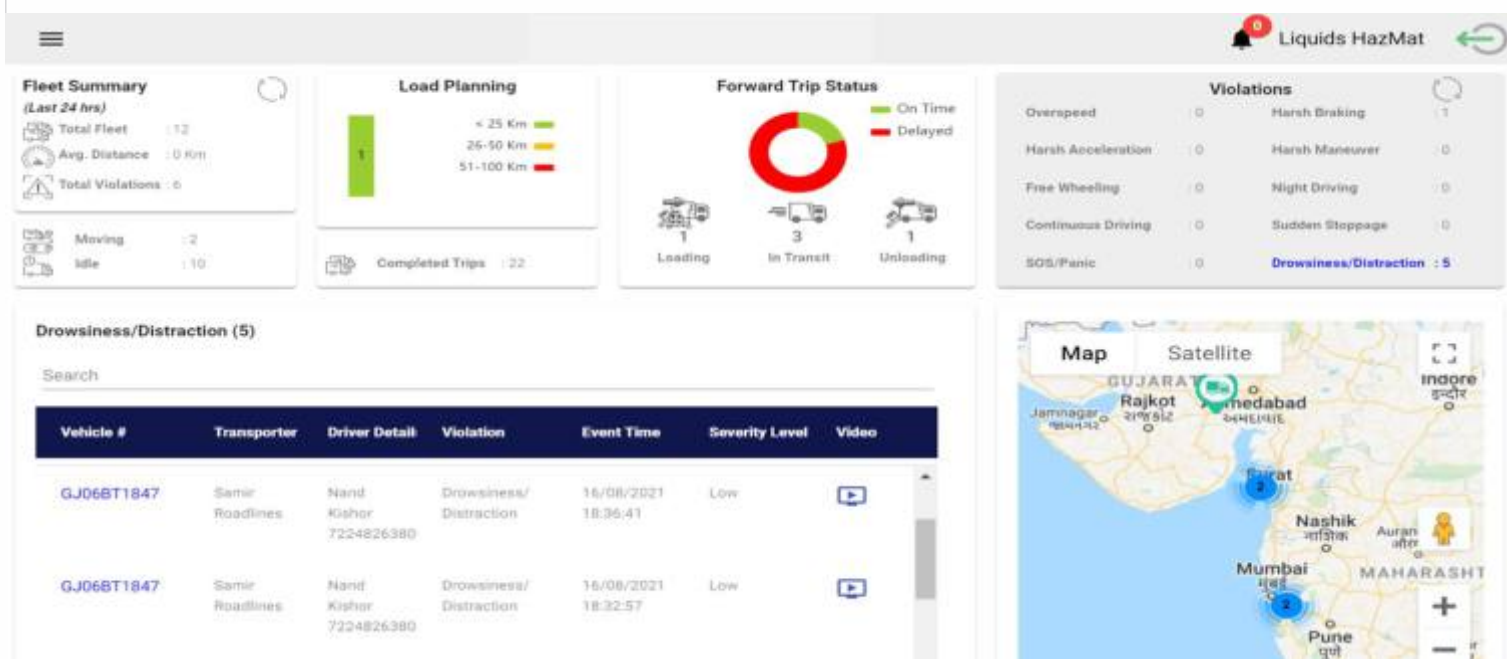


HMI & Logistics Driver Terminal

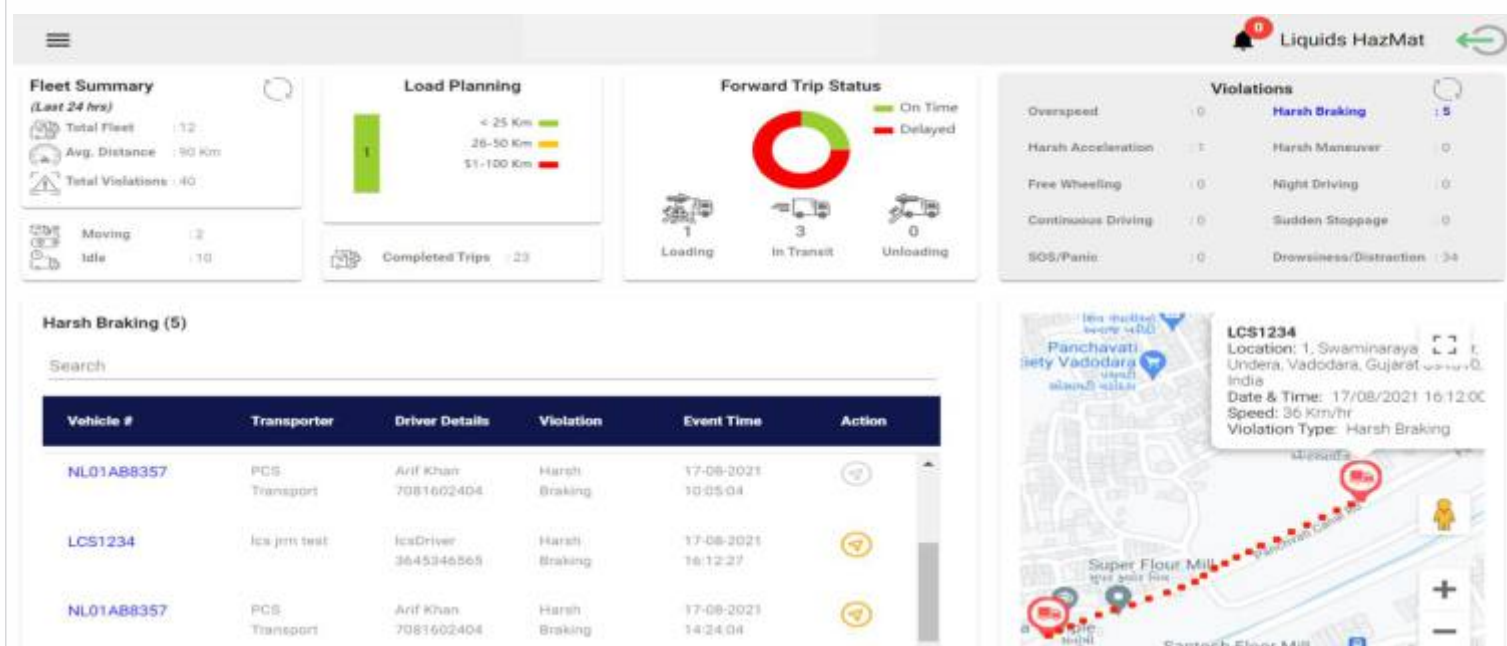


ADAS SMART & SAFE MOBILITY

APPLICATION DASHBOARD



HARSH BREAKING VIOLATION



ADAS SMART & SAFE MOBILITY

HARSH ACCELERATION VIOLATION

Fleet Summary
(Last 24 hrs)

- Total Fleet : 12
- Avg. Distance : 90 Km
- Total Violations : 40

Moving : 2
Idle : 10

Load Planning

- < 25 Km : 1
- 26-50 Km : 0
- 51-100 Km : 0

Completed Trips : 23

Forward Trip Status

On Time : 3
Delayed : 0

Loading : 1
In Transit : 3
Unloading : 0

Violations

- Overspeed : 0
- Harsh Braking : 5
- Harsh Acceleration : 1**
- Harsh Maneuver : 0
- Free Wheeling : 0
- Night Driving : 0
- Continuous Driving : 0
- Sudden Stoppage : 0
- SOS/Panic : 0
- Drowsiness/Distracted : 34

Harsh Acceleration (1)

Search

Vehicle #	Transporter	Driver Details	Violation	Event Time	Action
LCS1234	ics jmi test	icsDriver 3645346565	Harsh Acceleration	17-08-2021 16:11:57	

1 Total

DROWSINESS VIOLATION

Fleet Summary
(Last 24 hrs)

- Total Fleet : 12
- Avg. Distance : 0 Km
- Total Violations : 415

Moving : 2
Idle : 10

Load Planning

- < 25 Km : 0
- 26-50 Km : 0
- 51-100 Km : 0

Forward Trip Status

On Time : 0
Delayed : 0

Violations

- Overspeed : 0
- Harsh Braking : 1
- Acceleration : 0
- Harsh Maneuver : 0
- Free Wheeling : 0
- Night Driving : 0
- Continuous Driving : 0
- Sudden Stoppage : 0
- SOS/Panic : 0
- Drowsiness/Distracted : 4157**

Drowsiness/Distracted

Search

Vehicle #	Transporter	Driver Details	Violation	Event Time	Action
GJ06BT1918	Same	Harshankar Drowsiness	Drowsiness	16/09/2021	Moderate



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NOVUS AWARE
NOVUS PILOT

*All images are for illustration purpose only.

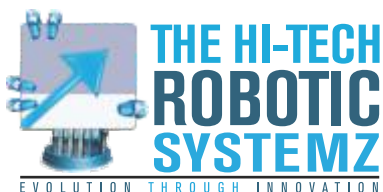
*All Features & Specification are customizable subject to change as per vehicle/project.



NOVUS FLOW™

FACTORY-WAREHOUSE-ROADLOGISTICS

Unlocking Sustainable Business Values by **Intelligently Automating Workflows**



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