

Road Weather Management Stakeholder Meeting

7-9 September 2011

AVL/GPS/Telematics Presentation The Case for a Uniform Telematics Platform

Mohammed Fotouhi, M.S.E.
mohammed.fotouhi@gmail.com
617.230.9697



- Mohammed Fotouhi, M.S.E., Director Public Sector, Telogis, Inc.,
- mohammed.fotouhi@gmail.com
617.230.9697
- Have worked with State, County, Municipal officials for over 30 years
- Telogis, Inc. is a worldwide leader in provider of GPS/AVL/Telematics Services

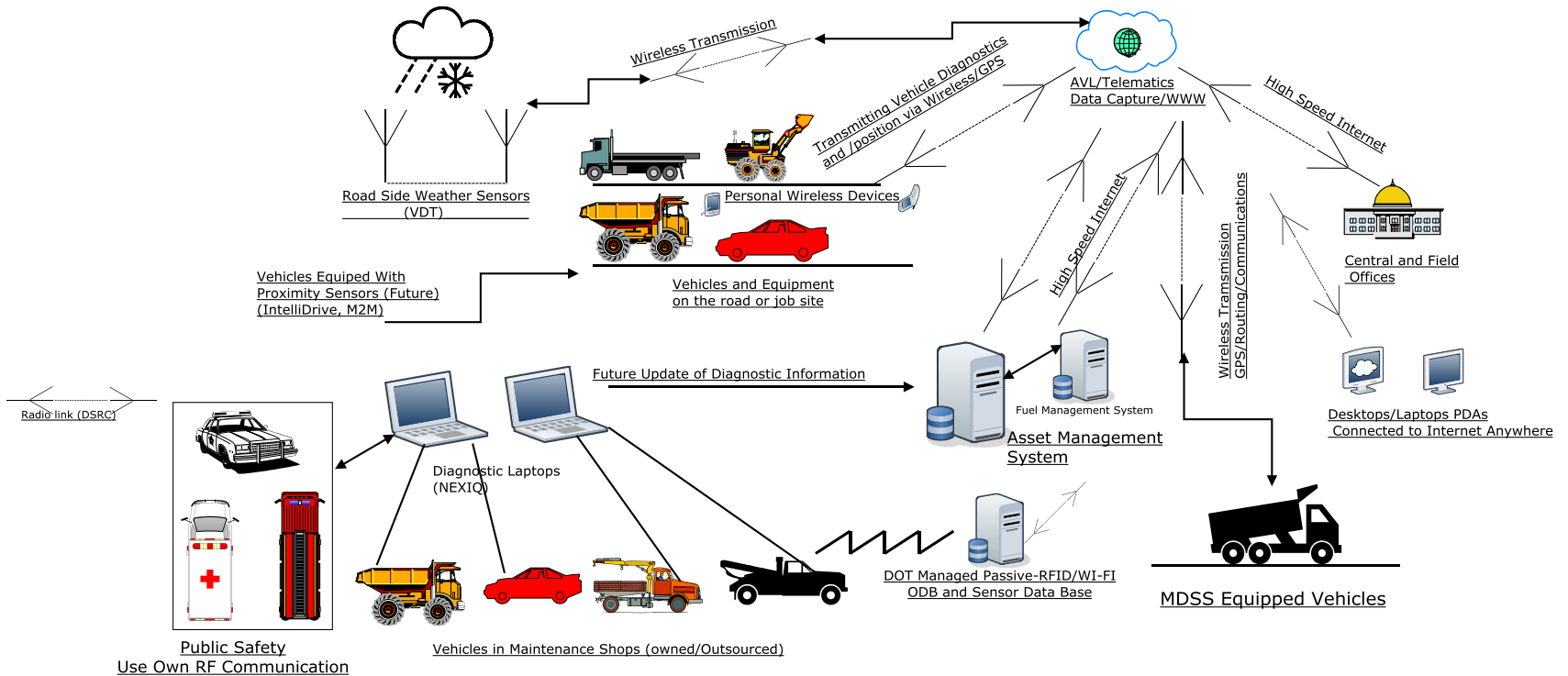


Outline

**BIG PICTURE
HW/SW Basics
GPS/Wireless/Telematics Connection
Problems in Current Telematics Offerings
Addressing “Standards”
Suggested Next Step**



DOT Information World



Typical State DOT Equipment Under Management

Data Topology

Data Sources

Equipment

- Engine (ODB)
- Body
- Sensors
- GPS/AVL
- DSRC (RF)
- RFID
- Barcode

- Fuel Card System

Fuel Dispensing

- Assets
- Accounting
- Inventory
- Etc.

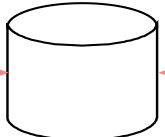
Asset Management

RoadSide Sensors

- Weather & Road Conditions
- Traffic, Safety
- Video
- Alerts
- Etc.

Data Storage

GPS/AVL Vendor and/or State DOT



GPS/AVL/Sensors

Stored Usually at State DOT



Fuel Dispensing System

Stored Usually at State DOT



Inventory/Work order/HR/Asset Tracking

Stored by VDT State Police, etc.



RWIS/Video/Etc.

Integration of Data

Partial Data Integration
AEMP/SAE/OEM/OBD
Very Little Sensor data

NO Data Integration
All Separate Data Bases...
Sensors data, Etc.

Critical Piece

Visualization of Information

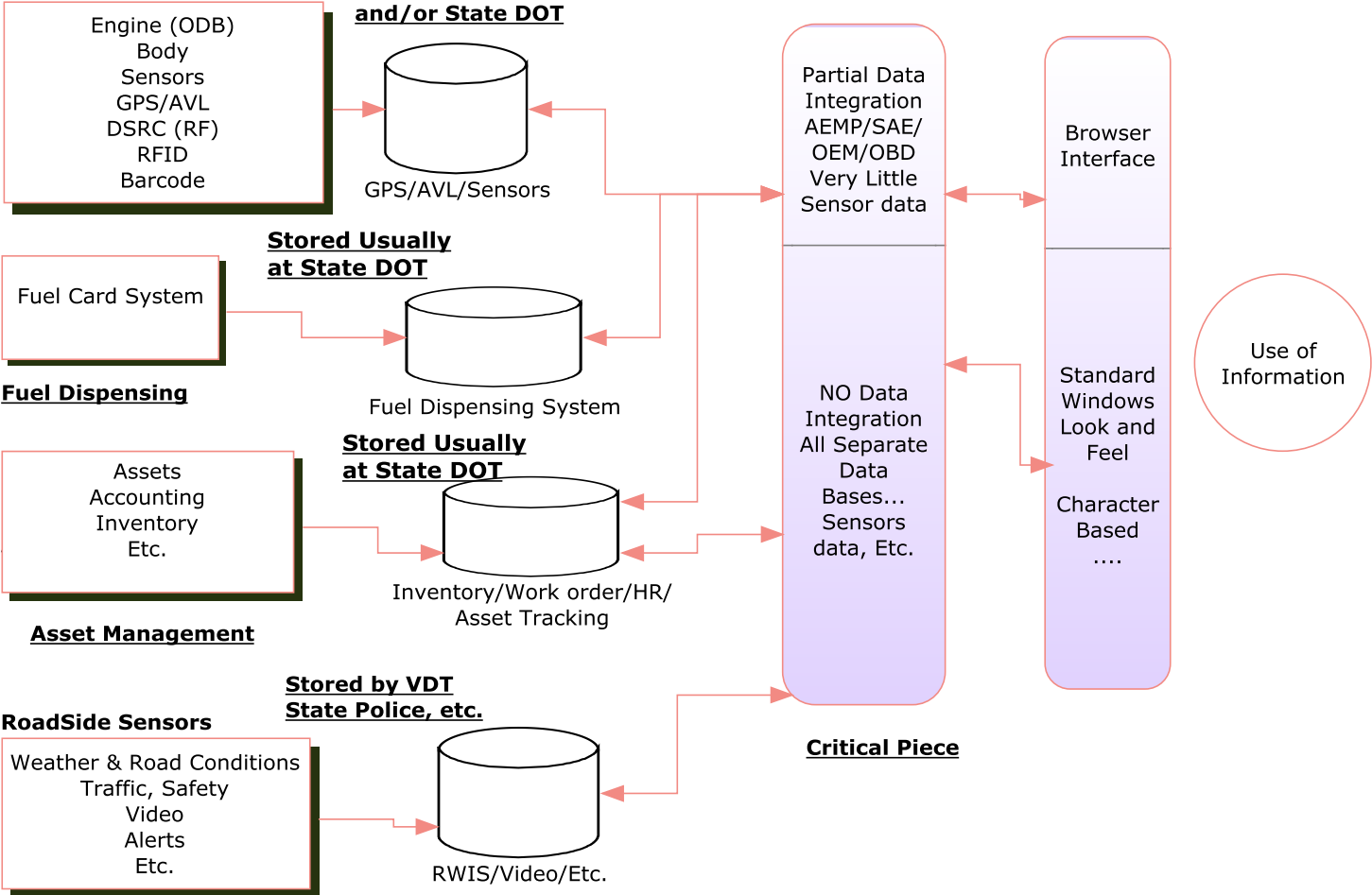
Browser Interface

Standard Windows Look and Feel

Character Based ...



Use of Information



Why YOUR Data Needs are Unique



- Most of Telematics services target long/short haul trucking or service fleets
- Your Needs are specialized:
 - You need less AVL data
 - You Need Much More Sensor and Controller Data



Key Benefits

- GSM/GPRS or CDMA 1x cellular configurations
- 10,000 buffered message log
- 32 built in Geo-Zones, any combination of circle or polygon zones, up to 5400 points
- Built-in 3-axis accelerometer for motion sensing, hard braking, crash detection
- 8 Inputs / 8 Outputs / 4 A-to-D
- Two 1-wire® interfaces
- 3 switched power serial ports
- Configurable power save modes
- Automatic, Over-The-Air Unit Download
- Web-Based Device Management diagnostic tools

Competitive Edge

CalAmp's flagship LMU-4200 product has the features, expandability, and flexibility with the intelligence to meet all customer's ever changing needs in fleet management. The LMU-4200 offers a full set of features, comprehensive I/O system and expandable accessories that make it an industry leading value proposition. The LMU-4200 expandability and flexibility lowers the cost of delivering, supporting, and growing fleet management solutions.

Expanded Interface

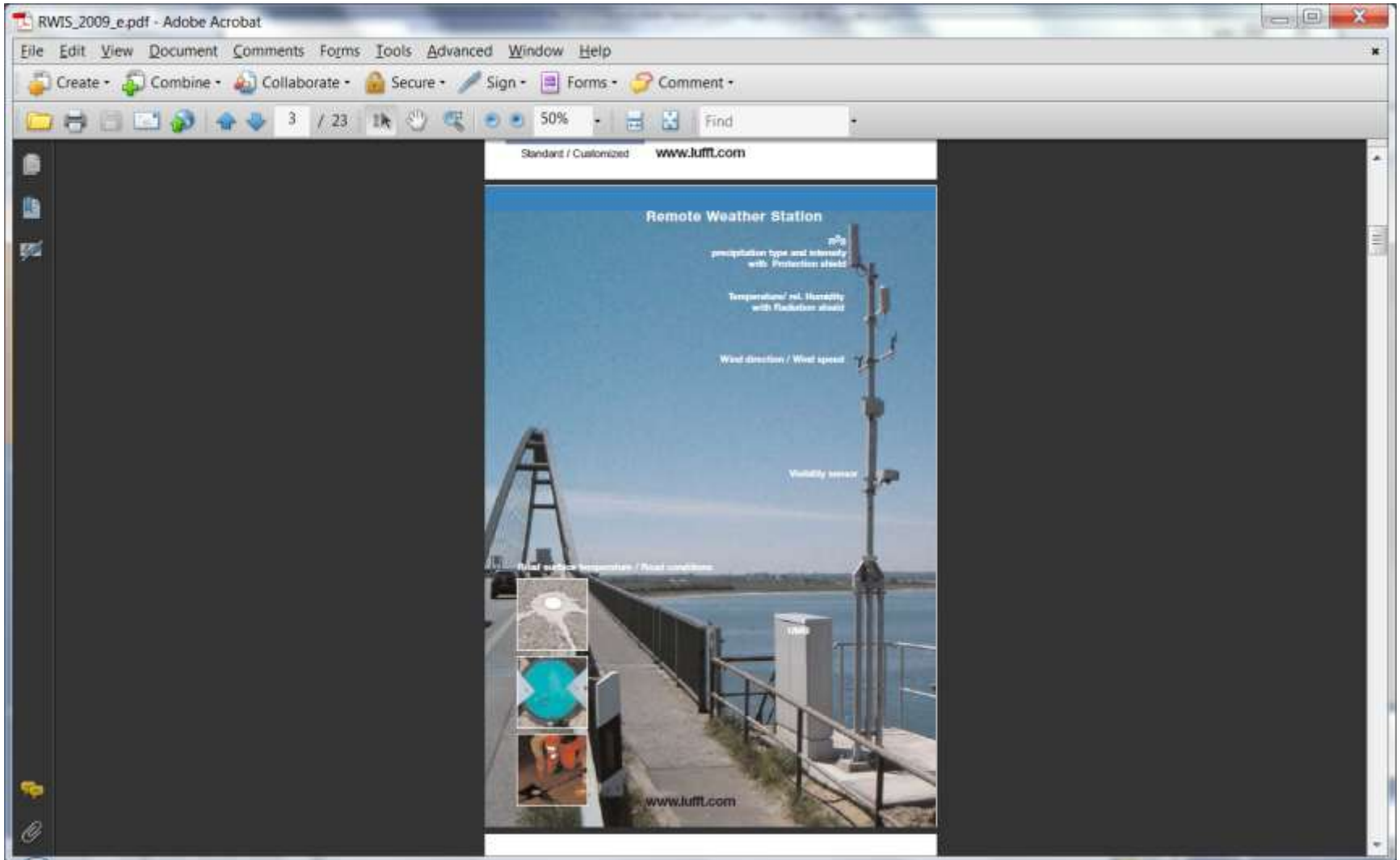
The LMU-4200 is designed to support customers needing an array of vehicle interfaces. For example, the serial ports supply switchable power at selectable voltages to ease the installation of peripheral data devices. The optional jPOD™ ECU (Engine Control Unit) interface reads and transmits heavy-duty engine condition and performance data such as engine temperature along with the fault codes to provide the best possible real-time picture of vehicle health. In addition, the LMU-4200 offers optional WiFi and Bluetooth capabilities.

Flexibility

The LMU-4200 employs CalAmp's industry leading on-board alert engine, PEG™ (Programmable Event Generator). This advanced engine monitors external conditions and supports customer-defined exception-based rules to help meet the needs of your application. PEG continuously monitors the vehicle environment and responds instantaneously to pre-defined threshold conditions related to time, date, motion, location, geo-zone, input and other event combinations. With PEG, your unique application will meet demanding customer requirements. This behavior can be programmed by CalAmp before shipment, at a customer's facility, or over-the-air once the unit has been fielded.

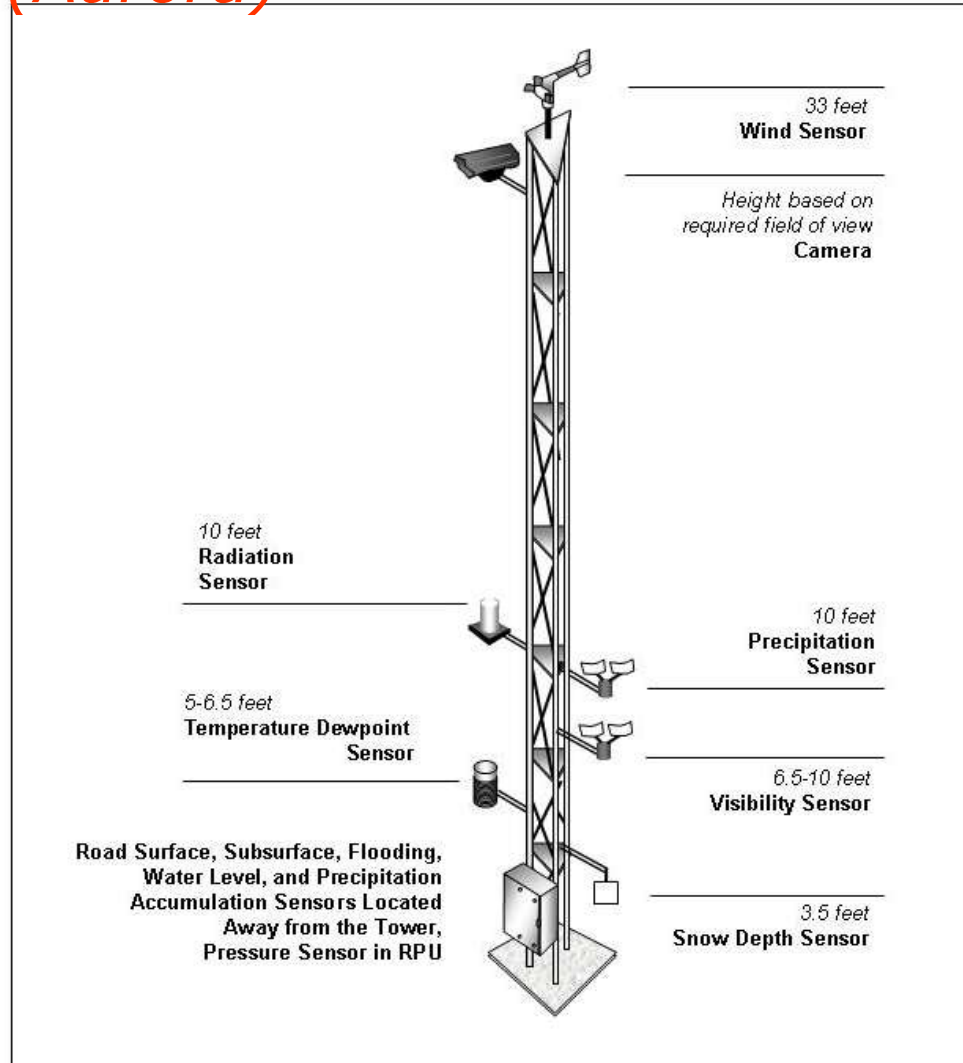
Over-the-Air Serviceability

Road Side Weather Data





RWIS/ESS Weather Station (Aurora)



Typical Roadside Weather Sensor



RWIS_2009_e.pdf - Adobe Acrobat

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Create - Combine - Collaborate - Secure - Sign - Forms - Comment -

6 / 23 50% Find

What do we measure?
(Sensors)

Intelligent, an "all-in-one" instrument
for atmospheric conditions


Intelligent measuring principle:
IRIS
microwave doppler radar.
Type of Precipitation
(rain, snow)
Precipitation intensity
(mm/h)

Measuring wind speed/direction
By means of an ultrasonic sensor.
Precision measurement without
mechanical moving parts.

Air pressure

**Air temperature & relative
humidity**
equipped ventilation shield

**Power supply and
communication in one cable.**
RS485 digital communication with
open ADCS or LIN protocol
(CAN in preparation)
up to 1000 meters.



www.lufft.com

IRS31-UMB - Intelligent road sensor




AASHTO 2011 SGL1813000101.pdf - Adobe Acrobat

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The Freedom ATS (Advanced Tracking System) is the newest component in Certified Power's group of Freedom controls.



Freedom ATS

What Does This Mean to You?



- NOT Much... Unless you can integrate the data in a meaningful way
- All Web Enabled
- ANSI XML Interfaces
- Browser Compatible



What About Standards?

- SAE JBUS Standards – Designed for ODB.. But:
 - Manufacturers interpret code differently and you don't always get the codes you need
- AEMP Telematics Data Standards, Released October 2010
 - Participants: McFadden & Associates, Caterpillar, John Deere, Volvo, ... developed a standard format for the transfer of Telematics data from the providers' servers to end users!
 - But... NOT ALL the data that YOU need! Mostly, AVL type data, miles travelled, cumulative operating hours, etc.
- NO standards for sensors, plow up/down, etc!
- The users (YOU) are supposed to get the data and do what you want with it

Current Trend: Collaboration



Rugged Telematics Alliance About
www.ruggedtelematicsalliance.com/about/

About RTA

The **Rugged Telematics Alliance** is brought to you by an alliance of leading companies dedicated to the rapid and cost-effective development of OEM telematics solutions for the heavy equipment industry. Together, we offer the key components required for a turnkey asset management solution.

Alliance Members

- METRODE ELECTRONICS, INC.**
Ruggedized biometric reader capable of reliable and accurate readings in any environment
- LHP**
OEM-based embedded software platform capable of custom CAN and sensor configurations
- Axeda**
Robust, scalable back-office management platform, which provides the management and configuration tools to customize to any OEM's business
- ORBCOMM**
Global satellite communications network that provides the satellite and terrestrial communications link and management platform
- telenor | connexion**
Global GSM SIM that provides cellular communications connectivity
- MOREY**
MT-30, a ruggedized hardware platform that supports CAN interface and dual-mode communications and is built to withstand the harsh environments of the heavy equipment / industrial industry
- Hirschmann Car Communication**
Ruggedized tri-mode communication antenna that supports satellite, cellular, and GPS communications



What is Coming

- Cheaper and Cheaper Hardware: \$100 device being tested by FedEx
- Cheaper Wireless Charges: Now \$4.00-\$7.00 and going down
- Vehicle Manufacturers are Talking to AVL Software Vendors
- Outsourcing of IT Services in Government
 - More use of Internet
 - Less in house IT Staff
 - Govt. IT staff is deployed to manage software vendor applications
- Route Optimization Integrated With Traffic Data



Suggested Committee Standard: Define What, Where and How you Want it

Rugged Telematics Alliance | Get Started

www.ruggedtelematicsalliance.com/quickstart/

Accelerate the Launch of an Out-of-the-Box OEM Telematics Solution

Installation Kit

The Quick Start Kit Contains:

The QSK comes with complete installation instructions detailing how to get your Telematics Control Unit (TCU) installed and operating along with a CD with comprehensive documentation and the software you need to launch your telematics platform.

Hardware

MF-0010
The TCU monitors SAE J1939 & 1708 data buses * Multiple digital/analog inputs and outputs for interfacing to peripheral sensors and gauges * Tested to SAE J1455 * IP67 sealed * Certifications: PTCRB, FCC, Mexico, CE, CSA, Australia

10001-00010-00
The wiring harness is configured for easy installation allowing quick connections to the supplied biometric sensor, power and J1939. The harness is designed to allow you to add additional sensors and gauges as you develop your OEM application.

HEC1-A0
This low-profile GSM/GPS antenna features installation on conductive and non-conductive surfaces, low current GPS LNA, low GPS noise floor, magnetic mount, and ground plane independent compact design.

HEAS-AD-01014-02
This combination magnetic base features a 90 degree rod. The antenna is tuned for optimal ORBCOMM TX/RX performance and equipped with matching keyed QMA connectors.

MS102
The biometric fingerprint reader employs patented multi-spectral imaging technology. This sensor allows the customer to know "WHO" is operating their assets at all times, even in wet, dry and dirty conditions.

Communications

The QSK includes three months of data service for ORBCOMM's network of LEO satellites and Telenor's global terrestrial services, providing low-cost, ubiquitous data coverage.

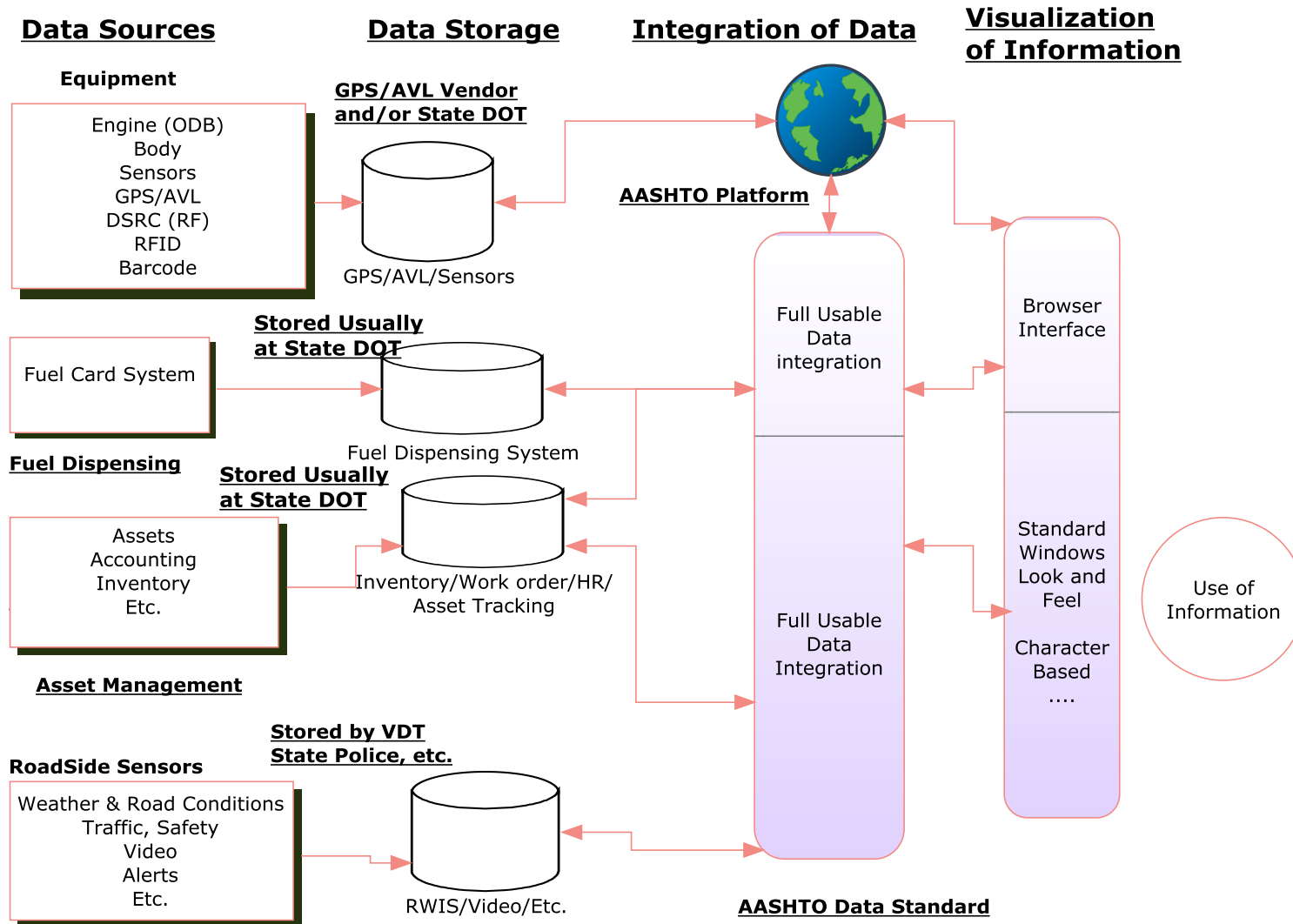
Back-Office

A secure and scalable cloud platform for connected products, the Axeda platform comes configured with an OEM application that enables systems integrators, solution architects and developers to quickly and easily connect, build and manage powerful M2M applications for connected products.

Embedded Software

The LHPT embedded software is the most advanced and configurable application on the market. The event engine can correlate multiple triggers together, which allows customers to create extremely advanced rule sets. The massive amount of configurable options allows your organization to monitor data in a variety of different ways.

Proposed AASHTO Data Platform



www.telogis.com