Road Weather Management Stakeholder Meeting
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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

Road Side Weather Sensors (VDT)

Vehicles Equipped With Proximity Sensors (Future) (Intellirive, M2M)

Vehicles and Equipment on the road or job site

Future Update of Diagnostic Information

Diagnostic Laptops (NEXIQ)

MDSS Equipped Vehicles

DOT Managed Passive-RFID/WI-FI DDR and Sensor Data Base

Vehicles in Maintenance Shops (owned/Outsourced)

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

- Fuel Dispensing System

- Inventory/Work order/HR/Asset Tracking

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....
Why YOUR Data Needs are Unique

- Most of Telematics services target long/short haul trucking or service fleets
- Your Need 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)

- 33 feet Wind Sensor
- Height based on required field of view Camera
- 10 feet Radiation Sensor
- 6.6 feet Temperature Dewpoint Sensor
- 6.5-10 feet Precipitation Sensor
- 6.5-10 feet Visibility Sensor
- 3.5 feet Snow Depth Sensor
- Road Surface, Subsurface, Flooding, Water Level, and Precipitation Accumulation Sensors Located Away from the Tower, Pressure Sensor in RPU
Typical Roadside Weather Sensor

What do we measure?

1. Temperature
2. Humidity
3. Air pressure
4. Wind speed/direction
5. Precipitation
6. Sunlight radiation

www.lufft.com

IRS31-UMB - Intelligent road sensor
The Freedom ATS (Advanced Tracking System) is the newest component in Certified Power’s group of Freedom controls.
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
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
Proposed AASHTO Data Platform