Why the need?

- 554 million vehicle-hours of delay per year result from snow, ice, and fog
- Delays to trucking companies range from $2.2-$3.5 billion annually
- Greenhouse gas emissions
The concept

CONNECTED VEHICLES: the Vehicle Data Translator
Sample input data

- **Probe data**
  - External air temperature
  - Atmospheric pressure
  - Wiper status
  - Headlight status
  - Accelerometer
  - Anti-lock braking status
  - Traction control
  - Stability control
  - Rate of change of steering
  - Vehicle velocity
  - Brake status
  - Brake boost

- **Probe data**
  - Date
  - Time
  - Location
  - Vehicle heading
  - Rain (rain sensor)
  - Relative humidity
  - Pavement temperature
  - RPM
  - Engine torque
  - Exhaust diagnostics
Additional sample data
Schematic

Stage I
Mobile data ingesters
Output data handler
Parsed mobile data

Stage II
Ancillary data ingesters
QCh Module
Statistics module
Output data handler
Qched data, Basic road segment, grid data

Stage III
Inference Module
Output data handler
Advanced road segment, grid data

Apps

Ancillary: Radar, Satellite, RWIS, Etc.
Stage I

- Simple quality-control

42.5N, -93.5W 08:38.23
Stage II

- Advanced quality control
- **Clarus-like algorithms**
  - Anticipated Range Test
  - Persistence Test
  - Step Test
  - Spatial Tests (replaces Neighboring Station Test)
  - Climate Range Test
- **Additional QC**
  - Data Filtering Test
  - Model Analysis Test (Enhanced)
  - Neighboring Vehicle Test
  - Combined Algorithm Test
Stage II continued

- Statistical output

Mean temp = 56.8°F

Wiper Status:
- Off: 35%
- Int: 50%
- On: 15%
Display

WDT Display - Mozilla Firefox

Dataset:
- NWS Watches and Warnings
- Radar
- Color Scale
- Road Segment

Map:
- Radar: Composite Reflectivity, RSAS Temperature, RSAS Dewpoint, Cloud Mask, None
- Color Scale:
- Road Segment: Temperature

Weather Advisory:
- Issued May 29 at 3:30AM MDT expiring May 29 at 3:00PM MDT
- Effective:
- Expires:
- NWS Alert

http://yungas:8080/wdt/

Downloads - File Br... AQ_G24_HG_30_03... g24_developer_kit.b... Gmail: Email from G... blambi@static: ~ WDT Display - Mozil...
Emergency Management

Variables: speed, location, pavement temperature, air temperature, dewpoint temperature, friction, yaw/pitch/roll, ABS, Stability/Traction Control, Collision

Variables: QC’d data from canbus and external, average temperature, average speed, precipitation type, slickness, visibility, etc.

EMDSS: Road Closures, Forecast route times, Forecasted Road Hazards, Strategic Forecasting, etc.
Fleet Operations

Variables: speed, location, pavement temperature, air temperature, dewpoint temperature, friction, yaw/pitch/roll, ABS, Stability/Traction Control, Collision

Variables: QC’d data from canbus and external, average temperature, average speed, precipitation type, slickness, visibility, etc.

Freight-haulers and Truckers

Tailored Content: Highway Closures, Forecast route times, Forecasted Hazards, etc.

Content Providers
Thank-you

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