Introduction

• Automatic Vehicle Location (AVL) is a computer based vehicle tracking system
• AVL systems use satellite and land communications to display in real-time each vehicle’s
  – Location
  – Status
  – Heading
  – Speed
Old AVL System

- DPW participated in CRCOG CAPTAIN AVL system
- CAPTAIN AVL dashboard did not fit our needs
- No control over data frequency collection and dashboard enhancements
- Designed for emergency services and regional response
**Enhanced Dashboard**

- Build multiple dashboards with enhanced features and notifications
  - Snow Plow Trucks
  - Sanitation and Recycling
  - Parks Maintenance
  - Street Sweeping
- Geofencing alarms
- Idle vehicles alarms
- Aggressive speed alarms
4 Step Process

• Step 1 – Telemetry Plans
  – Work with Cellular company for modem acquisition and matching telemetry plans

• Step 2 – Hardware Installation
  – Work with installer to install new modems

• Step 3 – Setup
  – Install GeoEvent Processor
  – Configure input and output connectors
  – Program modems and configure database tables

• Step 4 – AVL Dashboard
Step 1....

• Reviewed AT&T and Verizon
  – Both have LTE networks in Hartford
  – Both build custom APN’s (Access Point Name)
  – Both recommended the same hardware
  – Both offer telemetry data plans

• Went with AT&T under WSCA contract
  – Ordered the Sierra Wireless GX440 LTE modems
  – Set up a custom LTE APN
Step 2 - Installation

• Steven Shore Associates
  – Used Shore in the past
  – Familiar with DPW yard, equipment, and workflows
  – Installs equipment off hours (nights and weekends)
  – Specializes in covert installations
  – Recommended Mobile Marks Covert LTE and GPS Antenna
Step 3 - Setup

- Worked with MHIS to install GeoEvent Processor
  - Brett told Randy to do it....
  - Forced to upgrade Servers to 10.2
- Worked directly with GeoEvent team from ESRI
  - Helped set up and configure input connector
  - Started with Sierra Wireless RAP Adapter
    - Tested for a few weeks, helped debug issues.
  - Ended up using .Net application ESRI built
    - UPD Repeater
Step 3 – Setup Continued

• Setup Point Feature Class in SDE
  – Current Location
  – Historic Location

• Data Table of Information
  – Vehicle Number
  – Vehicle Type
  – Department, division
  – IMEI, Phone#, SIM#, IP Address
  – Data Plan
  – Modem type, Antenna type
Step 3 – Setup Continued

• Connect the Pieces Together
Step 4 – Dashboard

- **Web**
  - MHIS set up Flexviewer for vehicle locations

- **Desktop**
  - ESRI Operational Dashboard

- **Mobile (Android and IOS)**
  - ArcGIS Online
Benefits

• Control
  – Full-time access to current and historical data
  – Customize dashboard to fit our needs
  – Multiple dashboards themed
  – Ability to obtain other on-board data
  – Control over data collection frequency and cellular data plan rates
  – Using ArcGIS Online for multi-platform tablet and phone location info
  – Job security
Benefits Continued

• Cost Savings
  – Eliminate maintenance costs of CAPTAIN system
  – Better management of resources during storms and for routine activities
  – Using ESRI products allows for full integration into other GIS resources
Future System Architecture

• Connect AVL modems to CIRUS spreader controls in plow trucks
• Communicate more information live to command center
  – Road temperature
  – Air temperature
  – Material distribution mode
  – Plow status (up or down)
  – Driver Identification
• Transmit data with GPS location
ArcGIS GeoEvent Processor Manager

Please provide your GeoEvent Processor Administrator username and password.

Username: 
Password: 
Login