

Latest Technologies in Mobile Data Collection for Winter Road Maintenance

Michael Howarth

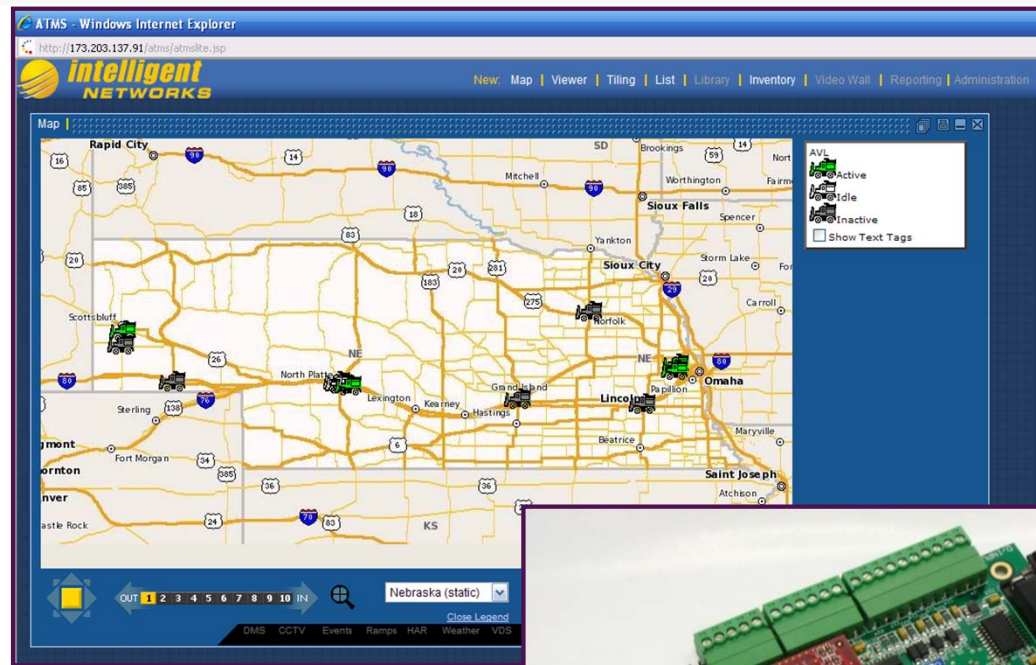
Executive Vice President

Intelligent Devices, Inc.



Intelligent Devices, Inc.

- Leader in NTCIP technology
- Legacy protocol translators
- Provider of NTCIP central software
- Mobile Data Collectors



Overview

- Winter road maintenance is one of the biggest challenges for agencies responsible with providing safe environments for the public
- A major growth area for ITS systems in the past few years
- Budget issues are forcing agencies to “do more with less”
- Smarter utilization of mobile data collection has played a significant role

MDC and MDSS



- Light weight
- Durable
- Remotely updateable
- Windows based
- Expandable
- Easy to install in vehicle

NDOR Mobile Data Collector Dim 03/11/10 2:26:21
v3.0.2

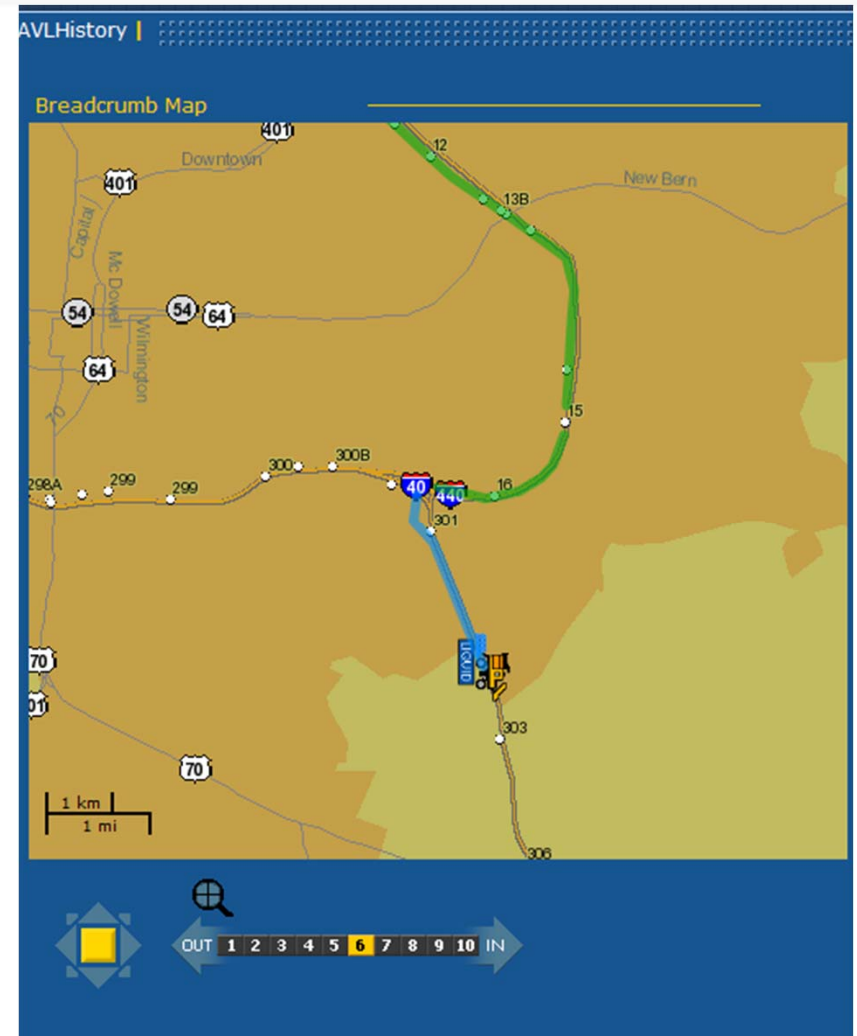
DOT 135 TRUCK FRONT: ↓ WINGS: ↑ ↓ UNDER: ↑ NO ERROR	NaCl / Gravel 30/70% Solid Rate: 350 lb/mi MATERIAL Prewet Rate: OFF Direct Rate: OFF	DIRECTION NORTH Plow: ↓ Treat: ↓ Speed: 0 mph GPS: 34.06 84.07
SNOW <1/4 mile WEATHER AIR TEMP 34° ROAD TEMP 31°	ROAD SNOW SNOW ACCUMULATION	DIAGN

ROAD CONDITIONS				↗ MAIN MENU
ROAD CONDITION	DRY	DAMP	WET	FROST
	SNOW	DRIFTED SNOW	SLUSH	ICE
SURFACE TEMP	27°F			

WEATHER CONDITIONS					↗ MAIN MENU
PRECIP TYPE	NONE	DRIZZLE	RAIN	SLEET	
	HAIL	SNOW FLURRIES	SNOW		
VISIBILITY	CLEAR	FOG	SMOKE	BLOWING SNOW	
DISTANCE	NEAR ZERO	<1/4 mile	>1/4 mile		
WIND (mph)	CALM <10	LIGHT 10-20	MEDIUM 20-30	STRONG >30	

Advanced AVL Tracking – Bread Crumbing

- Advanced AVL allows vehicles to be geo-located in real time on a map display and illustrate a “bread crumb” trail of the route progress
- Allows historical playback of completed truck route to review chosen road treatments



Advanced AVL Tracking – Canada

- Regulated performance specifications mandate specific material applications for given conditions
- Requirements to show real time and historical conformance with the regulations
- Advanced AVL combined with state-of-the-art central software shows real time confirmation of snow plow activity as routes progress
- Historical playback feature confirms the regulated treatment was applied

MDC and Patrol Vehicles

- 24/7 patrol vehicle reports geo-referenced time stamped deficiencies, current road and environmental conditions
- MDC collects pavement and air temperature automatically
- Touch screen allows driver to input observed deficiencies including pot holes, broken signs, wild life mortality, etc. and refined weather observations
- Historical playback feature confirms time stamped route completed
- Interface to maintenance management system to automatically generate service requests and work orders

SELECT SUBTYPE				↩ BACK	
Drainage	Pothole	Shoulder Drop Off	Cracks	Debris	
Washout	Spill	Lane Markings			
PREVIOUS PAGE		1	NEXT PAGE		


SELECT LOCATION		↩ COMMENTS	
Enter Description			
<div></div>			
Enter Address			
#	STREET NAME	DIRECTION	
	CROSS STREET		
CITY	PROVINCE	POSTAL CODE	
DEFICIENCY NOT FIXED		SUBMIT SERVICE REQUEST	

Cameras

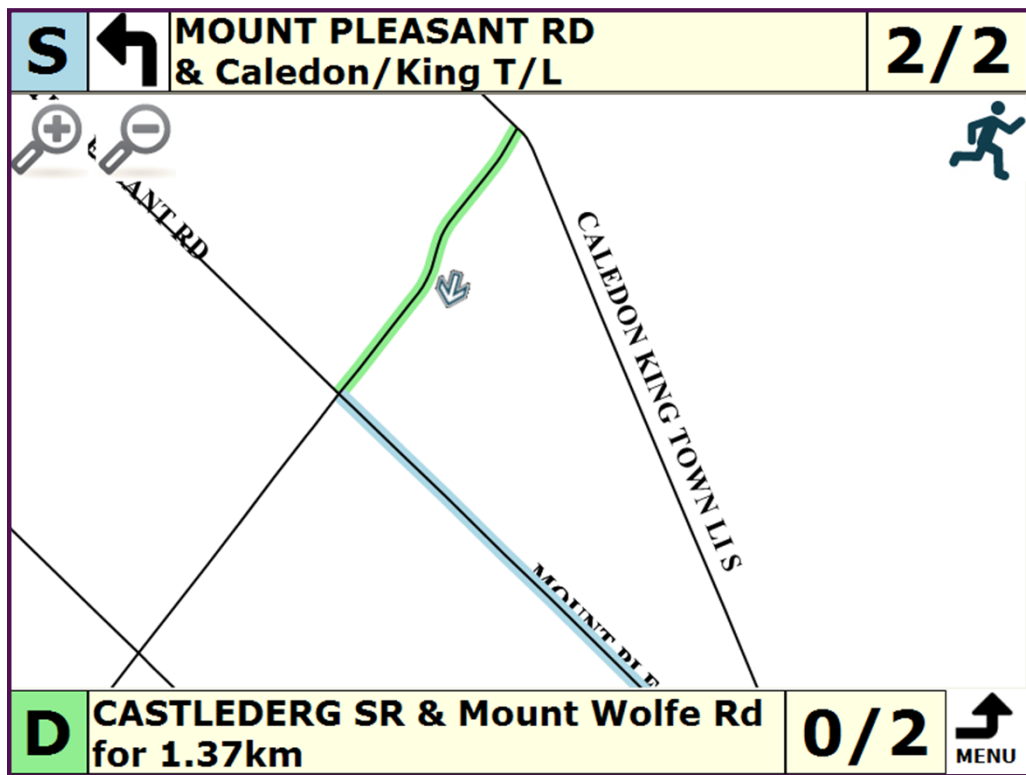
- Off the shelf
- Easily available
- Snap shot rate configurable
- Uses USB port
- Management quickly understands current conditions



Engine Codes

ENGINE CODES	 SETTINGS
VIN: 137ZA8438TE173069	
IDLE TIME: 0 Hrs 6 Min 32 Sec CUMULATIVE: 0 Hrs 42 Min 34 Sec	
RUN TIME: 6 Hrs 12 Min 18 Sec CUMULATIVE: 12 Hrs 16 Min 24 Sec	
ODOMETER: 32,508	
MILES THIS SESSION: 189	
ENTER TRUCK'S ODOMETER:	<input type="text"/> <input type="button" value="Set"/>

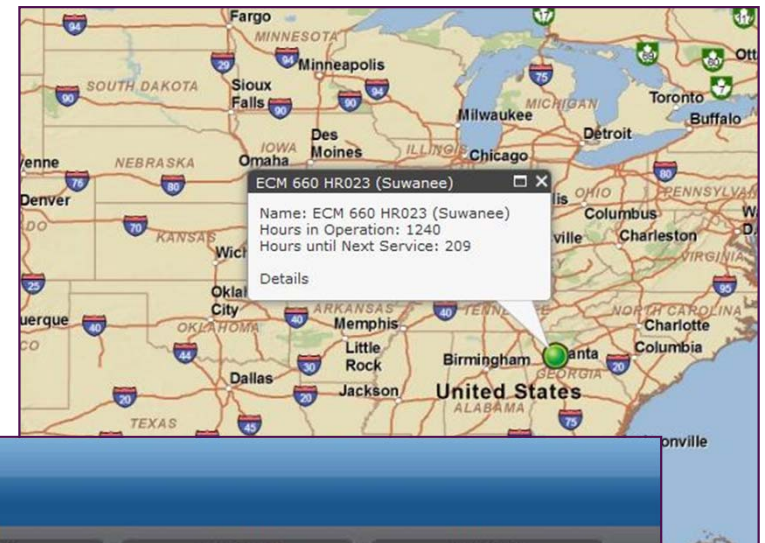
Route Optimization – Map View



- Displays turn by turn instructions for full route
- Color coded actions
 - Blue – Spreading
 - Green – Deadheading
 - Red – Plowing
- 7 Zoom levels
- Text to speech

Mobile Machine Maintenance

- Tracks use of equipment
- Geo-location
- Utilization rate
- Service alerts by text message and email



IntelligentWEB



ASSETS MAP ABOUT HELP

ASSETS

Status	Name	Hours in Operation	Hours until Next Service
●	DM 30 RD007 (Suwanee)	240	10
●	DM 30 RD031 (SA)	7160	98
●	ECM 660 HR023 (Suwanee)	1240	209

Incident Management Unit

- Tracks emergency response vehicles
- Geo-location on map display
- Dispatch vehicle to new location

v1.0.0  Incident Management Unit			DIM	SETTINGS	
OPERATOR	CURRENT DISPATCH	INSPECTION FORMS			
ASHLEY, PETER [114]	I-85 at Lawrenceville-Suwanee				
ASSIGNED ROUTE	Mile Marker 111	MAINTENANCE FORMS			
ROUTE 9	ACCIDENT IN LEFTMOST TRAVEL LANE				
SHIFT DETAILS					
Shift Started: 8/26/2011 10:27:49 AM					
EVENT LIST	AVAILABILITY	DIRECT MESSAGING			
3 CURRENT EVENTS	AVAILABLE	UNREAD MESSAGE			
CREATE EVENT	CURRENT STATE	ATMS			
	LOCATION ONLY				

MDC as an Integrated ITS Technology

- Open Standard
- Integration with TMC
- Combined fleet and traffic management
- Works with any NTCIP compliant central software



Questions?

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