The National Academies Transportation Research Board (TRB) - EMS Transport Safety ANB10(5)

Welcome to the

EMS
Fleet Management Tools Seminar

today's event - #EMSFleet

Wednesday March 6th 1-3pm USA EST, 2013

Simulcast from EMS Today & the Keck Center

Nadine Levick, MD MPH
Chair Emergency Medical Services Subcommittee ANB10 (5), TRB
CEO, Research Director, EMS Safety Foundation
Eileen Frazer RN
Co-Chair ANB10(5) TRB
Executive Director of Commission on Accreditation of Medical Transport Systems (CAMTS)

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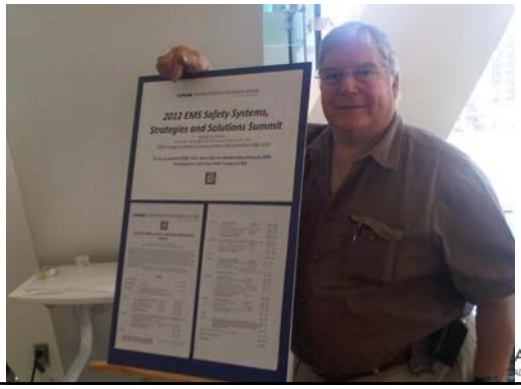
Thank you AJ and JEMS!!



Welcome to those joining us at EMS Today

This afternoon's Webinar

- Will cover:
  - An overview of the TRB ad ANB10(5)
  - A review of ANB10(5) EMS Fleet activities
  - Fleet Management Tools update
  - Introductory presentation by Nancy Bendickson, AON
  - Operational presentations:
    - Bruce Farr
    - Charlene Cobb

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A lot is now possible and for less!

- Driver behavior
- Vehicle behavior
- Roadside ITS
- Fuel consumption/Economics
- Resource modeling

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How?

- Deployment technology tools
- Invehicle telematics
- Smartphone telematics

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EARCH BOARD
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Since 2009

- New perspectives
- New technologies
- New generations focus
- New vehicles
- New platforms
- New policies/standards
- New international models

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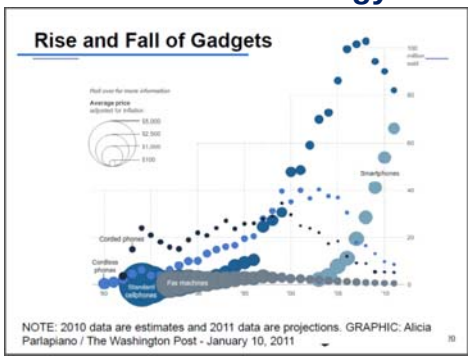
Communication Technology trends



NOTE: 2010 data are estimates and 2011 data are projections. GRAPHIC: Alicia Parlapiano / The Washington Post - January 10, 2011

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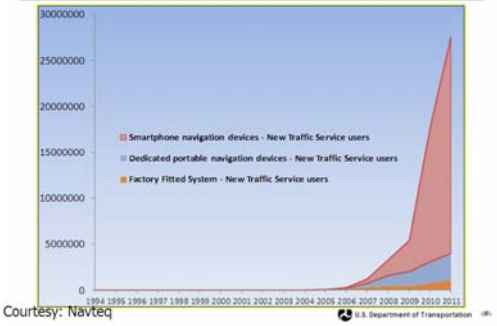
Smartphone navigation devices

US New Traffic Subscribers 1996 to 2011



Courtesy: Navteq

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January 2012, USA

Smartphone penetration by age and income

Source: Nielsen

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Generation - Y

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The new world of social media

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The Cloud is Global

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TRB MISSION

- To provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal.

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Special role for EMS at TRB

- One of the Key 4 E's
  - Engineering
  - Education
  - Enforcement
  - **Emergency Medical Services**

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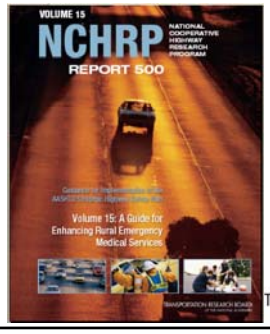
Transportation Research Board is an excellent resource… we should be using it!!



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ANB10 (5) TRB EMS Subcommittee Mission

- '*Bridging the gap between what we do and what is known - Enhancing ambulance transport safety through shared knowledge of technical data*'.

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Fragmentation

- There are now numerous and variably sound or technically sophisticated events occurring sporadically on ambulance safety – none under a transportation umbrella

Fragmentation Panacea

ANB10(5) is an independent platform for:

- Bringing fragmented information together
- Uniting diverse disciplines
- Focus on technically robust information

Whats out there?

- Integrated systems with mapping, safety and economy
- Deployment systems
- Driver management systems
- Intelligent transport system

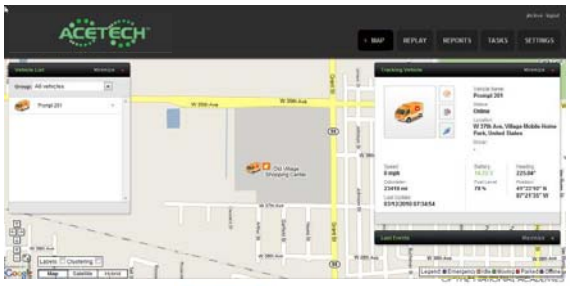
Fleet Management technologies

- ACETech/Ferno
- FleetEyes – Intermedix
- Zoll rescuenet and roadsafety fleet management systems
- Marvlis
- Telematicus
- Optima
- Northrop Grumman

ACETech/Ferno

ACETECH™ Web

- Mapping, reports, alerts, hotspots, vehicle data



Fleet eyes

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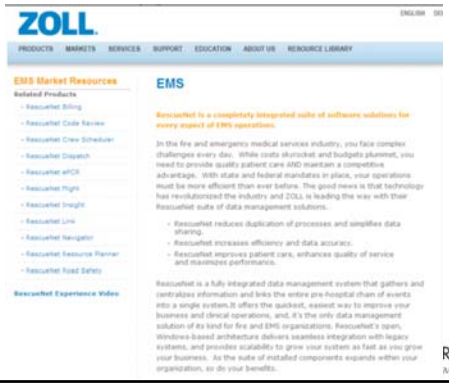
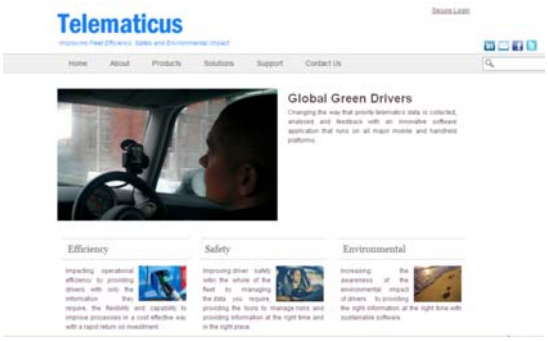
ZOLL systems



RD
MIES

Telematicus



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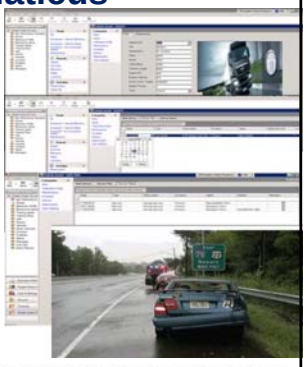
Telematicus

Fleet Management capability

Vehicle database
- Individual vehicle/ data
- Fleet mileage collection/Checklists
- Link to other systems (SAP, Fleet)

Maintenance & Service Plans
- Repair history & Scheduling
- Action planning

Reporting
- Export to Excel for manipulation
- Scorecards views, Crystal Reports reporting
- Direct Feedback



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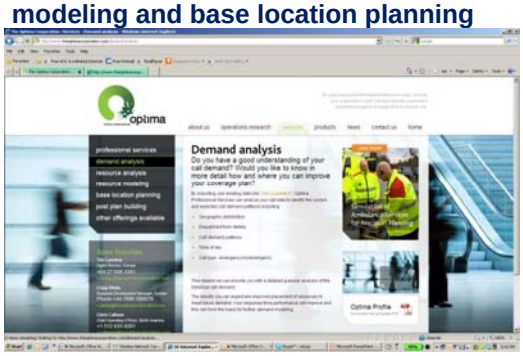
Optima: Demand/Resource analysis and modeling and base location planning



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Northrop Grumman

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Marvlis

- The dashboard calculates:
  - current percent of demand coverage
  - three closest vehicle recommendations for recent incidents
  - realistic travel time estimates for each possible responder

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Marvlis

- The web interface:
  - individual choice of reference maps
  - integration of AVL/ARL and other live feeds
  - native Android client
  - creation/update of spatial data direct to ArcGIS Server
  - customization options to extend functionality

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Priority Dispatch

SAAB

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The Transportation Research Board (TRB)

- History

TRB was established in 1920 as the National Advisory Board on Highway Research to provide a mechanism for the exchange of information and research results about highway technology.

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TRB divisions

- Technical Activities supports standing committees and task forces.
- Studies and Special Programs convenes specially appointed expert committees to conduct policy studies and program reviews, maintains the TRIS database, provides library services, prepares synthesis reports on behalf of the Cooperative Research Programs, and manages the Innovations Deserving Exploratory Analysis (IDEA) programs.

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TRB research programs

- Cooperative Research Programs manages
  - National Cooperative Highway Research Program - NCHRP
  - Transit Cooperative Research Program - TCRP
  - Airport Cooperative Research Program – ACRP
  - National Cooperative Freight Research Program - NCFRP
  - Hazardous Materials Cooperative Research Program. -HMCRP
- Strategic Highway Research Program 2 (SHRP-2)
  - manages a targeted, short-term, results-oriented program of contract research designed to advance highway performance and safety for U.S. highway users.
- Administration and Finance provides financial, information technology, and other administrative support, including financial oversight of the contracts and grants that support the work of TRB, administration of publications sales and distribution, and maintenance of benefits and services for sponsor and affiliate organizations.

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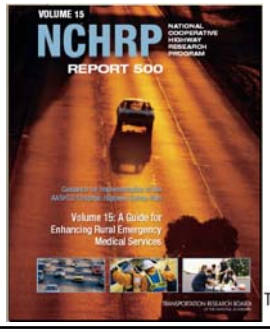
Transportation Research Board is an excellent resource… we should be using it!!



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The TRB and EMS

- TRB Mission:
  To provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multi modal.
- Provides service to government, public, and scientific and engineering communities.
- TRB Goals:
  - Being prepared for challenges.
  - Conduct and promote knowledge.
  - Provide timely and informed advice.
  - Act as an effective and impartial forum.
  - Promote collaboration.
  - Contribute to the professional development
  - Conduct and promote communications efforts.
  - Contribute to public's understanding.
  - A resource to the nation and to the transportation community worldwide

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What is ANB 10 (5)?

- Emergency Medical Services Safety Subcommittee, ANB 10 (5)
  - Subcommittee of the Transportation Safety Management Committee ANB 10, of the Transportation Research Board of the National Academies

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EMS Safety Subcommittee ANB10(5)

- Subcommittee supported by Transportation Safety Management ANB10
- Established July 2007
- First Subcommittee meeting – Jan 2008
- Chair, Nadine Levick MD, MPH
- Co-Chair, Eileen Frazer, RN
- Scope – Medical Transport Safety

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Multidisciplinary research

- Encompassing all aspects of transportation
- The expertise that EMS needs to address its transportation safety challenges includes:
  - Systems design
  - Transport systems safety
  - Human factors
  - Vehicles
  - Vehicle operations
  - Air medical transport safety
  - Impaired operators
  - Road design and egress and access
  - Highway and operational hazards

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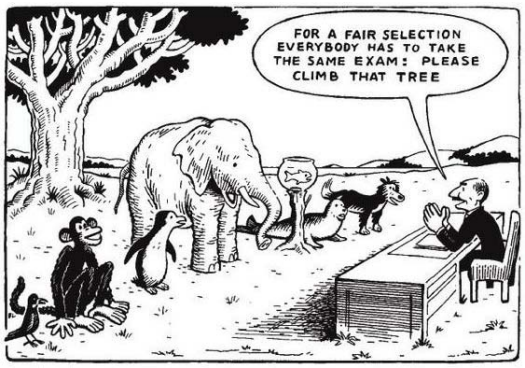
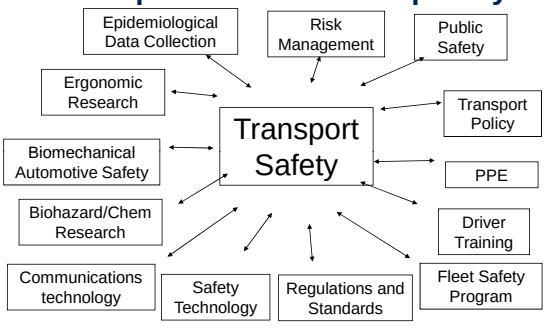
Integration

ANB10(5) is an independent platform for:

- Bringing fragmented information together
- Uniting diverse disciplines
- Focus on technically robust information



Ambulance Transport Safety IS Complex AND Multidisciplinary



Negative impact on system performance…

- A medical error may kill a patient BUT
- An EMS crash can kill all those involved AND wipe out a rural EMS system AND negatively impact a regions response capacity……

USA EMS transport safety data estimates

- ~ 81,000 vehicles
- ~ 9,000 crashes a year
- ~ One fatality each week
  - ~ 2/3 pedestrians or occupants of other car
- ~10 serious injuries each day
- Cost estimates > $500 million annually

*FARS/BTS 2007

Ambulance transport a serious USA transport safety problem…

- the most lethal vehicle on the road both per mile travelled and per vehicle
- is exempt from federal commercial fleet safety oversight (FMCSA)
- 2/3 fatalities not in the ambulance
- Exempt from most FMVSS standards

In the USA there are more safety standards for moving cattle than for moving patients

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Social media – twitter #ANB10(5) & today's event - #EMSFleet

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How do you use an eTag for the first time?

Get Microsoft Tag App on your smartphone
(free from your App store, it reads ALL eTags)

open Tag App and scan the eTag

www.objectivesafety.net/TRBSubcommittee.htm
page will open directly on your phone

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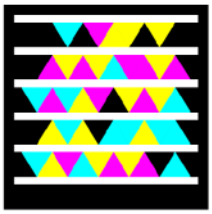
TRB Subcommittee info etag

will take you here

http://www.objectivesafety.net/TRB Subcommittee.htm



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Sign up for ANB10(5) here…

http://www.objectivesafety.net/TRBSubcommittee.htm

Fleet management approaches

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Fleet Management technologies

- ACETech/Ferno
- FleetEyes – Intermedix
- Zoll rescuenet and roadsafety fleet management systems
- Marvlis
- Telematicus
- Optima
- Northrop Grumman

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Data Collection & Driver Feedback System

- Onboard computer installed in each vehicle to assess driving performance
- Audible feedback puts drivers in control of performance

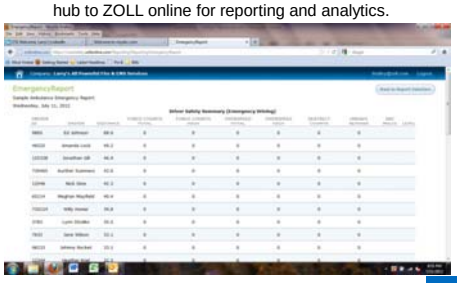

Onboard Computer


Audio Speaker

ZOLL

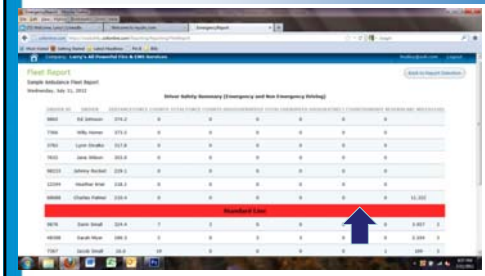
Data Upload and Reporting

Data collected onboard is transferred via wireless data hub to ZOLL online for reporting and analytics.



ZOLL

5% of Drivers Cause 95% of Problems



Identify safe, efficient drivers and provide additional incentives and rewards.

Identify and manage the exceptions.

ZOLL

ABC's of Safe Driving

- Driver grading system
  - Average miles
  - Between
  - Counts (violations)

ZOLL

Other events and behaviors monitored

- Braking, acceleration and side/sway forces
- Emergency lights and sirens
- Engine RPM
- Engine idle time (indicates wasted fuel)
- Distance driven
- Turn signals
- Numerous others—what's important to you?

ZOLL

Telematicus

CABIS® Business Solutions

Global Green Drivers

"Low Cost Safe Driving Platform"

Software solutions for business process operations and management

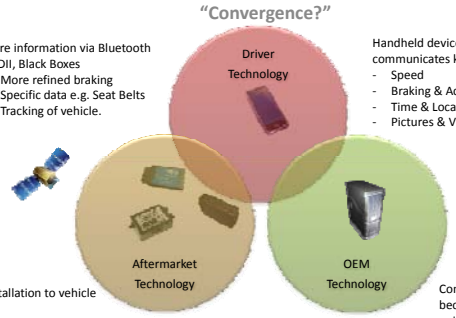
Telematicus

CABIS® Business Solutions

"Convergence?"

More information via Bluetooth OBDII, Black Boxes
- More refined braking
- Specific data e.g. Seat Belts
- Tracking of vehicle.

Handheld device collects and communicates key data
- Speed
- Braking & Acceleration
- Time & Location
- Pictures & Video



Installation to vehicle

Connected vehicle becomes an IP point, data access

Software solutions for business process operations and management

Telematicus

CABIS® Business Solutions

Safety Capability

Driver Alarm
- Instant SMS & Email location

Driver Risks
- Scorecards and Graphs
- Automated Messages
- Training

Trip playback
- Speed, Braking, Acceleration

Incident Recording
- Accident/Breakdown
- Photographs

Software solutions for business process operations and management

Incident Reporting

global green drivers

GGD Data Capture
- Real time
- Key details
- Photographs
- Details on application

Business System
- Individual records linked to drivers and vehicles
- Action planning and assignment
- Attachments e.g. photos

Reports
- Launch accident reporting process
- Export to Excel for manipulation
- Scorecard or crystal reporting

Telematicus

CABIS® Business Solutions

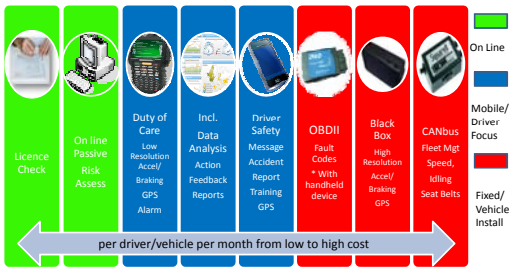
So What

- Capability
- Computing Power
- Convergence
- Costs

Software solutions for business process operations and management

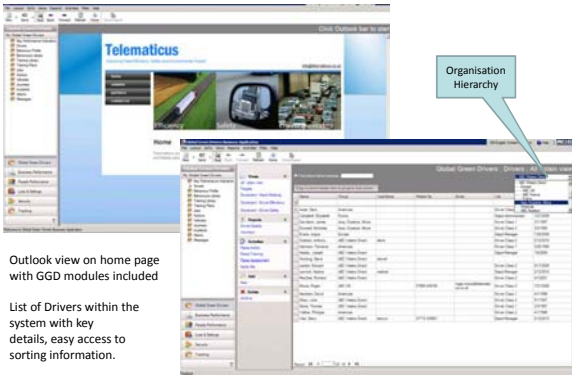
Telematicus

"Capabilities"



Software solutions for business process operations and management

Integrated business system — global green drivers



Outlook view on home page with GGD modules included

List of Drivers within the system with key details, easy access to sorting information.

Emergency Vehicle Intelligence
The Future Is Now with

ACETECH™

The ACETECH System provides system wide, on-board intelligence that improves the efficiency and safety of your emergency vehicles and staff, while reducing your operating costs.

Four Modular Functions

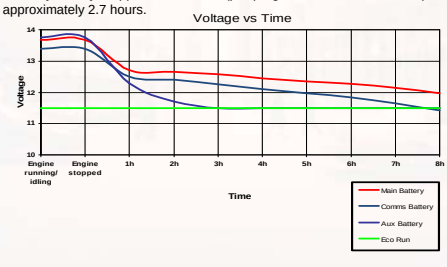
1. Vehicle operations center
   - Driver & vehicle operations
2. Patient Compartment
   - Mobile trauma bay environment; passive support
   - Communication, temperature, lighting, securement & access, storage, & overall interiorly & exterior safety
3. Medic platform – work environment & safety
   - Seating, operating areas, reach & access
4. Patient platform – care & safety focused
   - Cot & restraint system, patient care accessories

ACETECH Core Benefit

1. Integrated/Modular Solution
2. ROI
3. Vehicle Performance
4. User Power
5. Service
- **Affordability**
- **Excellent warranty**
- **Reliable**
- **Modular design**
- **Forward thinking**
- **Product/OEM Support**

ACETECH™ ECO-Run

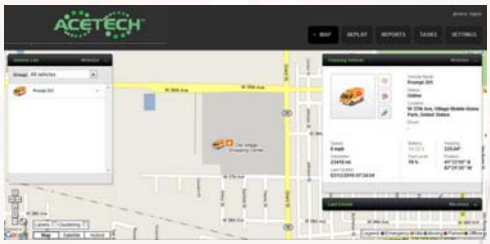
This graph indicates battery drain when engine is off and on- scene lighting was active. Auxiliary battery dropped to 11.5 volts (pre-programmed ECO-RUN start) in approximately 2.7 hours.



FERNO

ACETECH™ Web

- Mapping, reports, alerts, hotspots, vehicle data



Inspired Safety Innovation

FERNO

ACETECH™ Safety System Benefits ROI

- The following is a partial list of benefits that may be realized through a properly managed vehicle safety program.
  - Fewer collisions
  - Fewer collision/near collision related injuries
  - Reduced insurance premiums
  - Fewer lawsuits
  - Reduced repair costs
  - Fewer towing bills
  - Reduced light duty
  - Increased vehicle life
  - Less time spent investigating incidents- more time for beneficial activities
  - Improved image
  - Improved financial performance

Inspired Safety Innovation

FERNO

ACETECH™ Geo Fencing

- Set boundaries for vehicle travel and to receive automatic
- notification when a vehicle leaves this boundary
- Important in theft control.
- Maintain vehicles at expected locations thereby reducing response times, speeding events and fuel expense.

Inspired Safety Innovation

FERNO

ACETECH™ in the Future

- Advanced camera systems. Use of cameras to improve safety and security is not new. Camera systems include:
- Rear view
- Side View
- Front view
- Cameras may also be used to provide real time consult with on-line medical control.

Inspired Safety Innovation

Now on to our presentations

- Nancy Bendickson, Senior Consultant, AON, Minneapolis
- Bruce Farr, Ornge, Vice President of Operations, Ontario
- Charlene Cobb, Sunstar EMS, Florida

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TRB EMS Fleet Webinar

Nancy Bendickson, CDS, CSP, ARM
Senior Consultant,
Aon Global Risk Consultants
March 6, 2013

AON

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Introduction

- Focus for today's webinar is on operational fleet management technology tools
- Technology alone will not create a sustainable, effective, fleet safety process
- It provides a means to monitor on-road performance, which did not exist before

Why Manage Your Fleet?

Fleet Crash trends:

- **Leading cause of occupational fatality in US**
- **Vehicle crashes shown to be most likely cause of work-related fatality in EMS**

- **Driver Decisions were major factor in occurrence of motor vehicle crashes**

Employers need to promote safe driving behavior and enforce driver safety policies

Definitions

- Fleet Safety Management
  - Effective management of vehicles
  - Effective management of people while driving
- Fleet Safety Program
  - Series of elements permitting fleet to meet assigned objectives, safely, cost effectively, and on schedule
  - Basic goals are to reduce motor vehicle crashes, protect employee health, and reduce potential for property damage or injuries to general public or customers

Measures of Effective Fleet Safety System

- Fleet Safety & Operational Practices that can be defended
- Management Accountability and Controls
- Loss prevention efforts that identify key loss drivers
- Establish action plans to control/reduce risk factors leading to losses

ANSI/ASSE Z 15.1 2012

- Standard sets forth practices for safety operation of motor vehicles within an organization:
  - Definitions
  - Management, Leadership, & Administration
  - Operational Environment
  - Driver Considerations
  - Vehicle Considerations
  - Incident Reporting and Analysis

EMS Fleet Practices

- EMS Practice/Policy
  - Operating with Due Regard
  - Seat belt use for all occupants
  - Equipment secured
  - Intersection/Traffic Device Procedures
  - EVOC – Emergency Vehicle operators course
  - Distracted Driving Controls
  - Communications
    - Cell phones / texting
    - In-vehicle communication

FMCSA's Safety Management Cycle

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Fleet Audit

- Management Support
- Written Operational Policies
- Driver Management / Journey Management
- Driver Training / Communication
- Vehicle Management
- Accident Reporting & Investigation
- Program Performance Review

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Path to Sustainable Fleet Safety System

- Implement systems
- Utilize fleet safety team to assist with implementation & communication
- Measure performance to systems
- RESULT – a sustainable fleet safety management accountability process

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Distracted Driving

•Distracted driving is any activity that could divert a person's attention away from the primary task of driving.

•Effects of cell phone use:

✓delays reaction time as if you had .08 blood alcohol concentration,

✓ increases crash chances by 4X crash-handheld phone & 23X by Texting

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Types of Distraction:

- Visual – takes your eyes off road.
- Cognitive - takes your mind off the road
- Manual - takes your hands off the wheel
- Auditory - takes your focus off the road

- Tasks that can be a driving distraction often fit into more than one category.

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Sample of Non-Driving Tasks

Task	Odds Ratio	95% Confidence Interval	Frequency of Safety-Critical Events	Frequency of Baselines	Mean Eyes Off Forward Road Time (out of 6 sec)
Text message on cell phone	23.24	9.69 - 55.73	31	6	4.6 sec
Interact with/look at dispatching device	9.93	7.49 - 13.16	155	72	4.1 sec
Write on pad, notebook, etc.	8.98	4.73 - 17.08	28	14	4.2 sec
Use calculator	8.21	3.03 - 22.21	11	6	4.4 sec
Look at map	7.02	4.62 - 10.69	56	36	3.9 sec
Dial cell phone	5.93	4.57 - 7.69	132	102	3.8 sec
Talk/listen to hand-held phone	1.04	0.89 - 1.22	195	837	1.3 sec
Talk/listen to hands-free phone	0.44	0.35 - 0.55	91	901	1.6 sec
Talk/listen to CB radio	0.55	0.41 - 0.75	50	399	1.3 sec

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Summary

- Systems – Evaluate your level of fleet safety systems in your service for Fatigue Mgmt, Driver Fitness & Focused Driving
- Strategies – Increase focus on fleet safety to same level as patient and employee safety
- Solutions – Audits, Perception Survey to address behavior change in all levels of organization, Education, & use of Technology

AON

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TRB EMS Subcommittee ANB10(5)
March 6th, 2013

EMS Fleet Safety Seminar

Fleet safety systems &
"Putting invehicle telematics to use"

Bruce Farr, Ornge, Vice President of Operations, on behalf of John Cunnane, Niagara, Canada

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EMS Niagara

Niagara Region

Niagara Region Demographics

Population: 430,000 (12 Municipalities)

Niagara region: 1850 square km

Ambulance call volume: 75,000 (annually)

Mileage: 2,000,000 km driven annually

26 Peak Vehicles

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Acetech
Integrated Vehicle Intelligence System

Fully integrated, vehicle performance monitoring and control system with on-board intelligence.

- Safety Systems
- Eco-Run Module Benefits
- Asset Protection Benefits

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Safety System (Integrated into AVI)

- Speeding infractions, Unbelted, Unsecured occupants
- Lights and siren compliance
- Create Driver Safety Reports- provide feedback to employees
- Set pre-defined speed limiters

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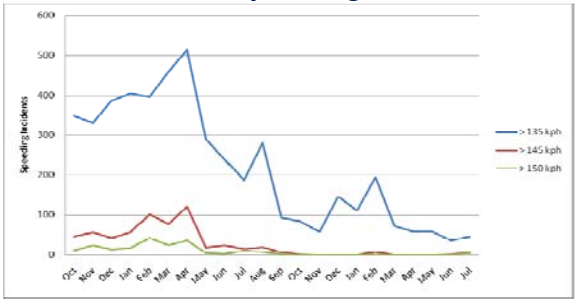
Niagara EMS
Decrease in Speeding Infractions



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Optimize your fuel efficiency and reduce your carbon footprint

- Reduce idle times by as much as 40% to lower your fuel consumption and costs
- Reduce carbon emissions and contribute to a greener environment
- Prevent flat batteries
- Reduce engine wear and reduce maintenance costs while extending vehicle & engine life
- Monitor driver behaviour to reduce excessive rpm for additional reduction of fuel consumption

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Report Generated for One Week of Excessive Idling and Potential Savings on 5 vehicles

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Summary

Automatic Vehicle Informatics (AVI) Benefits

- Protect assets with theft protection and geo-fencing
- Reduce engine wear and reduce maintenance costs while extending vehicle & engine life
- Modify driving behaviors with real time dashboard and full featured reports, and automatic updates on driving violations
- Improve fleet efficiency and operations with remote vehicle diagnostics & real time Fleet Management
- Track information through web based interface or integration with established dispatch software

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TRB EMS Subcommittee ANB10(5)
March 6th, 2013

EMS Fleet Safety Seminar

Fleet safety systems &
"Putting invehicle telematics to use"
Charlene Cobb, Sunstar, Florida

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Safety Technology
A System Perspective

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Marvlis System Overview

Front End Technology

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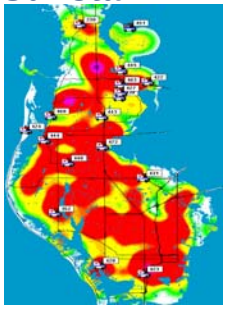
Marvlis at Sunstar

- Prior to Marvlis: We used history and geography
- Since Marvlis: We have data based on Year, week, day minute (17 years)
- We now weather the “storms” with more efficiency



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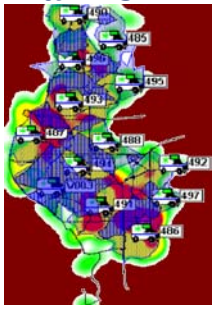
Utilization of Marvlis

- ✓ Improved response times
- ✓ Helps determine post plans
- ✓ Forecasts
- ✓ Routes



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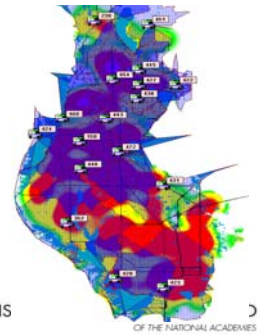
Dynamic Service Area

- Blue overlay shows us what parts of the county are covered
- Takes into account dead ends, traffic, geography water ways



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Fleet Eyes Overview

Back End Technology

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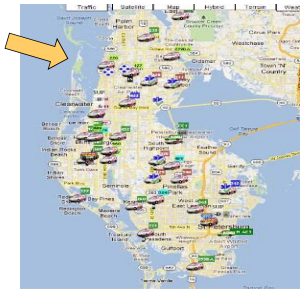
Fleet Eyes Functionality

- Weather
- Traffic
- Routing
- Speed
- Tracking
- Area Resources



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Fleet Eyes/Geo-Fencing

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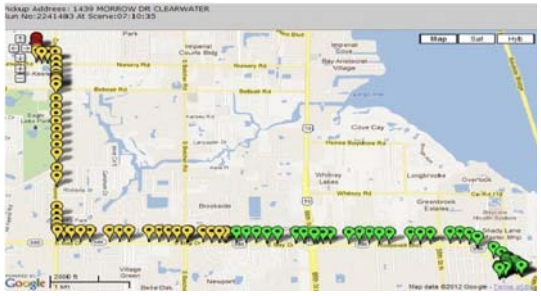
Route Review



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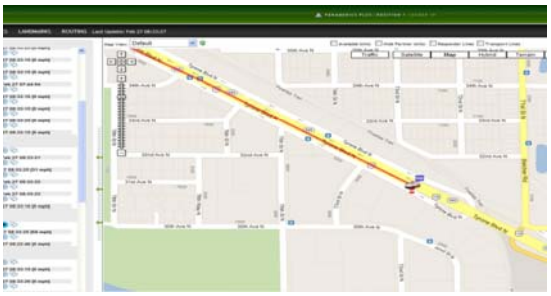
Real Time Tracking



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Call Details

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Road Safety Overview

Retrospect Technology

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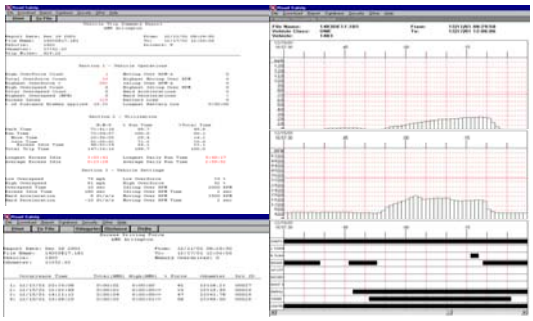
Road Safety Provides Data for Incident Investigation



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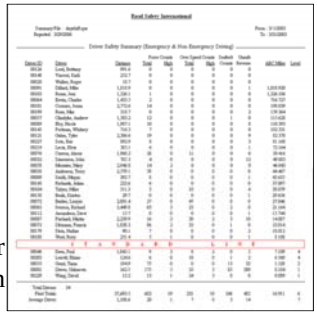
Monthly Driver Reports

- Identifies high risk behaviors
- Provides real time feedback to driver
- Provides reports for employee evaluation



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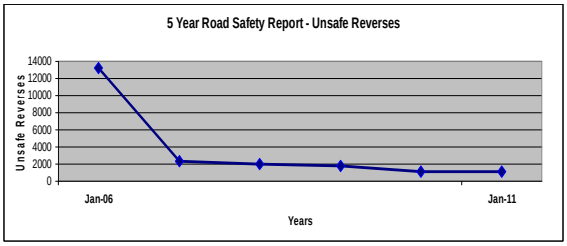
Measuring Our Success at Sunstar Paramedics



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Summary

Through these technologies:

- ✓ We realized dramatic change in our drivers attitude toward safety
- ✓ We have evidence based data to use for individual driver training and refresher courses
- ✓ We are able to identify drivers that fail to align themselves with our mission of safety

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