

Wireless Roadside Inspection (WRI) Program Overview

Wednesday, November 7, 2007

11 a.m. – 1 p.m. EDT

FMCSA Office of Analysis, Research and Technology

Outline

- ▶ Introduction
- ▶ WRI Program
- ▶ WRI Proof of Concept and Technology Showcase
- ▶ Questions and Feedback

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The Problem

- ▶ 64 percent of all fatal truck crashes have the “Critical Reason” linked to the truck*
- ▶ Truck numbers & mileage grow each year while roadside safety inspection resources remain constant
- ▶ The likelihood of a roadside inspection is far less than a truck being weighed
 - 3 million annual truck inspections with a **73% Violation rate (25% OOS rate)**
 - 177 million weigh inspections (staffed & WIM) with 515,587 citations – a **0.29% violation rate**
 - 82 million weigh inspections (staffed)
 - 95 million weigh inspections (WIM)

* Includes both single and multiple-vehicle fatal truck crashes (Source: LTTCS)

WRI Program Vision (The Solution)

- ▶ Motor Carrier safety could be improved through dramatic increases in roadside safety inspections due to wireless inspections using proven technologies and processes.
- ▶ Driver and vehicle safety assessments occur frequently enough to ensure compliance while minimizing disruptions to safe and legal motor carrier transportation.



WRI Program Goal

- ▶ Demonstrate and measure government and industry benefits and costs of a Wireless Roadside Inspection network across a multi-state region to enable a “go/no go” decision for nationwide deployment.



Opportunities for Technology

- ▶ Analysis of historical inspection data reveals that a large portion of significant “defects” are limited to a few items
- ▶ With the exception of load-securement, most of the key vehicle and operator condition criteria lend themselves to onboard electronic monitoring and diagnostic assessment

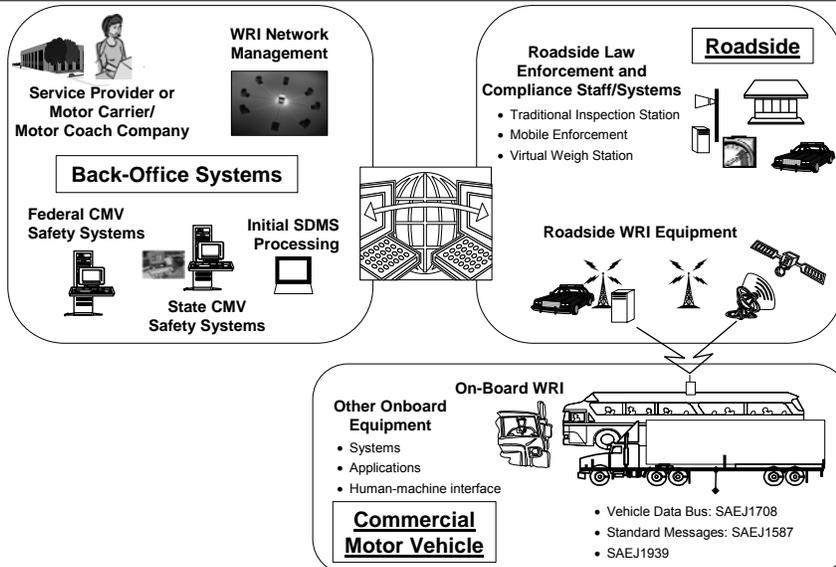
Driver Violations	% Driver OOS Violations	Vehicle Violations	% Vehicle OOS Violations
Logbook	40.0%	Brakes	41.2%
HOS	28.7%	Lighting	16.6%
CDL	19.4%	Tires	9.4%
Total	88.1%	Load Securement	15.7%
		Total	82.9%

Options for Automated Identification

- ▶ Concept being considered as part of CSA 2010
- ▶ Various technology options can provide automated identification
 - Uniform, machine-readable license plate
 - Typical CVO transponder (like those used in NORPASS, PrePass)
 - More advanced transponder integrated with an onboard computer
 - Transponder built into license plate
 - Transponder built into windshield decal
 - Others

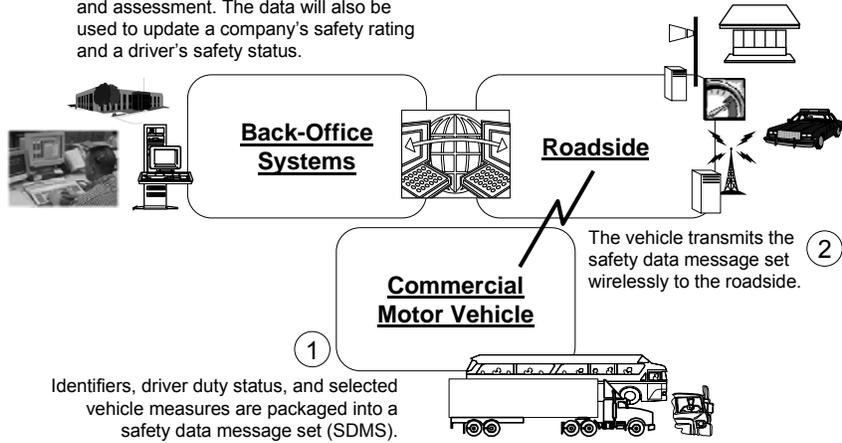


Wireless Roadside Inspection System Overview



Wireless Roadside Inspection Concept

- ③ The safety data message set is verified, archived, and distributed. It may be used for real-time enforcement, compliance, and assessment. The data will also be used to update a company's safety rating and a driver's safety status.



DRAFT Safety Data Message Set (SDMS) Contents

Identifiers

- ** from a data bus message
- Driver's license jurisdiction and ID
- Vehicle identification number (VIN) **
- Motor carrier/coach USDOT number
- Shipping document ID

Vehicle Measures

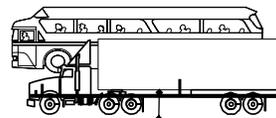
- Tires
- Vehicle position
- Weight

Vehicle Status

- Lighting
- Safety belt

Electronic On-Board Recorder (EOBR) Data

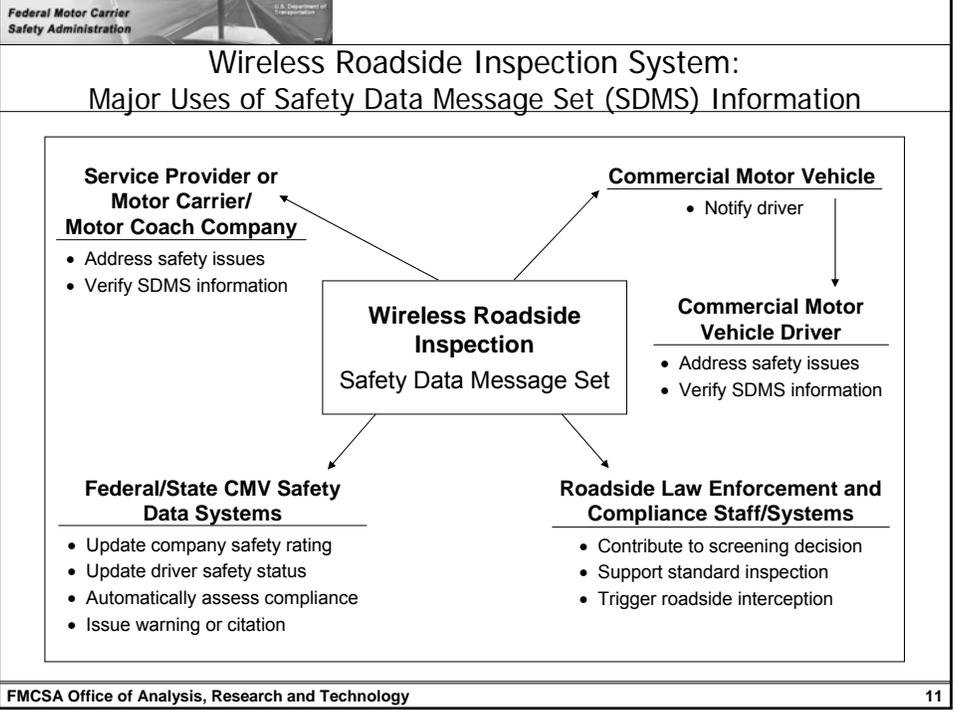
- Driver's Log
(Duty Status + Location of Duty Status Change over time)



- Vehicle Data:
- SAEJ1708/SAEJ1587
 - SAEJ1939
 - EOBR Data

Potential Future Vehicle Status Parameters

- Brakes
- Exhaust system
- Steering
- Wheels
- Other
- Coupling
- Fuel system
- Suspension
- Wipers

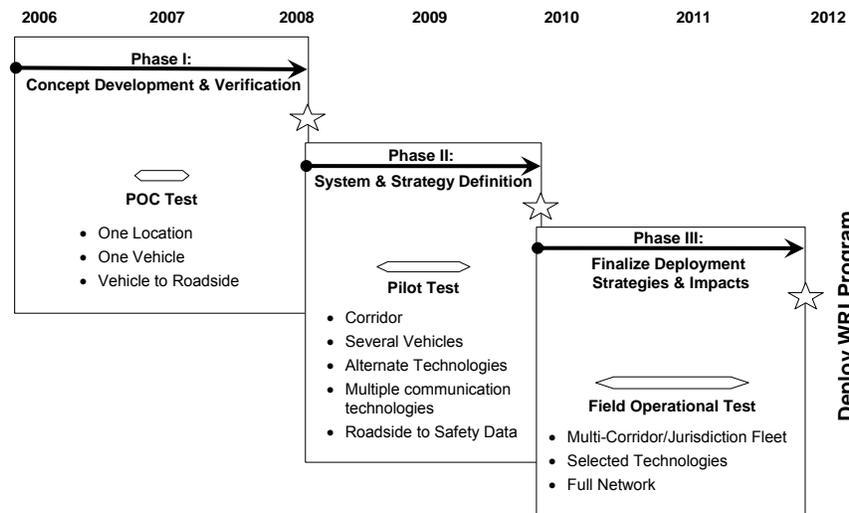


- Federal Motor Carrier Safety Administration
- ### Wireless Inspection Concept Deployment Plan
- ▶ **State and Federal Government**
 - 1,200 fixed facility inspection sites
 - 1,000 virtual inspection stations
 - 500 mobile inspection vehicles
 - IT infrastructure (roadside to back-office systems)
 - ▶ **Motor Carrier Industry**
 - CMVs equipped with WRI-compatible communications (transceivers/transponders) and onboard computers
 - Incentives for voluntary participation
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WRI Program Approach

- ▶ Phased implementation
- ▶ Decisions (Go / No Go) based upon verifiable results from Proof of Concept, Pilot, and Field Operational Tests
- ▶ Partnerships with Industry and State and Local Agencies to ensure success
- ▶ Close coordination/collaboration with FMCSA programs and initiatives to leverage resources and provide consistent direction to stakeholders
- ▶ Monitor and coordinate with other programs outside of FMCSA (Customs, Homeland Security, Ports, FHWA, etc.)

WRI Phase & Schedule



Paradigm Shift

- ▶ Electronic safety checks will be frequent and expected
- ▶ Unsafe operators and vehicles won't risk driving over HOS hours or with substandard equipment
- ▶ Number of unsafe CMV drivers and vehicles on road would be reduced
- ▶ Crashes related to unsafe CMV drivers and vehicle defects would be reduced

WRI Proof of Concept Test and CMV Technology Showcase

Wireless Roadside Inspection (Proof of Concept)

Wireless Roadside Inspections

- ▶ Driver Data
 - Driver identification, CDL status, and log info
- ▶ Vehicle Data
- ▶ Fixed & Mobile Units



WRI POC SDMS Data Elements

Driver First Name	Annual Inspection Date	Fuel
Driver Last Name	Annual Inspection Performed by	Vehicle Make
Driver CDL #	Annual Inspection Number	Vehicle year
Driver CDL State	IFTA year	Vehicle State
Carrier Name	IFTA State	
Carrier ID	IFTA Number	
Carrier USDOT #	Driver Duty Status	
VIN	Time of Last Driver Duty Status Change	Simulated Back-Office Data
Vehicle License Plate	Date of Last Driver Duty Status Change	License Revoked Status
Vehicle Net Weight	HOS Time	License Expiration Date
Vehicle Steer Axle Wt.	Odometer	Expired Registration Status
Vehicle Drive Axle Wt.	Location of Last Driver Duty Status Change	States Apportioned
Vehicle Trailer Wt.	GPS Longitude	ISS Rating
ABS Warning Lamp Flag	GPS Latitude	Inspection History
ABS Off-Road Flag	GPS Heading	Operation Authority
Medical Card Physician Name	GPS Speed	Insurance Provider
Medical Card Physician ID	GPS Time UTC	Insurance Policy Number
Medical Card State	GPS Fix	Insurance Effective Date
Medical Card Exam Date	Engine RPM	Insurance Expiration Date

Federal Motor Carrier Safety Administration

Wireless Inspector ver. 1.4

File Scan Options Help

Overview Driver Carrier Vehicle HOS

Federal Motor Carrier Safety Administration U.S. Department of Transportation

Driver: Name **John Doe One** CDL # 123456789 State: TN

Carrier: Name **Commercial Carrier Consultants** USDOT #: 1628871 ISS Rating **84**

Vehicle:  Make: Freightliner Year: 2005 License Plate #: TN20474HZ State: TN VIN #: 1FUJA6AV95LU33071

Weight: Net **31577** Steer: 12841 Drive: 8932 Trailer: 9804

HOS: On-Duty Time Available: 7:1:57 Driving Time Available: 7:1:57

Alerts: High ISS rating: 84 Driver's license has been revoked Vehicle's registration is expired

Dismiss Quick Save Quick Save and Dismiss

Ready

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Federal Motor Carrier Safety Administration

Wireless Inspector ver. 1.4

File Scan Options Help

Overview Driver Carrier Vehicle HOS

Federal Motor Carrier Safety Administration U.S. Department of Transportation

John Doe One

License Information: Number: 123456789 State: TN Expires: 05-29-2007 Status: Revoked

Medical Card: By: Feltbetter Lic. #: 112233 State: TN Expires on: 12/01/07

HOS: On-Duty Time Available: 7:1:57 Driving Time Available: 7:1:57

Inspection History:

Date	Citation
03/08/2003	Vehicle Overweight
06/25/2006	Brakes out of adjustment

Ready

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File Scan Options Help

Overview Driver Carrier Vehicle HOS

Federal Motor Carrier Safety Administration U.S. Department of Transportation

Commercial Carrier Consultants USDOT #:1628871

Operating Authority
Number: MC 12345

Proof of Insurance
Insurance Provider: We Insure You
Policy Number: 11335577
Effective Since: 07-24-05
Expires On: 07-24-08

ISS Rating
84

Ready

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Federal Motor Carrier Safety Administration

Wireless Inspector ver. 1.4

File Scan Options Help

Overview Driver Carrier Vehicle HOS

Federal Motor Carrier Safety Administration U.S. Department of Transportation

General Information



Make: Freightliner Year: 2005
License Plate #: TN20474HZ State: TN
VIN #: 1FUJAGAV95LU33071

Weight

Net Weight: 31577
Steer: 12841
Drive: 8932
Trailer: 9804

Last Federal Annual Inspection

Date: 02/12/07
Performed By: Breakbot
Number: 121212

IFTA



Apportionment

IRP/Apportioned States



Apportioned For:

US States/Territories:
TN VA KY GA WV AL

Non-US Territories:

System Statuses

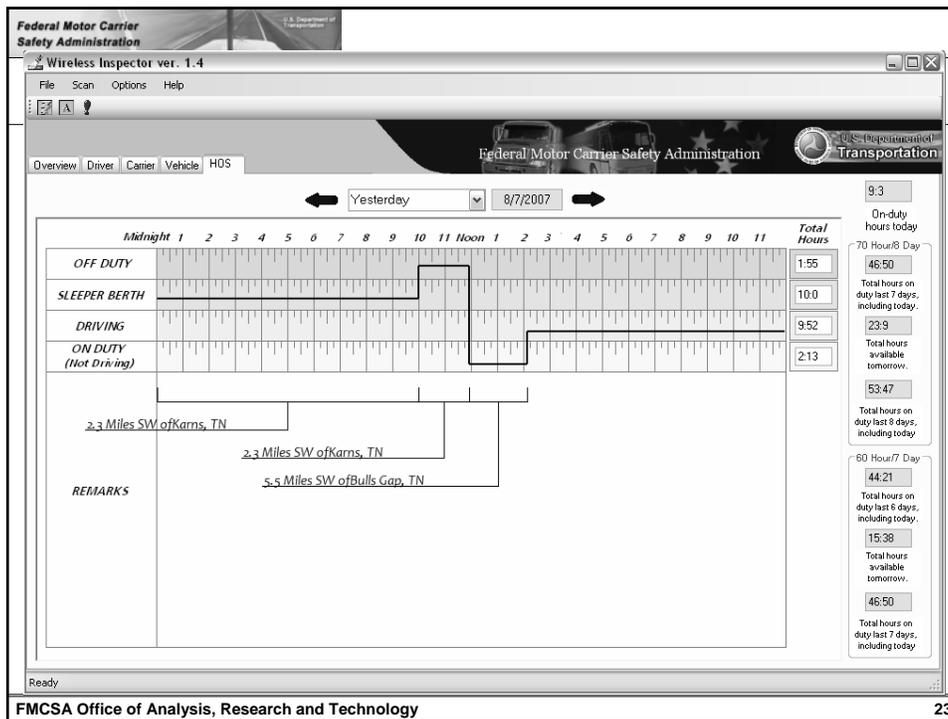
Brakes
ABS Warning Lamp Status: OFF
ABS Brake Control Status: OFF
ABS Retarder Control Status: OFF
ABS Off-Road Function Switch Status: OFF

Engine
Engine Oil Temperature (deg F)
Engine Oil Pressure (lb/in. sq.)
Boost Pressure (lb/in. sq.)

Tires
Sensors not available

Ready

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Preliminary Results of POC Field Tests

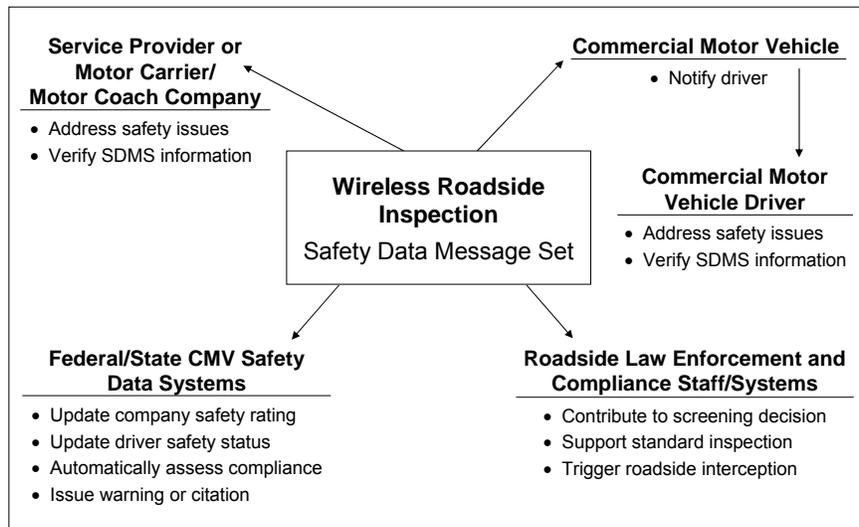
- ▶ Enabling technology of EOBR and transponder worked as expected
- ▶ Concept proved viable in field testing with fixed and mobile units
- ▶ Antenna orientation a key area in follow-on testing
- ▶ Motor carrier and technology provider support outstanding and laudable
- ▶ Products include:
 - Prototype software
 - Example data analysis report

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Other Technologies Demonstrated at Showcase

- ▶ Commercial Vehicle Inspection System (ComVIS)
- ▶ CVISN Electronic Screening via Pre-Pass™ System
- ▶ Query Central and other inspection tools
- ▶ Performance-based brake testing device
- ▶ Smart Infrared Inspection System (Prototype)

Wireless Roadside Inspection System: Major Uses of Safety Data Message Set (SDMS) Information



Discussion Questions

1. What are your initial thoughts and impressions regarding the WRI Program as a whole?
 - ▶ What advantages and benefits do you see that the WRI Program will provide to your current operations?
 - ▶ Do you have any thoughts/concerns regarding the WRI technologies or operational scenarios?
 - ▶ Are there other programs or services that the WRI program should coordinate with?
 - ▶ Does the timeframe for the WRI program seem reasonable?

2. Do you see any initial barriers or concerns that must be overcome?

- ▶ Are there any barriers that must be addressed before the WRI Program can be implemented?
- ▶ Are there any issues that may discourage your voluntary participation in the WRI Program once it is deployed?
- ▶ How should we overcome the concerns and issues that have been raised?
- ▶ What additional steps should be carried out to make the program a reality?
- ▶ What are your thoughts on the Scope of WRI (data included in the SDMS, voluntary versus mandatory, universal identification)?

3. What can we do to encourage (maximize) voluntary deployment?

- ▶ How can we encourage (maximize) participation under a voluntary WRI Program?
- ▶ What incentives should we investigate in the next phases of the program development?
- ▶ What would it take for your organization to participate?

4. How should we engage the motor carrier industry and other stakeholders as we move forward?

- ▶ What different stakeholder groups and organizations should we work with as the WRI Program moves forward?
- ▶ How can we encourage participation in the WRI Program Development? What outreach activities should we carry out.
- ▶ Are there any conferences/events that we should participate in?
- ▶ Would you like to stay involved as the program develops? If so, how would you like to be involved?

Thank you!

Contact Information

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