Wireless Roadside Inspection (WRI) Program Overview

Wednesday, November 7, 2007

11 a.m.–1 p.m. EDT

Outline

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

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 & weigh-in-motion (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: Large Truck Crash Causation Study)

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

Vehicle Violations	% Vehicle OOS Violations
Brakes	41.2%
Lighting	16.6%
Tires	9.4%
Load Securement	15.7%
Total	**82.9%**

Driver Violations	% Driver OOS Violations
Logbook	40.0%
HOS	28.7%
CDL	19.4%
Total	**88.1%**

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

Service Provider or Motor Carrier/ Motor Coach Company

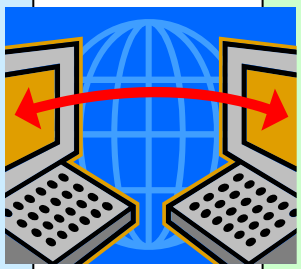
WRI Network Management

Back-Office Systems

Federal CMV Safety Systems

State CMV Safety Systems

Initial SDMS Processing

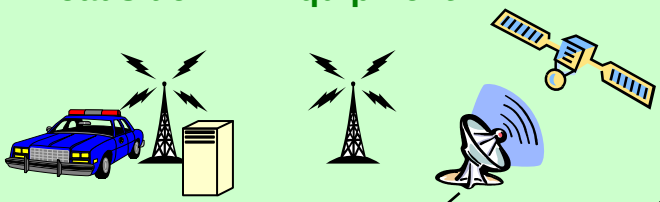


Roadside

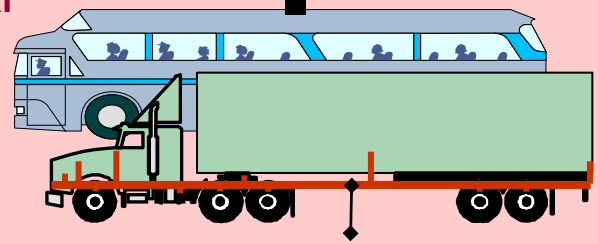
Roadside Law Enforcement and Compliance Staff/Systems

- Traditional Inspection Station
- Mobile Enforcement
- Virtual Weigh Station

Roadside WRI Equipment



On-Board WRI



Other Onboard Equipment

- Systems
- Applications
- Human-machine interface

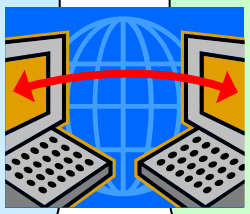
Commercial Motor Vehicle

- Vehicle Data Bus: SAEJ1708
- Standard Messages: SAEJ1587
- SAEJ1939

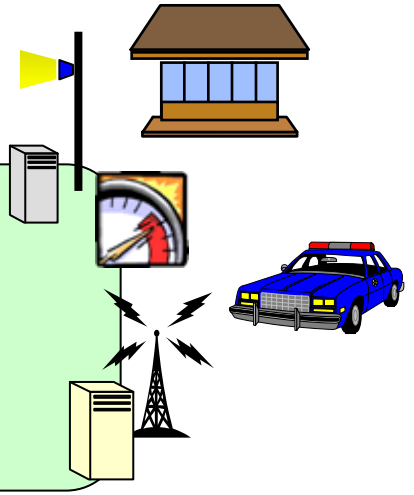
Wireless Roadside Inspection Concept

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.

Back-Office Systems



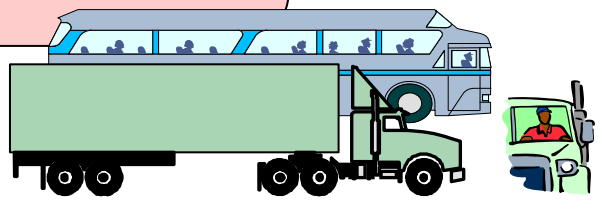
Roadside



The vehicle transmits the safety data message set wirelessly to the roadside. 2

Commercial Motor Vehicle

1 Identifiers, driver duty status, and selected vehicle measures are packaged into a safety data message set (SDMS).



DRAFT Safety Data Message Set (SDMS) Contents

Identifiers

** from a data bus message

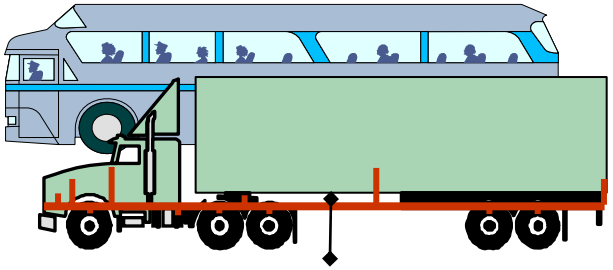
- Driver's license jurisdiction and ID
- Vehicle identification number (VIN) **
- Motor carrier/coach USDOT number
- Shipping document ID

Vehicle Measures

- Tires
- Vehicle position
- Weight

Vehicle Status

- Lighting
- Safety belt



Vehicle Data:

- SAEJ1708/SAEJ1587
- SAEJ1939
- EOBR Data

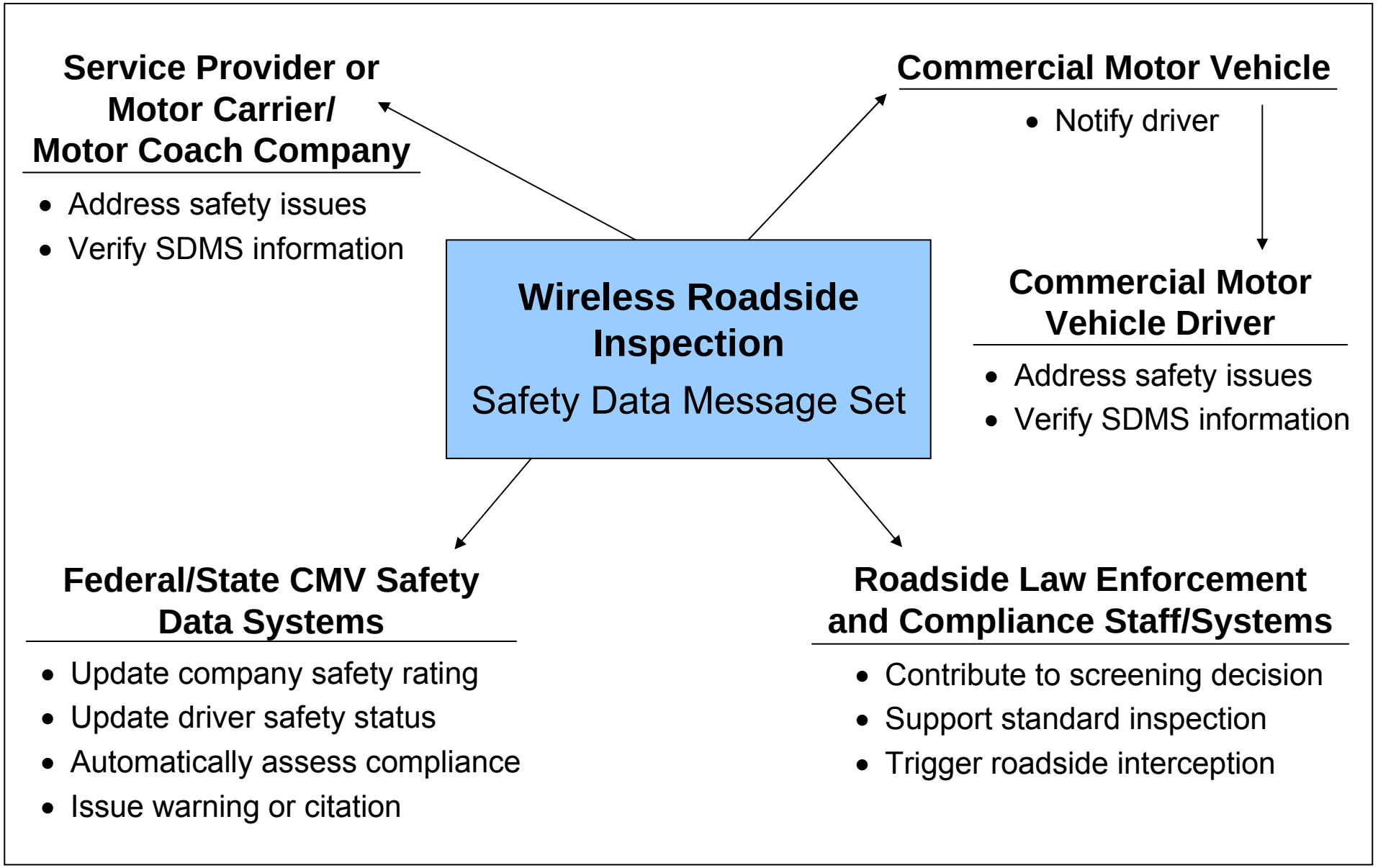
Potential Future Vehicle Status Parameters

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

Electronic On-Board Recorder (EOBR) Data

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

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



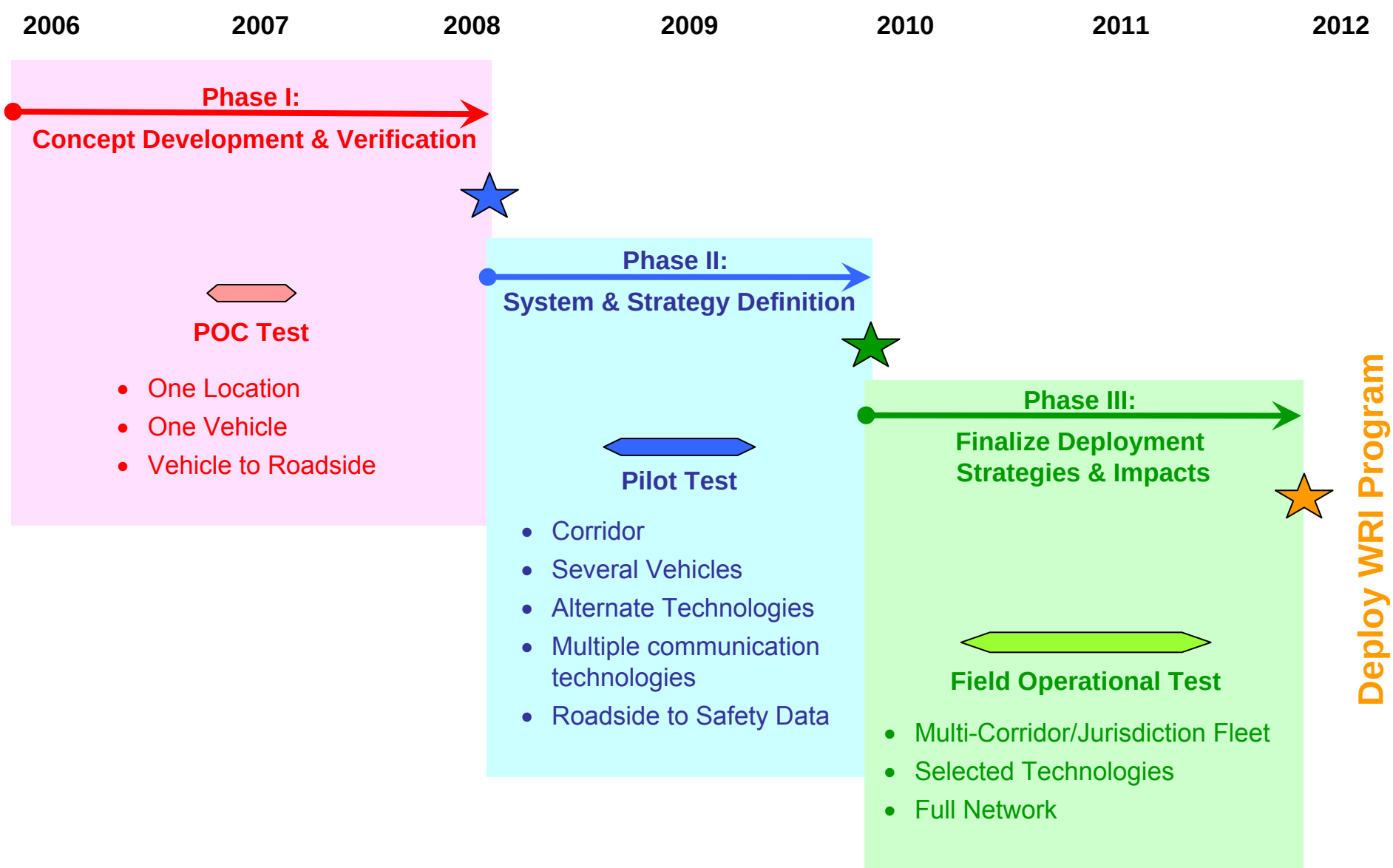
Wireless Inspection Concept Deployment Plan

- 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 (transcievers/transponders) and onboard computers
  - Incentives for voluntary participation

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

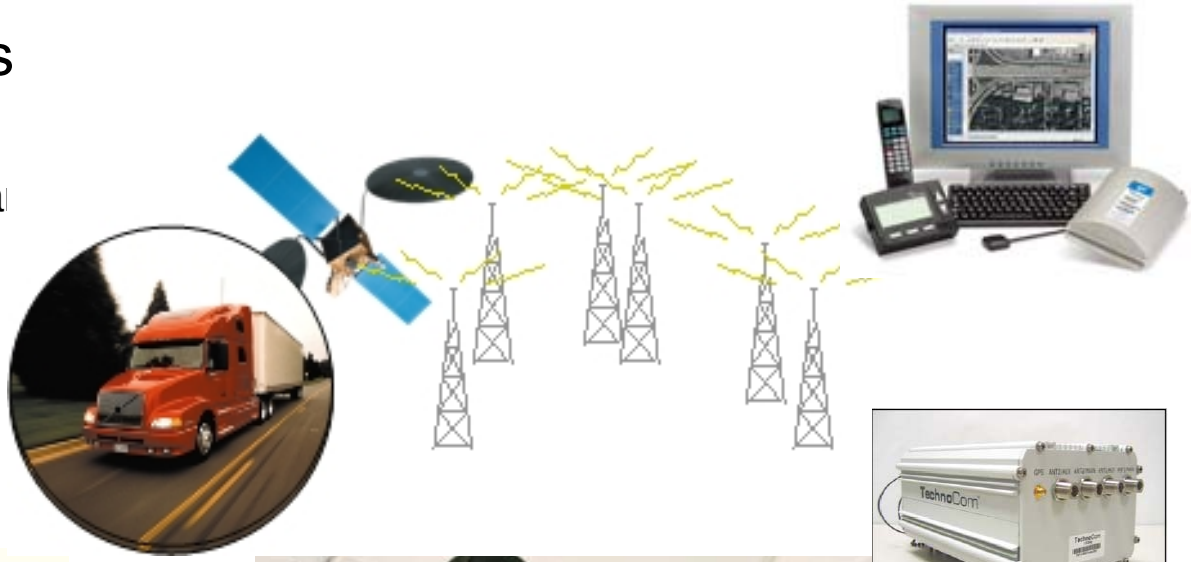
- Electronic safety checks will be frequent and expected
- Unsafe operators and vehicles won't risk driving over HOS hours or with substandard equipment
- Number of unsafe CMV drivers and vehicles on road would be reduced
- Crashes related to unsafe CMV drivers and vehicle defects would be reduced

WRI Proof of Concept Test and CMV Technology Showcase

Wireless Roadside Inspection (Proof of Concept)

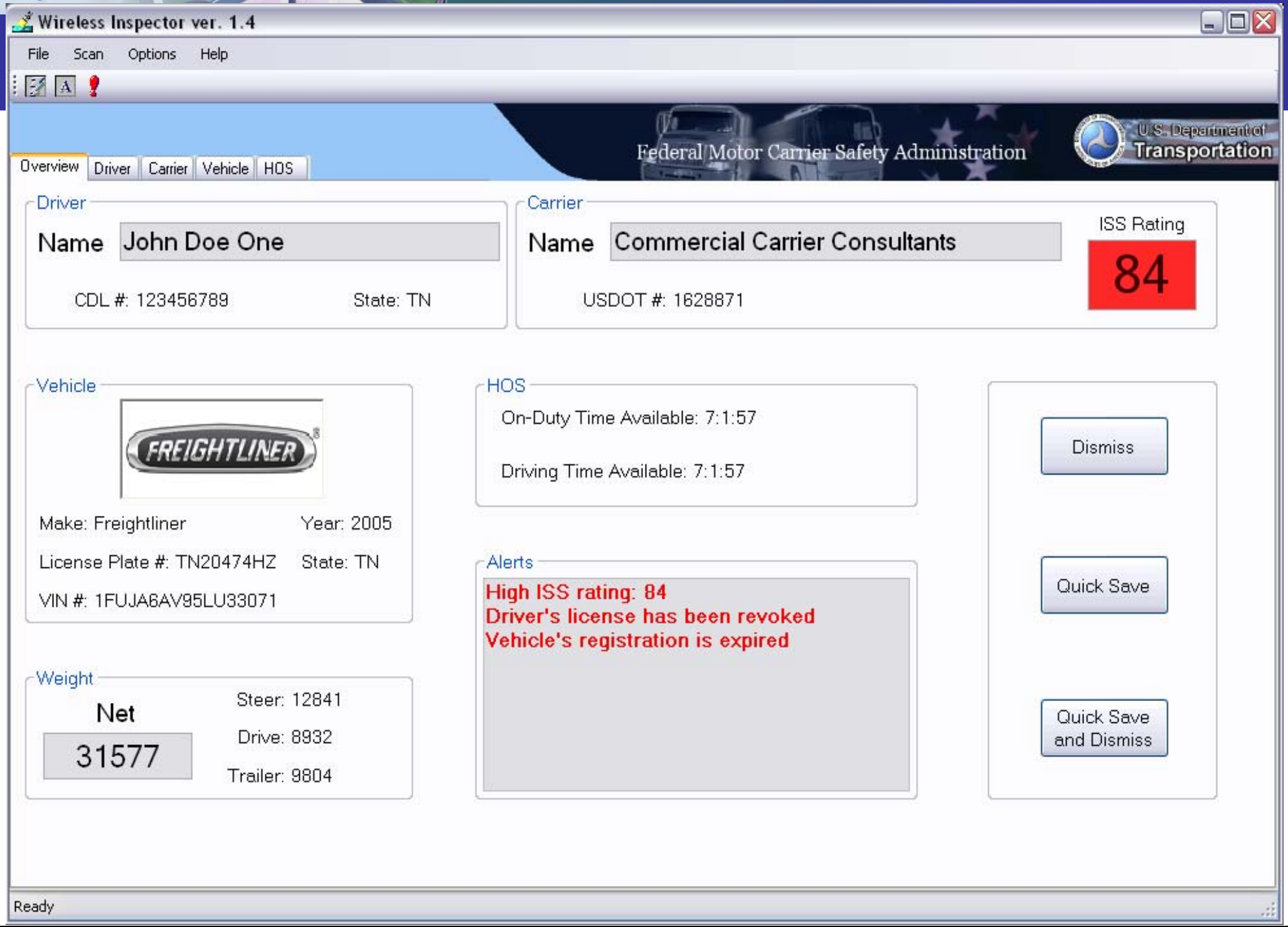
Wireless Roadside Inspections

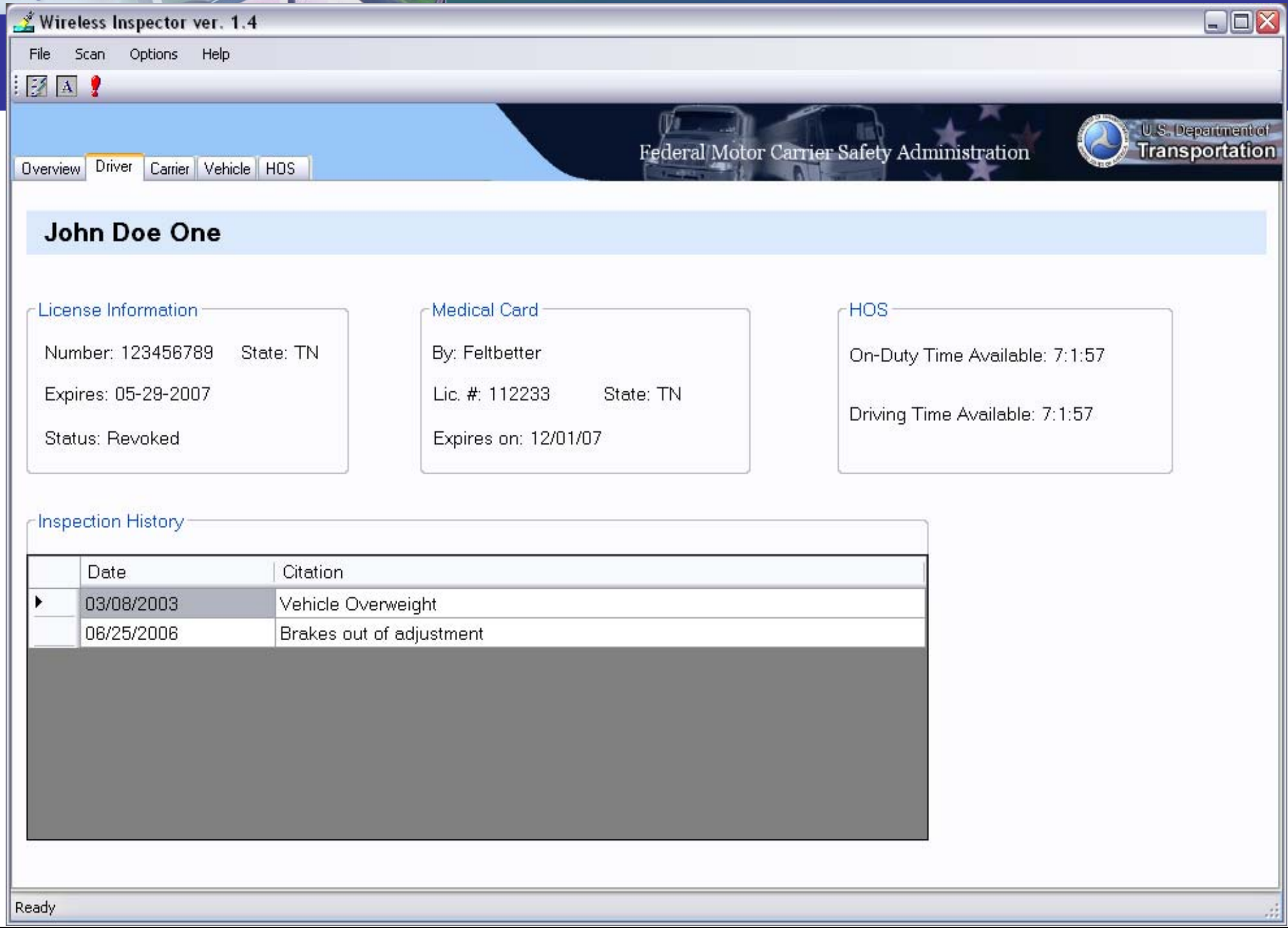
- Driver Data
  - Driver identification, CDL status, a
- Vehicle Data
- Fixed & Mobile Units

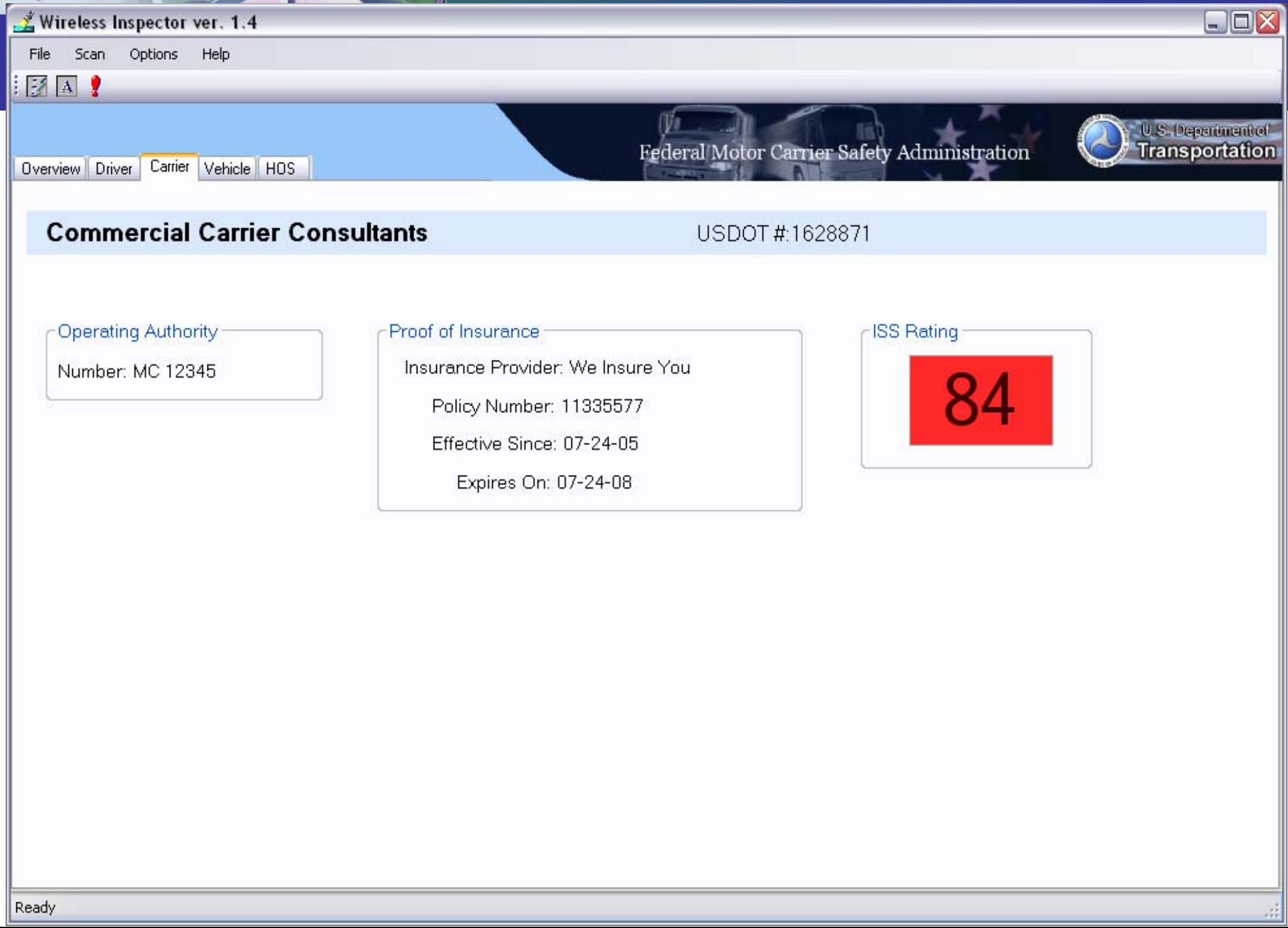


WRI POC SDMS Data Elements

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


Wireless Inspector ver. 1.4
File
Scan
Options
Help
Federal Motor Carrier Safety Administration
U.S. Department of Transportation
Overview
Driver
Carrier
Vehicle
HOS
Driver
Name John Doe One
CDL #: 123456789
State: TN
Carrier
Name Commercial Carrier Consultants
USDOT #: 1628871
ISS Rating
84
Vehicle
FREIGHTLINER
Make: Freightliner
Year: 2005
License Plate #: TN20474HZ
State: TN
VIN #: 1FUJA6AV95LU33071
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
Weight
Net
31577
Steer: 12841
Drive: 8932
Trailer: 9804
Ready


Wireless Inspector ver. 1.4
File
Scan
Options
Help
Federal Motor Carrier Safety Administration
U.S. Department of Transportation
Overview
Driver
Carrier
Vehicle
HOS
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


Wireless Inspector ver. 1.4
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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

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

FREIGHTLINER

Make: Freightliner Year: 2005

License Plate #: TN20474HZ State: TN

VIN #: 1FUJA6AV95LU33071

Weight

Net Weight

31577

Steer: 12841

Drive: 8932

Trailer: 9804

Last Federal Annual Inspection

Date: 02/12/07

Performed By: Breakbolt

Number: 121212

IFTA

IFTA 2007

TN 1822045

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):

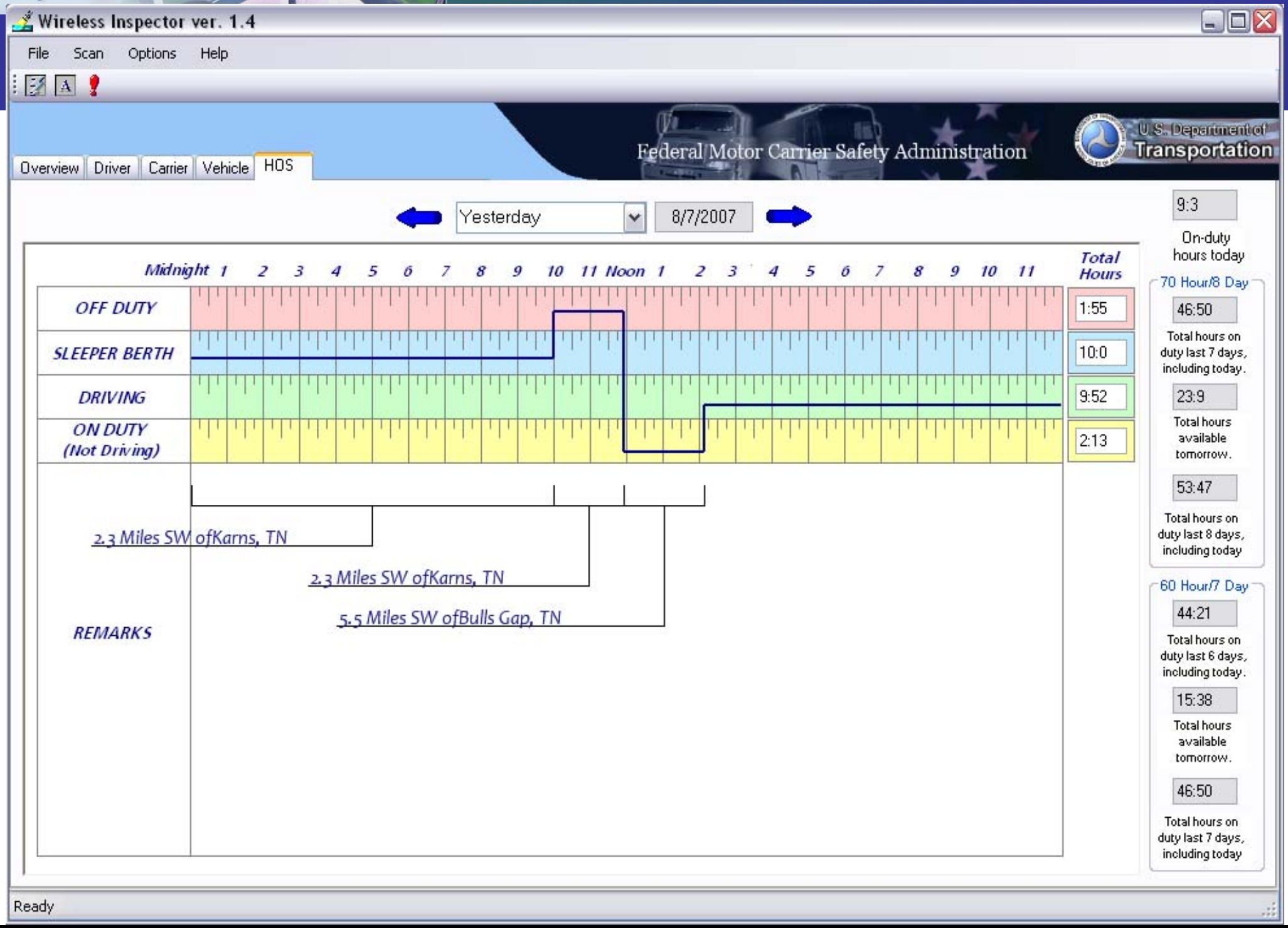
Engine Oil Pressure (lbf/sq.in.):

Boost Pressure (lbf/sq.in.):

Tires

Sensors not available

Ready


Wireless Inspector ver. 1.4
File
Scan
Options
Help
Overview
Driver
Carrier
Vehicle
HOS
Federal Motor Carrier Safety Administration
U.S. Department of Transportation
Yesterday
8/7/2007
Midnight 1 2 3 4 5 6 7 8 9 10 11 Noon 1 2 3 4 5 6 7 8 9 10 11
Total Hours
OFF DUTY
SLEEPER BERTH
DRIVING
ON DUTY (Not Driving)
1:55
10:0
9:52
2:13
2.3 Miles SW ofKarns, TN
2.3 Miles SW ofKarns, TN
5.5 Miles SW ofBulls Gap, TN
REMARKS
9:3
On-duty hours today
70 Hour/8 Day
46:50
Total hours on duty last 7 days, including today.
23:9
Total hours available tomorrow.
53:47
Total hours on duty last 8 days, including today
60 Hour/7 Day
44:21
Total hours on duty last 6 days, including today.
15:38
Total hours available tomorrow.
46:50
Total hours on duty last 7 days, including today
Ready

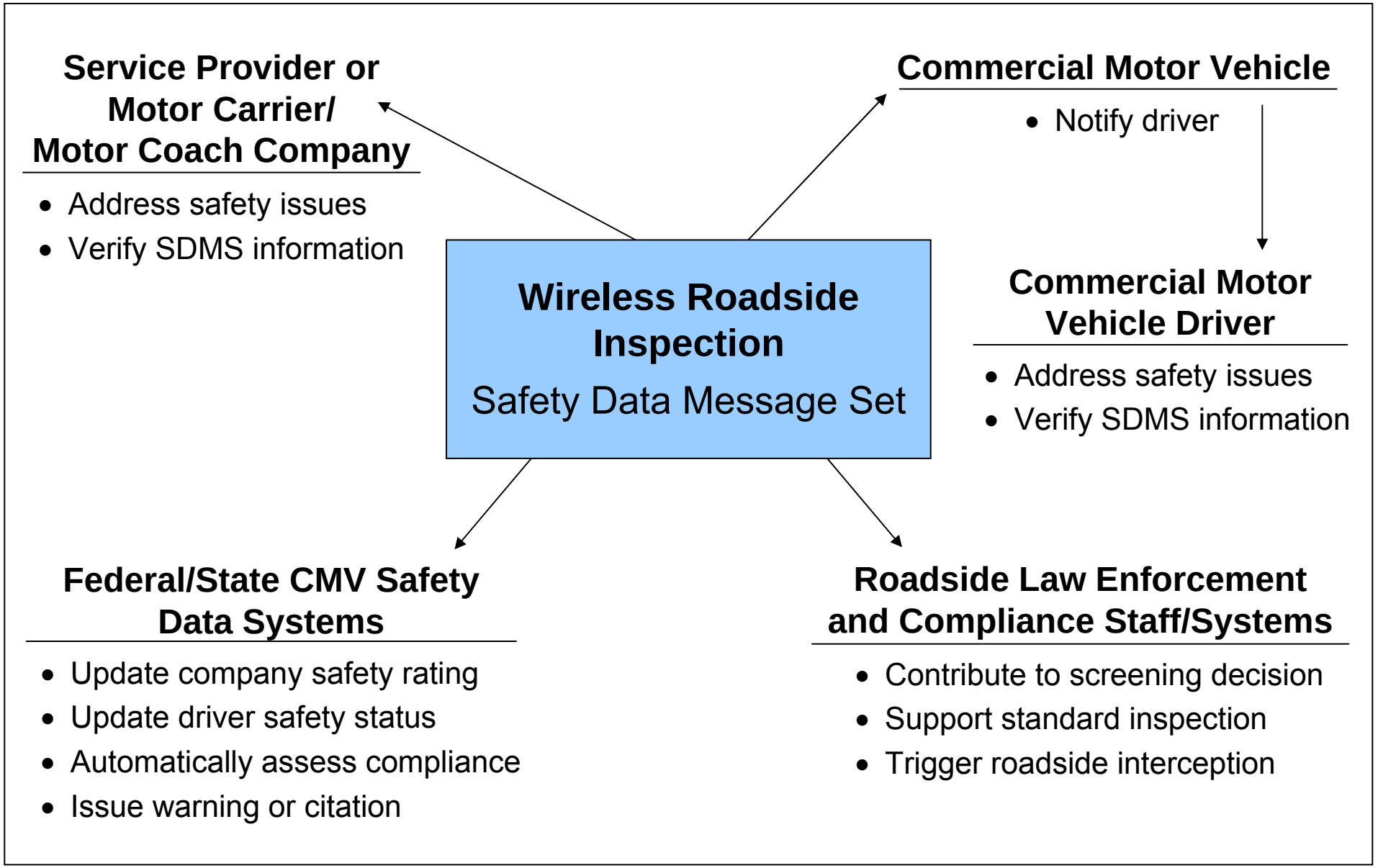
Preliminary Results of POC Field Tests

- 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

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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