Wireless Roadside Inspection (WRI) Field Operational Test (FOT)

The U.S. Department of Transportation (DOT) Federal Motor Carrier Safety Administration (FMCSA) has commissioned the Wireless Roadside Inspection (WRI) Program to validate technologies and methodologies that can improve safety through inspections using wireless technologies that convey real-time identification of commercial vehicles, drivers, and carriers, as well as information about the status of the vehicles and their drivers. It is hypothesized that these inspections will:

- Increase safety – Decrease the number of unsafe commercial vehicles on the road;
- Increase inspection efficiency — Speed up the inspection process, enabling more inspections to occur, at least on par with the number of weight inspections;
- Improve Inspection effectiveness — Reduce the probability of drivers bypassing CMV inspection stations and increase the likelihood that fleets will attempt to meet the safety regulations; and
- Benefit industry — Reduce fleet costs, provide good return-on-investment, minimize wait times, and level the playing field.

To this end, the WRI program is defined in three parts

Phase 1: Proof of Concept Test (POC) – Testing of commercially available off-the-shelf (COTS) or near-COTS technology to validate the wireless inspection concept (2006-2008, testing completed August 2007)

- One location
- Two vehicles
- Vehicle to roadside communications

For more information, see http://info.ornl.gov/sites/publications/Files/Pub12285.pdf

Phase 2: Pilot Test – Safety and inspection technology maturation demonstration, system loading, and back office system integration (2008-2011)

- Several vehicles
- Alternative technology
- Multiple communication paths
- Vehicle to back office, back office to roadside communications

For more information, see http://info.ornl.gov/sites/publications/Files/Pub34717.pdf

Phase 3: Field Operational Test (FOT)– Full end-to-end system testing on multiple vehicles from multiple fleets within a multi-state corridor (2012-2017)

- Multi-state corridors
- Fleets and vehicles from several jurisdictions
- Selected technologies (focus on Commercial Mobile Radio Services [CMRS]) Full network (vehicle/roadside/government system)

WRI FOT Vision — A CMRS-based solution is developed based on a set of end-to-end and sub-module ("black box") functional specifications. Assumptions are documented and explored as to validity. The final WRI FOT system is scalable in all of its components and interfaces to meet the needs of a nationally deployed system. WRI system features (See System Features Section below) that are seen by stakeholders as needed for a truly viable system are included, developed, tested, and analyzed in the FOT. The FOT total system (consisting of partners, hardware, software, and vehicles) is small enough to be manageable, but large enough to give statistically meaningful test data that will answer the go/no-go question for a national deployment. The FOT will feed revisions to the already existing WRI requirements, Concept of Operation, and Architecture.

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WRI FOT Goals and Objectives—The goal of the WRI FOT is to support the WRI Program by determining the viability and effectiveness of wireless CMV inspection using currently-existing telematics technologies and a custom-developed government system to receive and process the safety data messages at an instantaneous rate equal to a nationally deployed system and provide a nexus for future national deployment via Commercial Vehicle Information Systems and Networks (CVISN) or other program.

The WRI CMRS goal will be met by the following objectives:

- Demonstrate WRI via one or more CMRS Partner systems
- Demonstrate the transfer of a CMRS-generated Safety Data Message (SDM) to the government system (GS)
- Demonstrate the transfer of the CMRS-generated SDM from the GS to the State centralized and roadside-based systems
- Demonstrate WRI CMRS end-to-end system functionality via one or more CMRS Partner systems
- Demonstrate carrier, enforcement, and compliance decision making using associated WRI GUI(s) populated with the CMRS-generated SDM/Inspection Record
- Demonstrate WRI system instantaneous loading equal to a nationally deployed system
- Feed revisions of the already existing WRI requirements, Concept of Operation, and Architecture
- Inform the go/no-go decision for WRI national deployment

Figure 1 shows the major WRI use cases and the ability of the WRI FOT to validate them. Figure 2 shows the WRI CMRS overview.

The WRI FOT is currently underway and data collection is expected to begin in 2015.

Date: July 2014

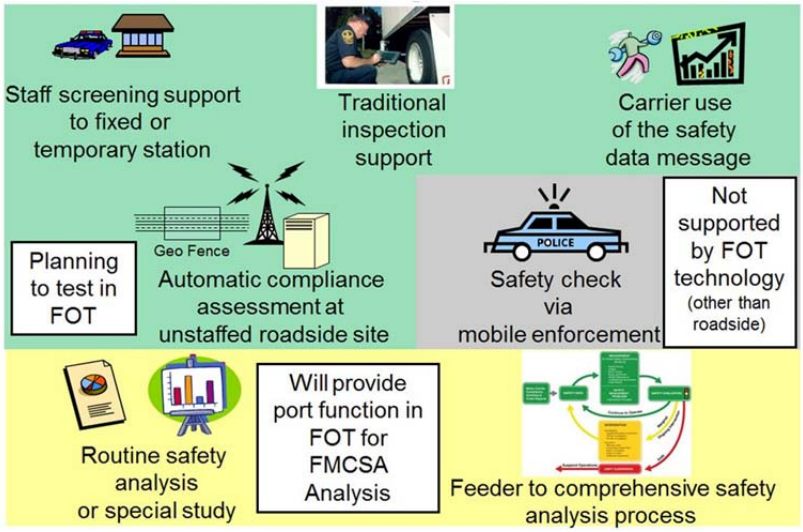

Figure 1—WRI System Major Use Case

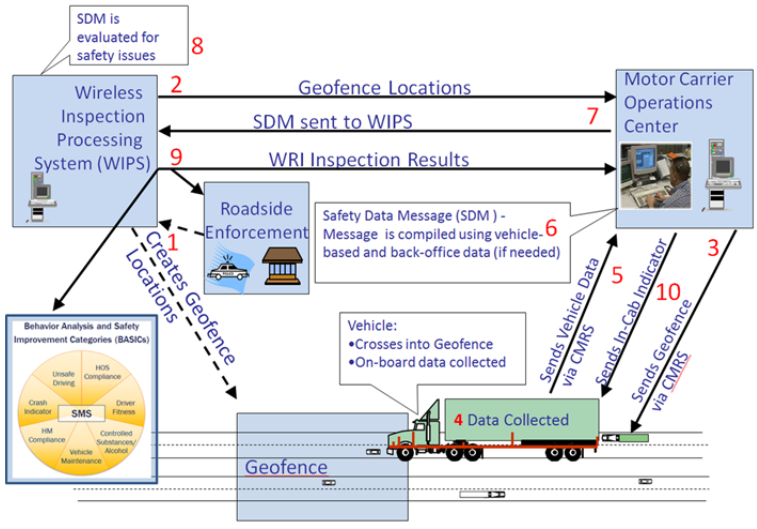

Figure 2—WRI CMRS Overview