

# Response, Emergency Staging, Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.)

NRITS Session D1: Public Safety Applications Linda Dodge, USDOT

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# **Overview**

- Dynamic Mobility Applications (DMA)
  Program Overview
- R.E.S.C.U.M.E. Status and Plans



# **USDOT ITS Program**

- ~\$100 million annual research program addressing intelligent vehicles and infrastructure
- Primary focus on "connected vehicles" to address safety, mobility and environmental challenges
- The ITS Joint Program Office, housed in RITA, coordinates multimodal research initiatives across six USDOT administrations: FHWA, NHTSA, FTA, FMCSA, FRA, and MARAD.



U.S. Department of Transportation Research and Innovative Technology Administration



# **ITS Research Program Components**



Harmonization of International Standards & Architecture

Human Factors

Systems Engineering

Certification

**Test Environments** 

Policy

Technology

**Deployment Scenarios** 

Financing & Investment Models

**Operations & Governance** 

Institutional Issues



# **Mobility Program**



**Dynamic Mobility Applications** 



## Key Research Questions for the Mobility Program

- What are the benefits of applications enabled by connected vehicle and connected traveler data?
- What testing is required to prepare applications for eventual demonstration and deployment?
- What are the cross-cutting data and communication needs among DMA bundles?
- What is the role of Basic Safety Message (BSM)?
- How do we successfully implement Open Data and Open Source concepts within the program?





#### Data Capture and Management and Dynamic Mobility Applications Programs: Integrated Roadmap

# **Dynamic Mobility Applications Program**

#### Vision

- Expedite development, testing, commercialization, and deployment of innovative mobility application
  - Maximize system productivity
  - Enhance mobility of individuals within the system



Transformative Mobility Applications

(May have more impact when BUNDLED together)

### Objectives

- Create applications using frequently collected and rapidly disseminated multi-source data from connected travelers, vehicles (automobiles, transit, freight) and infrastructure
- Develop and assess applications showing potential to improve nature, accuracy, precision and/or speed of dynamic decision
- Demonstrate promising applications predicted to significantly improve capability of transportation system
- Determine required infrastructure for transformative applications implementation, along with associated costs and benefits

#### **Project Partners**

 Strong internal and external participation: ITS JPO, FTA, FHWA R&D, FHWA Office of Operations, FMCSA, NHTSA, FHWA Office of Safety



# **Dynamic Mobility Application Bundles**

MMITSS: Multimodal Intelligent Traffic Signal System	
INFLO: Intelligent Network Flow Optimization	
<b>R.E.S.C.U.M.E.:</b> Response, Emergency Staging and Communications, Uniform Management, and Evacuation	
Enable ATIS: Enable Advanced Traveler Information Systems	Ĩ
IDTO: Integrated Dynamic Transit Operations	
FRATIS: Freight Advanced Traveler Information Systems	





# R.E.S.C.U.M.E.





# Response, Emergency Staging and Communications, Uniform Management, and Evacuation

 Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG)



- Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE)
- Emergency Communications and Evacuation (EVAC)



# Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG)

- Situational awareness info to responders while en route
- Input to responder vehicle routing, staging and secondary dispatch decisions
  - Staging plans
  - Satellite imagery
  - GIS data
  - Current weather data
  - Real-time modeling outputs



Source: Oconto County, WI



# Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE)

## **Two components**

- Alerts drivers of lane closings and unsafe speeds for temporary work zones
  - Could be augmented with merging and speed guidance to drivers.
- 2. Warns on-scene workers of vehicles with trajectories or speeds that pose a high risk to their safety





# **Emergency Comm and Evacuation (EVAC)**

# Addresses the needs of two different evacuee groups:

- 1. Those using their own transportation
  - Dynamic route guidance information
  - Current traffic and road conditions
  - Location of available lodging
  - Location of fuel, food, water, cash machines and other necessitates

## 2. Those requiring assistance

- Identify and locate people who are more likely to require guidance and assistance
- Identify existing service providers and other available resources









# **The Rural Connection**

### INC-ZONE

 Warn public safety and transportation responders of imminent dangers in highrisk rural incident zones

### **RESP-STG**

- Enhances incident response and departure times (e.g., ambulance departing the crash scene for hospitals)
  - Closures can be more challenging given limited alternate routes and spacing of rural roadways

## EVAC

- Supports large-scale regional evacuations that traverse rural areas
  - Hurricane Rita, estimated 3.7 million people evacuated the Texas coastline
    - 107 evacuation-related fatalities 24 on bus with poor maintenance records
    - Motorists stranded for hours without fuel, lodging, food and water



# R.E.S.C.U.M.E. Program Status

### Phase I (FY12-FY13)

 Completed ConOps, Systems Requirements Document, and Test Readiness Assessment

## Phase II (FY13-FY14)

- Prototype Development and Testing
  - Develop and test prototypes for INC-ZONE and RESP-STG
  - Define an architecture for EVAC and identify institutional issues
  - Awarded to Battelle/UMD-CATT team; kickoff 8/28/2013
- Impacts Assessment
  - Estimate impacts of integrated multi-application deployments using standardized messages and shared communication networks
  - Awarded to Booz Allen; kickoff in mid-September



# DMA and R.E.S.C.U.M.E. Outlook

## Phase III Demonstrations (FY15-FY16)

- Showcase promising integrated system alternatives identified in the Phase II development and testing. Not every demo will include every bundle or application.
- Demo sites and applications to be selected in FY15.

## **Key Assumptions/Expectations**

- Overall market penetration of connected vehicles in this timeframe will be relatively low
- Market penetration of connected travelers with mobile devices may be higher
- New forms of data capture must be integrated with legacy systems
- Private sector likely to play an important role



## **For More Information**



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