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

Theodore A. Smith, PMP
National Rural ITS Conference – Session S1
Response, Emergency Staging and Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.) Overview and Status
August 29, 2011
Coeur d’Alene, Idaho
Presentation Overview

- Introduction to the DMA Program
- R.E.S.C.U.M.E. application bundle overview
- R.E.S.C.U.M.E. status next steps
- Questions/Comments
ITS Research = Multimodal and Connected

To Improve Safety, Mobility and Environment

Research of technologies and applications that use wireless communications to provide connectivity:
- Among vehicles of all types
- Between vehicles and roadway infrastructure
- Among vehicles, infrastructure and wireless consumer devices

FCC Allocated Spectrum at 5.9 GHz for Transportation Safety (known as DSRC)
Major Objectives

- Move aggressively on vehicle to vehicle communications
  - Regulatory Decision on In-Vehicle Equipment by 2013
- Accelerate in-vehicle technology
  - “Here I Am” messages
  - Aftermarket Safety Systems
  - Enables safety and active traffic management
- Accelerate infrastructure communications capability
  - Signal Phase and Timing (SPaT) as initial focus
  - Enables safety, mobility, and environmental applications
- On road multi-modal pilot deployments for high-value applications
- Monitor and evaluation of driver distraction issues
- Understand data and communications needs (DSRC/other) of transformative mobility applications – and the potential benefits of these applications
## ITS Research Program Components

### Applications

<table>
<thead>
<tr>
<th>Safety</th>
<th>Mobility</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>V2V</td>
<td>Real Time Data Capture &amp; Management</td>
<td>AERIS</td>
</tr>
<tr>
<td>V2I</td>
<td>Dynamic Mobility Applications</td>
<td>Road Weather Applications</td>
</tr>
<tr>
<td>Safety Pilot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Technology

- Harmonization of International Standards & Architecture
- Human Factors
- Systems Engineering
- Certification
- Test Environments

### Policy

- Deployment Scenarios
- Financing & Investment Models
- Operations & Governance
- Institutional Issues
Mobility Program

Real-time Data Capture and Management

- Vehicle Status Data
- Infrastructure Status Data
- Weather Data
- Truck Data
- Transit Data
- Location Data

Data Environment

Dynamic Mobility Applications

- Reduce Speed 35 MPH
- Transit Signal Priority
- Weather Application
- Real-Time Travel Info
- Fleet Management/Dynamic Route Guidance
- Signal Phase & Timing Adjusts Real-Time Conditions
- Safety Alerts and Warnings

U.S. Department of Transportation
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

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

Transformative Mobility Applications
(May have more impact when BUNDLED together)
Transformative Application Bundles: Bundling Rationale and Prioritization Process

- Consolidate input from external stakeholder groups, workshop
- Consider internal stakeholder priorities
  - Leveraging on-going or other planned research
- **Group Applications into Bundles**
  - Similar high-level data needs
  - Interaction among applications predicted
  - Evident value in concurrent development
  - Encourage coordinated non-federal research activity
- **Bundling increases transformational impacts and reduces costs of research and development**

- Resource-constrained prioritization process based on expected value of developing application bundles, as well as individual applications
  - Applications the program cannot fund at this time are still candidates for collaborative development with other programs or stakeholders
- **High-Priority Application Bundles announced at TRB 2011**
Advanced vehicle-to-vehicle safety messaging over DSRC to improve safety of emergency responders and travelers:

- Emergency Communications and Evacuation (EVAC)
- Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG)
- Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE)
- Mayday Relay (MAYDAY)
Emergency Communication and Evacuation

- Addresses the needs of two different evacuee groups:
  - Those using their own transportation
    - Dynamic route guidance information,
    - Current traffic and road conditions,
    - Location of available lodging, and
    - Location of fuel, food, water, cash machines and other necessitates
  - Those requiring assistance
    - Identify and locate people who are more likely to require guidance and assistance
    - Identifies existing service providers and other available resources
Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG)

- Situational awareness to public safety responders while enroute to establish safer incident work zones
- Valuable input to responder and dispatcher decisions and actions
- Range of data to responders through mobile devices to help support public safety responder vehicle routing, staging and secondary dispatch decision-making, including:
  - 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 and warns drivers of lane closings and unsafe speeds for the temporary work zones
    - Could ultimately be augmented with the provision of merging and speed guidance to drivers.
  - Warns on-scene workers of vehicles with trajectories or speeds that pose a high risk to their safety
    - Workers in the zone (e.g., law enforcement) could then be warned of the risk via an audible warning that is delivered via earpiece or some other device

Source: John Bodie
Mayday Relay (MAYDAY)

- When an enabled vehicle is involved in a crash, this application will automatically send a mayday message. When a passing enabled vehicle receives the mayday message, it will deliver it to a roadside hot spot.
- This information will then be relayed to the appropriate PSAP based on the crash location.

Source: Greg Carter Herald Sun
R.E.S.C.U.M.E. Status and Next Steps

- Initiate foundational research that will lead to second phase of focused development and testing
- Engage stakeholders in the public safety and transportation communities to further develop transformative concepts and to refine data and communications need
- Development of a Concept of Operations (ConOps) and functional requirements
- Identification and assessment of key technical and non-technical issues related to field-testing the R.E.S.C.U.M.E. applications
For More Information …

Linda Dodge
Chief of Staff / ITS - Public Safety Program Manager
US DOT
RITA – ITS Joint Program Office
Linda.Dodge@dot.gov
(202) 366-8034

Ted Smith, PMP
Principal
Noblis
theodore.smith@noblis.org
(202) 863-3647