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

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



MOBILITY

Research Overview

R.E.S.C.U.M.E. is the next generation of applications that transform the response, emergency staging and communications, uniformity of management, and evacuation process associated with incidents. The vision for R.E.S.C.U.M.E. is to leverage wireless connectivity, center-to-center communications, and center-to-field communications to solve problems faced by emergency management agencies, emergency medical services (EMS), public agencies, and emergency care givers as well as persons requiring assistance.

Background

Dynamic Mobility Applications (DMA) is a multimodal initiative led by the Intelligent Transportation Systems Joint Program Office (ITS JPO) within the U.S. Department of Transportation (USDOT) Research and Innovative Technology Administration (RITA). The DMA program seeks to identify, develop, and deploy innovative applications that leverage the full potential of connected vehicles, travelers, and infrastructure to increase system efficiency and improve individual mobility. The program's research has identified a collection of applications for development and testing, grouping applications with similar high-level data needs into bundles to increase impact and reduce the costs of research and development. R.E.S.C.U.M.E. is one of these bundles. Its applications will provide advanced vehicle-to-vehicle safety messaging over dedicated short-range communications to improve the safety of emergency responders and travelers.

Goals

The R.E.S.C.U.M.E. bundle of applications aims to leverage new information that helps quickly detect and assess incidents and their effects on traffic flow, model the evacuation flow and push information to evacuees, and help responders identify the best available resources and ways to allocate them in the timeliest manner. Government officials who conduct evacuations will have a better common operational picture, enhanced by greater communication with vehicles and roadside equipment, public safety personnel in the field, and the public itself. Public safety personnel in the field who are increasingly using portable communications devices (such as tablets and smartphones to supplement radios, cell phones, and mobile data terminals) will be able to provide real-time information to operations centers and traffic management centers, which will improve traffic and route guidance during incidents and evacuations.

The DMA high-priority application bundles include:

- Enable Advanced Traveler Information System (EnableATIS)
- Freight Advanced Traveler Information System (FRATIS)
- Integrated Dynamic Transit Operations (IDTO)
- Intelligent Network Flow Optimization (INFLO)
- Multi-Modal Intelligent Traffic Signal System (M-ISIG)
- Response, Emergency Staging and Communications, Uniform Management, and Evacuation (R.E.S.C.U.M.E.)



U.S. Department of Transportation

Research and Innovative Technology Administration



Some of the key gaps that R.E.S.C.U.M.E. applications will address include:

- Lack of shared situational awareness among first responders and other managers
- Lack of interoperability among communications systems
- Need for more timely warnings and notifications to general public
- Inadequate notification to incident scene work zone personnel and vehicles approaching the zones
- Insufficient information available on special needs populations to facilitate their evacuation and need for relocation.

Applications

The R.E.S.C.U.M.E. bundle includes the following applications:

- **Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG):** Provides situational awareness information to public safety responders while en route to an incident. This application can also help establish incident work zones that are safe for responders, travelers, and crash victims by providing input regarding routing, staging, and secondary dispatch decisions; staging plans; satellite imagery; GIS data; current weather data; and real-time modeling outputs. This new information is expected to provide more accurate and detailed information to support decisions and actions made by responders and dispatchers.
- **Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE):** This application bundle has two components—one that warns drivers that are approaching temporary work zones at unsafe speeds and/or trajectory, and another that warns public safety personnel and other officials working in the zone through an audible warning system.

- **Emergency Communications and Evacuation (EVAC):** This application bundle addresses the needs of two different evacuee groups:
 - For those using their own transportation, EVAC provides dynamic route guidance information; current traffic and road conditions; available lodging location; and location of fuel, food, water, cash machines, and other necessities.
 - For those requiring assistance, EVAC provides information to identify and locate people who are more likely to require guidance and assistance and information to identify existing service providers and other available resources.
- **Advanced Automated Crash Notification Relay (AACN – RELAY):** These applications could help transmit a range of data to other vehicles and roadside hot spots to enhance incident response. This information can then be forwarded to a public safety answering point. Some of the potential data elements include:
 - Data generated through in-vehicle systems that can assist responders. Examples of this type of data include vehicle location, number of passengers, seat belt usage, airbag status, point of impact, risks inherent with the type of vehicle (e.g., alternative fuel), airbag deployment, delta velocity of vehicle involved in crash, likelihood of injury, vehicle's final resting position (e.g., overturned), exact vehicle location (e.g., immediately adjacent to waterway), and infrastructure damage (e.g., bridge support)
 - Relevant medical information and patient history used to expedite lifesaving care
 - Electronic manifest data collected from commercial vehicles that are involved in an incident to identify load contents and hazmat risks.

For more information about this initiative, please contact:

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