

UASI Project Summary
Develop ITS Redundancy to Improve TMC Reliability
Yanlin Li -- ITS Division/IPMA
Natalie Jones-Best -- Emergency Preparedness and Risk Management
DDOT

Five Core Capabilities

- **Signal Control Redundancy**
- **Signal Power Redundancy**
- **Communication Redundancy**
- **Surveillance Capabilities**
- **Regional Coordinated Evacuation Signal Timing Plan**

Issue/weakness

The Intelligent Transportation Systems (ITS) in DDOT's Traffic Management Center (TMC) represent a potential single point of failure. Failure due to TMC destruction, inaccessibility, contamination, extended loss of power, or other circumstance would disable all modes of transportation within the National Capital Region, including Metro's rail and bus systems and the region's law enforcement, fire, and emergency medical services. This was demonstrated when the Montgomery County traffic management computer system failed during the first week in November 2009. Though 15 miles from DDOT, the event caused traffic chaos throughout the region. A primary system failure would also cause:

- 1) Loss of 140 camera views which provide real time awareness along evacuation routes. The camera views are distributed via TrafficLand to HSEMA, MPD, Media, RITIS, VDOT, MDOT, and and general public.
- 2) Loss of the capability of local traffic controllers to control timing of traffic signals during an emergency evacuation.
- 3) Loss of broadcast capability of the Highway Advisory Radios (HAR), a key communication element that supports public information during an evacuation.
- 4) Loss of all real time traffic detector data from DDOT to RITIS then to HSEMA, MDOT and VDOT. The region would lose a significant portion of the transportation situation awareness picture that is critical in emergency evacuation.
- 5) Loss of traffic incident information shared by the regional transportation entities.
- 6) HSEMA would lose the ability to control traffic from the TMC as well as the ability to view cameras along evacuation routes to confirm progress.

Any of the above would negatively affect an emergency evacuation or other situation needing emergency traffic management.

Project Summary

To address the concerns noted above, this project will develop a redundant Intelligent Transportation System (ITS) in a different location/facility, to include: traffic signal software, HAR, CCTV server, database services, dynamic message sign control, and related technologies. In addition it would provide a reliable back power supply for the system. The development will also include a video wall, work stations, and communication devices for TMC operators. This project will further address communication issues so that all

the data that would be received at the Reeves Center will be routed to the new back up facility to support emergency operations in the case of a primary center failure. This fully functional back up ITS system would be able to take over during any type of failure at the Reeves Center facility. The new system will mirror real-time traffic data and the functions of the Reeves Center TMC. The established fail-over process will enable the primary and back-up system to collectively improve the reliability of TMC operations under emergency conditions.

Currently, DDOT ITS is centered at the traffic management center (TMC) at the Reeves Center. This facility provides 24/7 operations and emergency transportation management. This facility has a significant role in the rapid mass evacuation of people in urban centers after large casualty events occurring due to any and all-hazards. All of the TMC functions depend on ITS system. Reliability of this system is crucial. In order to ensure the security of the region it is necessary to have a redundant ITS computer system operating at a different facility. This has become the industry standard for a mission critical system such as TMC/ITS. The National Capital Region, therefore, needs ITS resiliency and redundancy enhancements.

Estimated Cost: \$2.6 Million