

## Development of a Remote Sensing System for Rapid Post-Hazard Assessment of Transportation Infrastructure

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In the hours immediately following a hazard event such as an earthquake, tornado, hurricane or flood, it is necessary to quickly assess the status of critical infrastructure. Transportation features such as roads, bridges and airports are critical infrastructure that enable life and property saving activities such as evacuation, fire fighting and delivery of medical treatment. Currently, the preparation and delivery of geospatial imagery and map products following hazard events often takes 48 hours or more, and the utility of these products decreases significantly as time passes following the event. Delivery of geospatial products and situational awareness within the first few hours following a hazard is needed.

Funded by the U.S. Department of Transportation's (DOT) Commercial Remote Sensing and Spatial Information Technologies program, the University of New Mexico, San Diego State University and BAE Systems are developing and evaluating a remote sensing system for time-sensitive detection of fine-scale damage to transportation infrastructure. The system will include: collection of baseline imagery for critical transportation infrastructure features; repeat post-hazard collection with matched view geometry of airborne image frames; automated co-registration; automated change detection to cue an analyst of possible damage to critical infrastructure; and a customized interface enabling analysts to review image pairs corresponding to specific transportation features of interest and to document and disseminate information about damage identified. The team will present initial results of 1) surveys of DOT personnel regarding the types and timeliness of information needed, 2) analysis of the time required for collection and delivery of information products with various airborne platforms and imaging systems, 3) development of automated airborne image co-registration and change detection routines, and 4) development of the custom user interface.