



RESEARCH PROJECT CAPSULE [23-5SS]

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TECHNOLOGY TRANSFER PROGRAM

Improved Incident Response through Coordinated, Interoperable Communications

JUST THE FACTS:

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24 months

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SPR: TT-Fed/TT-Reg – 5

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POINTS OF INTEREST:

Problem Addressed / Objective of
Research / Methodology Used /
Implementation Potential

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PROBLEM

Traffic incidents on U.S. highways require a coordinated and efficient response to reduce exposing travelers' and responders' lives to risk and lower delays. Congestion resulting from incidents can lead to secondary crashes, further increasing safety risks and economic costs. As defined by the Federal Highway Administration (FHWA), Traffic Incident Management (TIM) is "a planned and coordinated process to detect, respond to, and remove traffic incidents and restore traffic capacity as safely and quickly as possible" [1]. TIM involves multiple public agencies and private-sector partners coordinating to achieve a quick road clearance and opening. Communication plays a critical role in TIM by coordinating personnel and resources for an effective response to incidents. Intelligent Transportation Systems (ITS) have provided opportunities for better interagency communications, exchange of information, and data sharing through interoperable platforms. ITS integration with TIM has resulted in several benefits including improved incident notification and verification, better situational awareness, faster mobilization of resources, and quicker clearance times. Current interoperable systems provide additional capabilities, such as instant communications, event monitoring, multi-channel communications, and measurement tools with analytics and reporting. Other features are the use of GIS map backgrounds, improved data sharing with multimedia sharing abilities, use of web-based platforms, and the ability to connect several devices (phones, radios, computers, tablets, etc.) on a single web-based application. These enhanced features provide response agencies with the means to instantly collect and share data seamlessly across agencies with the use of cloud services [2]. This research will carry out an operational and functional needs assessment of TIM in Louisiana to determine areas that may be improved with an interoperable web-based communication platform known as Mutualink. A Field Operations Test (FOT) will also be undertaken on integrating Mutualink with the Traffic Management Centers (TMCs) and other TIM communication systems. During these tests, communication issues, coverage issues, lag, and other implementation issues will be identified along with proposed solutions. Finally, an economic analysis will be done to analyze the benefits and cost of integrating Mutualink into TIM operations.

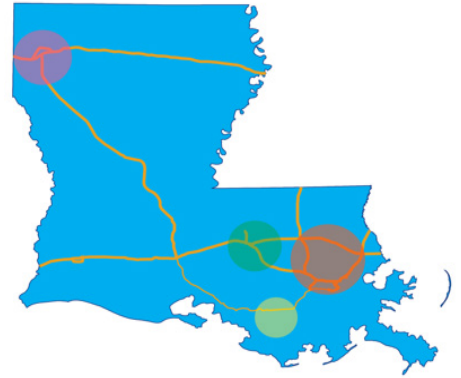


Figure 1. Traffic management centers in Louisiana [3].



Figure 2. Flooded highway in Louisiana [3].

OBJECTIVE

The objectives of this study are to:

- Carry out an operational needs assessment and a performance evaluation of the state's TIM.
- Perform a functional analysis of the Mutualink system.
- Carry out a benefit cost analysis of integrating Mutualink into the state's TMC.

METHODOLOGY

- Conduct an information review.
- Evaluate TIM system in Louisiana.
- Establish TIM evaluation criteria and benchmarks.
- Demonstrate Mutualink use to stakeholders.
- Conduct a field operations test of Mutualink.
- Perform a functional and performance evaluation of Mutualink.
- Conduct a benefit-cost analysis of integrating Mutualink into TMCs in Louisiana.

IMPLEMENTATION POTENTIAL

The outcome of this research will make it possible to integrate an interoperable communications platform into TMCs, which will allow for better coordination and communications during incident response by taking advantage of the power of the internet. A statewide deployment of an interoperable system could be instrumental in natural disaster response and reduce crash fatalities, given Louisiana's high crash rate. Such a system would improve the efficient operations of incident response in the state.

REFERENCES

1. FHWA, "Next-Generation TIM: Integrating Technology, Data, and Training," 15 December 2022. [Online]. Available: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_6/nextgen_tim.cfm.
2. Mutualink, "Public Safety: Connecting for a Safer Response," 2022. [Online]. Available: <https://mutualink.net/public-safety/>.
3. M. Nickles, Louisiana TMC and MAP ITS Presentation [Power Point Slides]. DOTD, 2022.