

## Measuring Systems Interoperability: A Focal Point for Standardized Assessment of Regional Disaster Resilience

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**Abstract :** The key argument of this research is that every element of systems interoperability is an enabler of regional disaster resilience, and arguably should become a focal point for standardized measurement of communities' ability to work together. Few resilience research efforts have focused on the development and application of solutions that measurably improve communities' ability to work together at a regional level, yet a majority of the most devastating and disruptive disasters are those that have had a regional impact. The key findings of the research include a unique theoretical, mathematical, and operational approach to tangibly and defensibly measure and assess systems interoperability required to support crisis information management activities performed by governments, the private sector, and humanitarian organizations. A most effective way for communities to measurably improve regional disaster resilience is through deliberately executed disaster preparedness activities. Developing interoperable crisis information management capabilities is a crosscutting preparedness activity that greatly affects a community's readiness and ability to work together in times of crisis. Thus, improving communities' human and technical posture to work together in advance of a crisis, with the ultimate goal of enabling information sharing to support coordination and the careful management of available resources, is a primary means by which communities may improve regional disaster resilience. This model describes how systems interoperability can be qualitatively and quantitatively assessed when characterized as five forms of capital: governance; standard operating procedures; technology; training and exercises; and usage. The unique measurement framework presented defines the relationships between systems interoperability, information sharing and safeguarding, operational coordination, community preparedness and regional disaster resilience, and offers a means by which to implement real-world solutions and measure progress over the course of a multi-year program. The model is being developed and piloted in partnership with the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T) and the North Atlantic Treaty Organization (NATO) Advanced Regional Civil Emergency Coordination Pilot (ARCECP) with twenty-three organizations in Bosnia and Herzegovina, Croatia, Macedonia, and Montenegro. The intended effect of the model implementation is to enable communities to answer two key questions: 'Have we measurably improved crisis information management capabilities as a result of this effort?' and, 'As a result, are we more resilient?'

**Keywords :** disaster, interoperability, measurement, resilience

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