



Project Challenge

The entire project experienced delays due to COVID in terms of data collection and research design.

Proposed in-person emergency drills may have liability risks and the team is open to virtual drills and/or university campus drills instead of emergency managers participating in their communities.

Major Outcomes/Progress

Emergency Managers and Operators Web Survey in Florida

Conducted a quantitative web survey of public-private partnerships (PPP) in EM, worked with the Florida Emergency Preparedness Association (FEPA) to distribute the survey to all emergency managers and operators (EMOs) in the State of Florida, presented findings at multiple conferences, and publishing manuscripts.

Organizational and Community Resilience Analyses

Developing a more generalized model for quantifying resilience that allows for more flexibility in defining resilient behavior. The model allows for simultaneously assessing resilience in the form of either loss of functionality due to a disruptive event or unexpected gain in functionality due to such an event.

Social Media Analysis on Organization Social Networks in Emergencies

Collected tweets from 252 agencies from the ECF region during Hurricane Irma and the COVID-19 period. Developed a comprehensive list of 377 relevant organizations with their ESFs, produced engagement scores compared to other levels of organizations, conducted literature reviews, presented at conferences, and publishing manuscripts.

311 Non-Emergency Call Reports Analysis in Orange County

Conducted a series of preliminary analyses that focused on the COVID-19 pandemic using the complete set of 311 requests made in Orange County. Presented findings at conferences, and publishing manuscripts.

East Central Florida (ECF) Community Resilience Data Depot (CoRD²)

Designing a web-based software system - CoRD², porting all the existing data collected by East Central Florida Regional Planning Council into this platform, extending CoRD² to mobile devices, extending the functionality to more counties, and implementing a deep neural model ranking images for the level of disasters.

Emergency Risk Communication Drill

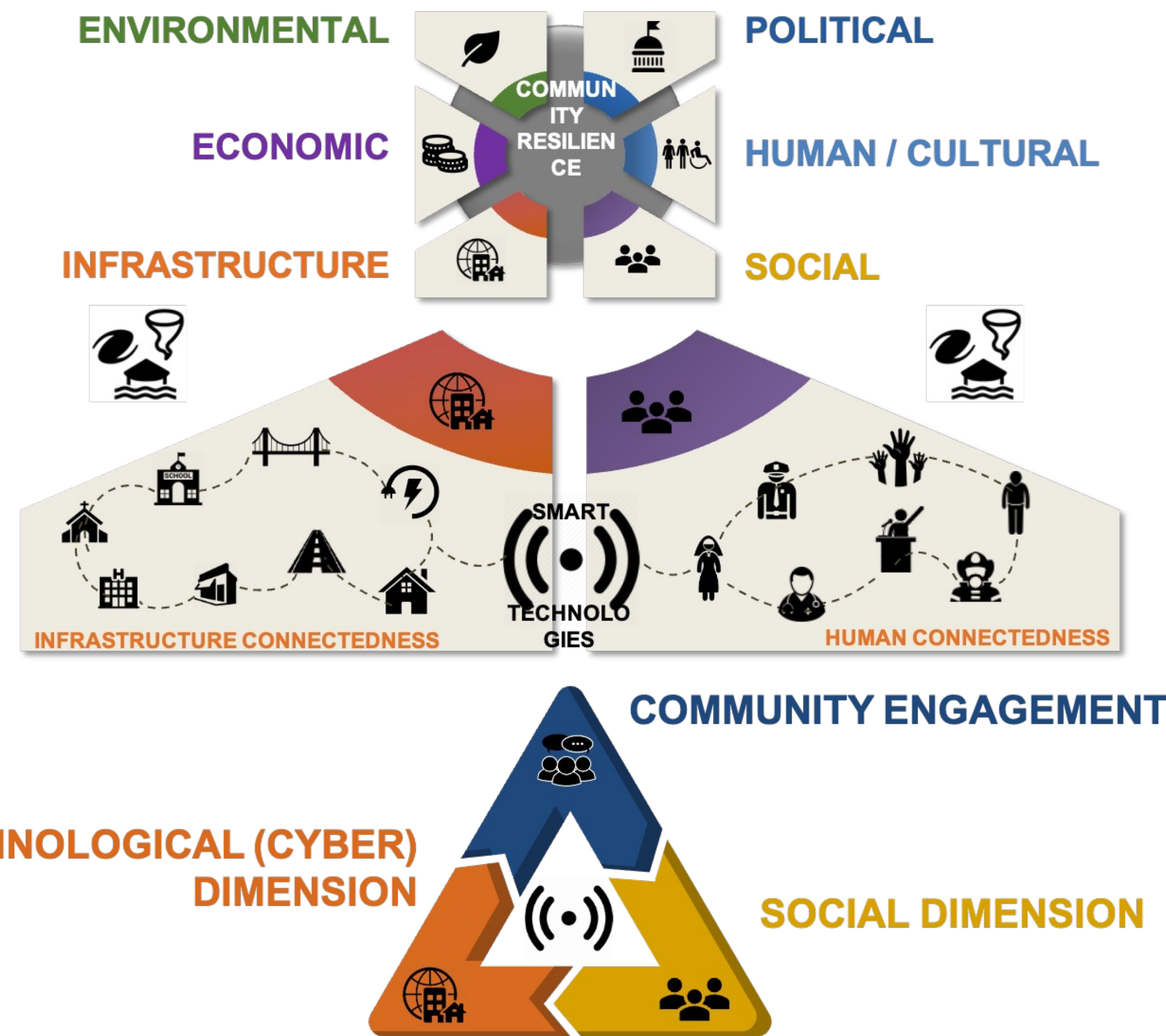
Developing an emergency drill application and comparing the data quality between the drill application with STAVA, developing a mobile application to make real-time text/image communication available during simulated and real events, and extract individual trajectory data during an emergency drill event.

GRA Alumni Job Placements

2 TT Assistant Professors at U New Hampshire and U South Florida

3 Postdocs at Universidad Pablo de Olavide, HEC Montreal, and Colorado State U

1 Research Scientist at OpenAI



Broader Impact

Providing a deeper understanding of the understudied aspects of emergency management PPPs and creating opportunities for emergency managers, policymakers, and researchers to use the proposed conceptual EMO PPP framework in other settings.

Identifying potential gaps between the design and implementation by analyzing policy, plan, and actual partnerships.

Understanding which specific local agencies are leading in disseminating information on social media platforms during a disaster, measuring the engagement of these agencies with respect to their crisis-communication posts, and understanding whether the ESFs of these agencies correlate with the engagement of their crisis-communication posts.

Leveraging 311 data analyses results to develop opportunities for more effective crisis communication and decision-making support, and reveal Wi-Fi access disparities as evidence for Orange County to add Wi-Fi capacity to socially vulnerable communities to disasters in using web and mobile services to report non-emergency and emergency needs.

Future Goals

Complete the CoRD² web portal and mobile app developments.

Conduct an emergency drill in late spring 2024.

Complete a culminating subproject on measuring community resilience functionality and its changes over time.

Intellectual Merit

- **The research involves:**

Developing an integrative framework to evaluate smart technology advances that foster community partnerships and enhance community connectedness in resilience management.

Filling research gaps in modeling community partnership characteristics and examining the design and implementation networks among cross-sector partners for community resilience.

Creating a holistic approach to comparing community resilience functionality changes by research intervention of a simulated event.

Building CoRD² for resilience data sharing and integration among public, private, and nonprofit sectors to support real-time collective decision making.

- **The novel methodologies include:**

Collecting and calibrating multi-dimensional data from behavioral surveys, policy and plan documents, social media posts, and an in-house drill with pre-/post-surveys.

Creating converged metrics for evaluating community resilience from an organizational perspective.

Providing next-generation computational solutions for processing disaster response data flowing in the CoRD² as peak influxes.

Developing real-time machine learning algorithms and software capacities for social media big data analytics (texts and images).

Modeling organizational resilience capacity and multidimensional community resilience functionality.

