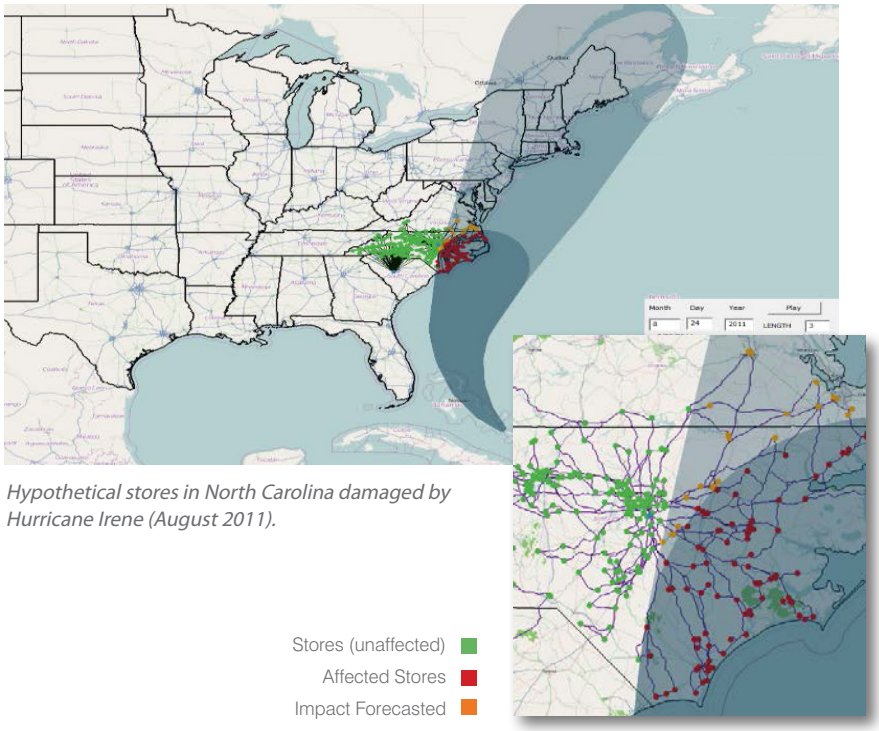
VASA— Visual Analytics for Security Applications

goal:

To effectively analyze emergency situations caused by severe weather conditions and natural disasters. Our system presents historical and simulated events where users can instantly consider various scenarios, alternative, operational and simulation attributes. Based on these decisions and parameters, new simulations may be run to explore the effects on multiple critical infrastructures (e.g., power, computer networks, water, transportation, sewer) and the effectiveness of contingency plans and mitigation strategies.

One example is a franchise food network where food delivery routes need to be changed based on store and infrastructure damage. In our visual analytics environment, analysts and decision-makers can effectively monitor the situation, understand the impact of these storms on critical infrastructure, and evaluate potential re-routed road paths for the food network with adjusted parameters.

how it works:



Hypothetical stores in North Carolina damaged by Hurricane Irene (August 2011).

early development — lab prototype — commercial product

Benefit:

This system provides a visual analysis and decision making environment for severe weather and natural disaster planning and response for several critical infrastructures (e.g., power, computer networks, food distribution). Business officials and local officials can use this tool to evaluate continuity of operation plans, plan for contingencies, prepare for, and respond to a severe weather event or natural disaster. Rerouting suggestions for food distribution centers impacted by a severe weather occurrence to facilitate decision-making in emergency situations.

Data Layers:

- Infrastructure geolocations
- Distribution routes
- Economic and business models
- Weather event data

Collaborators:

- Purdue University (Lead)
- Texas Advanced Computing Center
- University of Minnesota
- University of North Carolina at Charlotte

VACCINE
Visual Analytics for Command, Control and Interoperability Environments
A U.S. Department of Homeland Security Science and Technology Center of Excellence

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