Disaster Application for Decision-makers

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Introduction

- UCSD PRIME Research Program
- SAGE2 Application Development
- Disaster Application for Decision-makers (DAD)

Disaster Management Cycle

- **Mitigation** – Preemptive actions to reduce severity, consequences, and risks to people
- **Preparedness** – range of critical tasks and activities necessary to build, sustain and to improve operational capability to prevent, protect against, respond to, and recover from disaster
- **Response** – immediate/ongoing activities and systems to manage the effects of an incident and help reach a stable status for the entity
- **Recovery** – programs designed to return conditions to a level that is acceptable to the entity. Assisting victims and restore institutions. Rebuilding.

Research Objective

- Deployment of a multi-site visualization tool for disaster management
- Design Objectives
  - Being able to geographically visualize regions of interest
  - Being able to access multiple unique datasets to gauge disaster action choices
  - Selectively view and toggle relevant datasets
- The application needs to be streamlined, straightforward, and transparent to the user

Methods

- Development on a Scalable Amplified Group Environment (SAGE2)
  - A shared multi-site collaborative environment for viewing and interacting with content

- JavaScript
  - Leaflet Map, D3, and Heatmap Libraries
  - Data Broker (JSON datasets)
  - HTML Document Object Model (DOM)

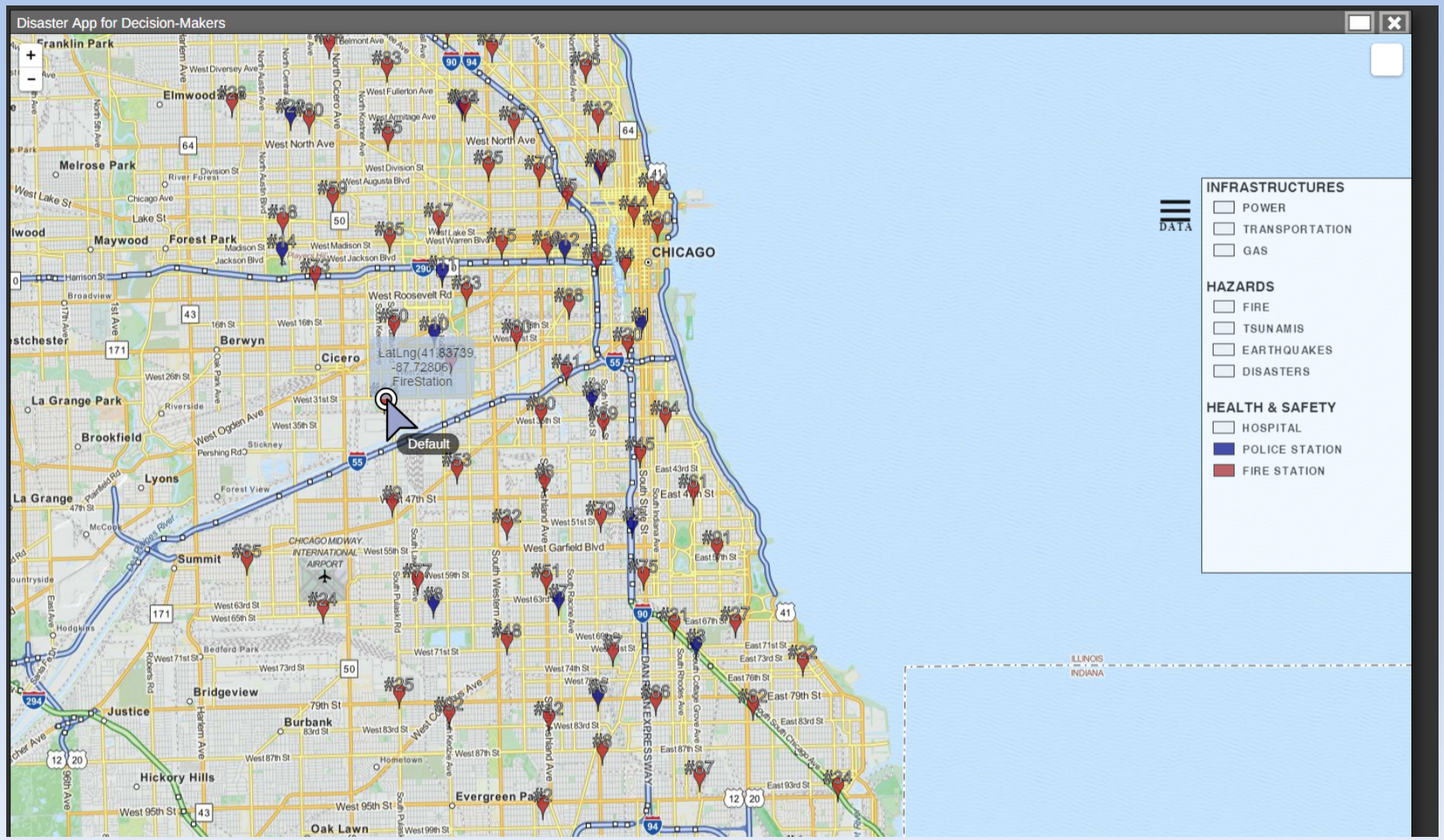
Application Demo

- Created a working prototype SAGE2 application with a simple user interface
- Allows user to link JSON datasets and tag them with keywords through the data broker
- Users can see both static 2D data and 3D data with the heat map layers
- Show the feasibility of creating a data-intensive application on SAGE2

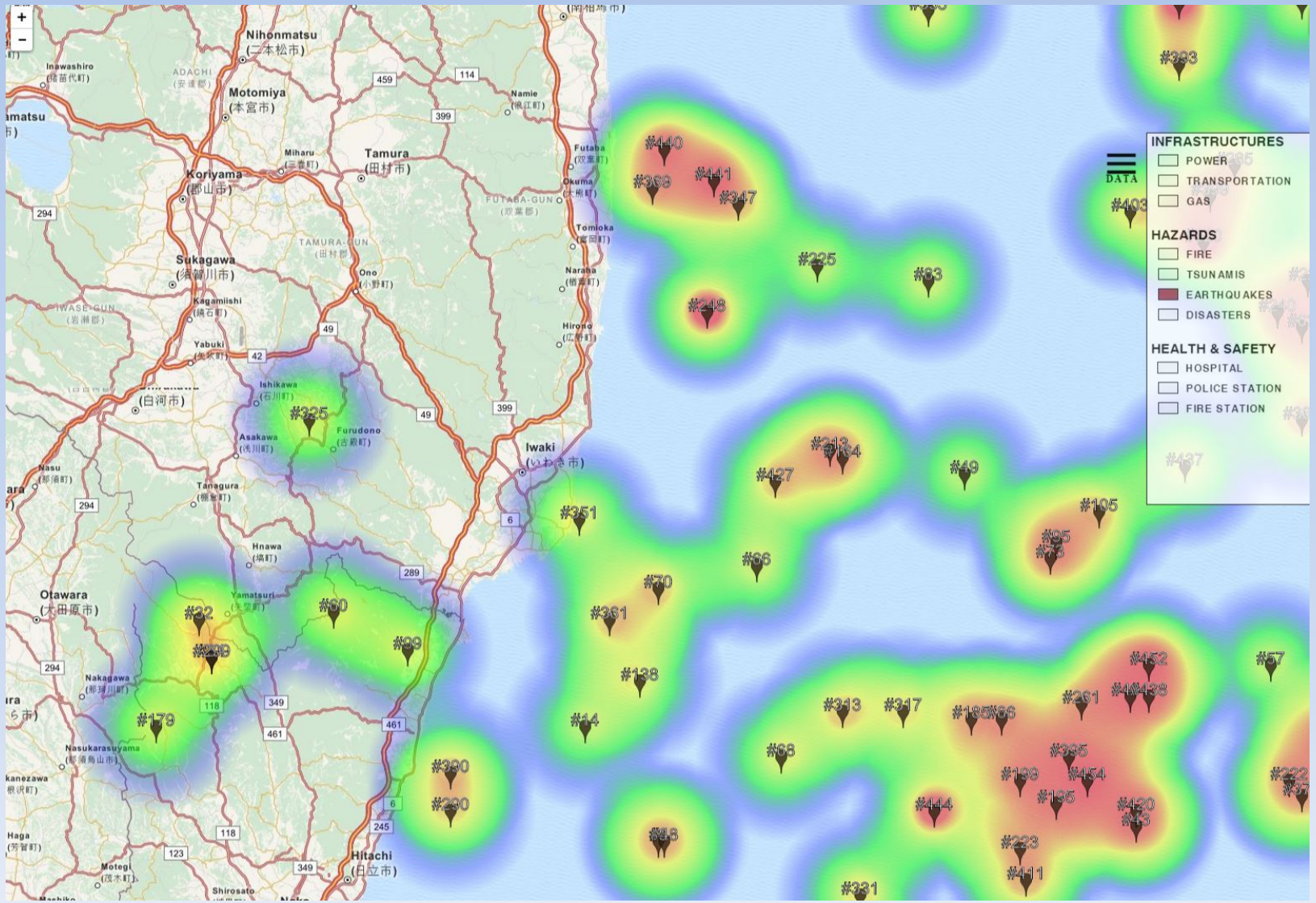
Demo

- Show here

Point data of police and fire stations (City of Chicago, 2015)



Heat map of historical earthquake data (East Coast of Japan, 2011)



Conclusion

- DAD displays coordinate-specific and area-specific JSON data based on the user's input
- No real-time application due to lack of an available dataset
- Prototype functional application with real-world data
- First disaster management application for the SAGE2 platform

Future Work

- Integration of different types of datasets
- More advanced data broker
- More detail each data point
- Tuning the heat map feature
- Further testing with real-time data
- Further UI improvements

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SAGE2™

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