emprata

CLIENT: Rensselaer Polytechnic Institute (RPI)
Center for Infrastructure, Transportation, and the Environment (CITE)
PROJECT: Access Restoration Planning (ARP)

THE CHALLENGE

CITE investigates complex transportation, infrastructure, and environmental problems and assists in developing approaches for alleviating these issues. One area of research where CITE focuses its efforts is Disaster Response, where the goal is to efficiently allocate resources for clearing access to critical infrastructure after extreme events.

Along with its partners, RPI developed a mathematical model using city data and social parameters (e.g., priority valuations, private costs, resource capacities) to determine optimal restoration paths. Emprata was contracted to build a decision support tool to integrate the components of the ARP model and visualize its solution.

OUR SOLUTION AND RESULTS

Emprata created a practical decision support tool that gives its users the ability to quickly apply the ARP model and take informed actions for providing immediate disaster assistance.

Our team of Java developers and GIS specialists used leading-edge architecture and geospatial platforms to develop a product that allows users to:

- Upload and view city data (e.g., entry points, critical infrastructure points, road inks, restoration times) and define the parameters used by the model
- Upload satellite images that quantify the amount of debris swept onto a roadway, in order to then calculate restoration times
- Manually define any entry points or critical infrastructure points that are directly affected by the extreme events
- Create and run multiple scenarios, allowing decision makers to evaluate alternative solutions based on varying considerations
- View the results of the model interactively through a data visualization dashboard

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