Archived Content

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An Advanced Platform for End-to-End Hurricane Evacuation Planning, Training and Execution

Emergency managers (EMs) handle the challenge of planning for tropical cyclone impacts by developing detailed evacuation plans, preparing staff through training exercises and evaluating real-time forecasts to determine if evacuations are necessary. Currently, each of these tasks is performed on separate platforms that do not share the same interfaces, data standards or product integration. A 2013 Department of Homeland Security (DHS) Science and Technology Directorate (S&T) funded gap analysis concluded that an upgraded hurricane decision support platform should be developed to integrate all phases of hurricane planning and evacuation decisions. Since then, DHS S&T, in collaboration with the Federal Emergency Management Agency via the National Hurricane Program (NHP) Technology Modernization effort, has been working to enhance the Hurricane Evacuation or HURREVAC storm tracking and decision support platform, a computer based tool commonly used throughout the emergency management community. The end product for this effort will be known as the HURREVAC-eXtended (HV-X) platform.

Component Architecture of HV-X
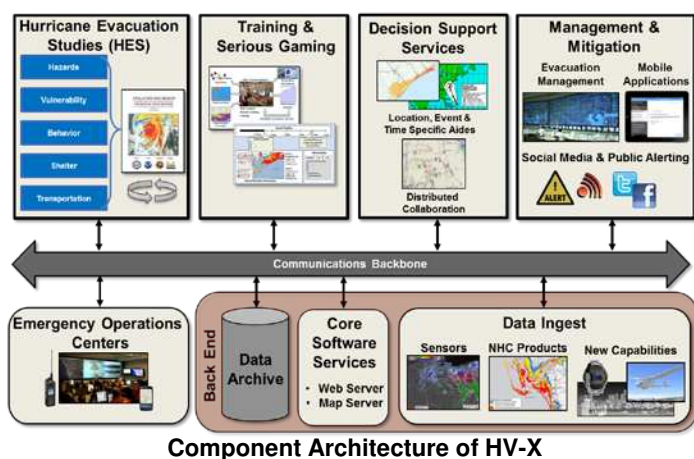
HV-X Capabilities

The goal of the NHP Technology Modernization effort with respect to the integrated HV-X platform is to create a flexible system with new and updated technology that enables EMs to make timely and accurate evacuation related decisions. The new system will be applicable in a variety of contexts, including evacuation studies, planning, training, evacuation decision-making and response. The ability to utilize HV-X as a multi-purpose tool allows users to become more familiar with the interface, reducing the need for training on multiple tools and processes. To avoid the clutter of an interface that is all things to all users, DHS S&T, in partnership with MIT Lincoln Laboratory, is developing a series of cascading interfaces which will allow users to interact with the tool based on their task needs. The HV-X extends the capability and utility of the existing HURREVAC tool in several ways:

- Utilization of a Web-based thin client architecture built with open-source software components; increasing ease of use, data collaboration and deployment and allowing for operation on mobile devices.

- Creation of open-source geospatial data sharing services to maximize the available data sources and minimize the overhead of integrating new data.

- Institution of a series of navigation aids that assist the user in seamlessly accessing, analyzing and viewing data temporally and spatially.

- Incorporation of decision analytics to enable users to better assess impacts and uncertainty.

- Creation of a storm surge explorer for viewing both planning and operational storm surge flood risk data, including the ability to view storm surge risk areas for applicable combinations of Maximum Envelopes of Water, which allows for improved understanding of storm surge risk from an approaching hurricane prior to the availability of probabilistic storm surge data and products.

- Integration with a modular Hurricane Evacuation Study (HES) process that will allow not only integration of the HES components, but also the ability to utilize sub-modules of HES within the decision-making and training processes.

- Integration of serious gaming capabilities into the HV-X platform, including automated simulation capabilities, decision-focused training modules and feedback mechanisms for improved decision-making.

- Creation of a simplified storm track simulation and advisory generator to enable EMs to create new training scenarios on their desktop.