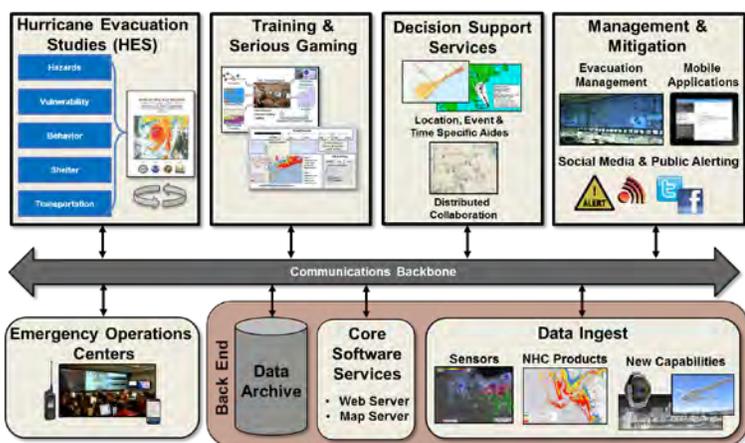


# DHS Science and Technology Directorate National Hurricane Program Technology Modernization HURREVAC-eXtended Portfolio

## An advanced platform for end-to-end hurricane evacuation planning, training, and execution

Emergency Managers 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. Each of these tasks are currently performed on separate platforms that do not share the same interfaces, data standards, or product integration. One of the primary conclusions from a 2013 DHS S&T funded gap analysis was that a new hurricane decision platform should be developed that integrates all phases of hurricane planning and evacuations. Since then, DHS S&T, in collaboration with FEMA via the National Hurricane Program Technology Modernization effort, has been working to streamline the HURREVAC storm tracking and decision support platform, a computer based tool commonly used throughout the Emergency Management community. The end product in this effort will be known as HURREVAC-eXtended (HV-X), a more integrated decision support platform that ingests all of the necessary forecast and planning data and provides decision support tools and products and incorporates all of the functions into one interface.



Component Architecture of HV-X

## HURREVAC-eXtended (HV-X)

The goal of the NHP modernization in terms of 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. 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.
- Improved display and data interrogation capabilities using open-source geospatial data sharing services to maximize the available data sources and minimize the overhead of integrating and sharing new data.
- Instituting a series of navigation aids that assist the user in seamlessly accessing and viewing data. For example, an interactive timeline would visually depict key decision times, view data by storm and local time, and navigate storm forecasts and layers on the map.
- Incorporation of new EM-decision layer products with locally specific analytics and visualizations into the decision making process, and improved decision support tools that will enable users to better assess impacts and uncertainty.
- Creation of a storm surge explorer for combining single-scenario Maximum Envelopes of Water (MEOW) into super-MEOWs. By combining this technique with National Hurricane Center (NHC) forecasts, EMs can carefully constrain the worst-case storm surge from Maximum of the Maximums (MOM) at 5 days to prototype storm Surge (p-Surge) at 48 hours.
- Integration with a modular Hurricane Evacuation Study (HES) process that will allow not only



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interrogation of the HES components, but the ability to utilize sub-modules of HES within the decision-making and training process.

- 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 at their desktop.

