Virtual USA Generation III Prototype

The Problem

Real-time, actionable, location-based information is critical during day-to-day and emergency response operations that may require the interaction of multiple jurisdictions and disciplines. Today, much of this critical information is being shared by first responders via fax or email. While some states have or are building state-level emergency response geospatial information systems (GISs) and map viewers, many do not have this capability. These systems are typically designed to support the operational needs of individual states or agencies, and state emergency information has therefore become what is referred to as "siloed"— that is, available within one state, but not to other states.

Virtual USA

To address these communications challenges, the U.S. Department of Homeland Security (DHS) Science and Technology (S&T) Directorate created the Virtual USA (vUSA) initiative—a cost-effective, nationwide capability that significantly improves information sharing and decision making during day-to-day and emergency operations. vUSA integrates existing information-sharing systems to enable collaboration across jurisdictional boundaries with trusted partners.

A Virtual USA Solution – The Generation III Prototype

S&T captured requirements for state and regional information sharing from state emergency management officials and homeland security agencies participating in vUSA's Southeast Regional Operations Platform Pilot (SE ROPP) and Pacific Northwest (PNW) Pilot. Based upon these recommendations, existing intrastate information-sharing activities were leveraged, resulting in the development of a series of prototype information-sharing systems that established an evolving model for a vUSA national information-sharing prototype. This vUSA Prototype provides a Web-based, trusted environment and a common space for users to discover and share information in real time. Further, the Prototype improves access to once siloed GIS information by providing a trusted space in which users can effectively share actionable information with one another.

The Prototype functions as a dynamic library. Each participating organization—states, Federal agencies, and the private sector—decide what information they want to post in their own library and with whom they want to share it. When users consult these libraries, they only see the information the data owner wants them to see. Common information is shared among all users while other information is only made available to a subset of users (i.e., those with specific roles in specific partner organizations), at the discretion of the data owner. This illustrates a critical tenet of vUSA's governance—empowering authorized users to decide what information they share, with whom, when, for how long, and in what format(s). Through S&T's interactions with users, it has been learned that users are more comfortable sharing important information with trusted partners when they maintain constant control over their own information. Sharing data links within the vUSA Prototype environment, rather than sharing the actual data itself, maintains data ownership and also ensures the data is current.

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Building upon a functional assessment of the Generation II Prototype, lessons learned, and best practices derived to this point—combined with SE ROPP state recommendations regarding the need for additional functionalities—the Generation III (Gen III) Prototype was developed.
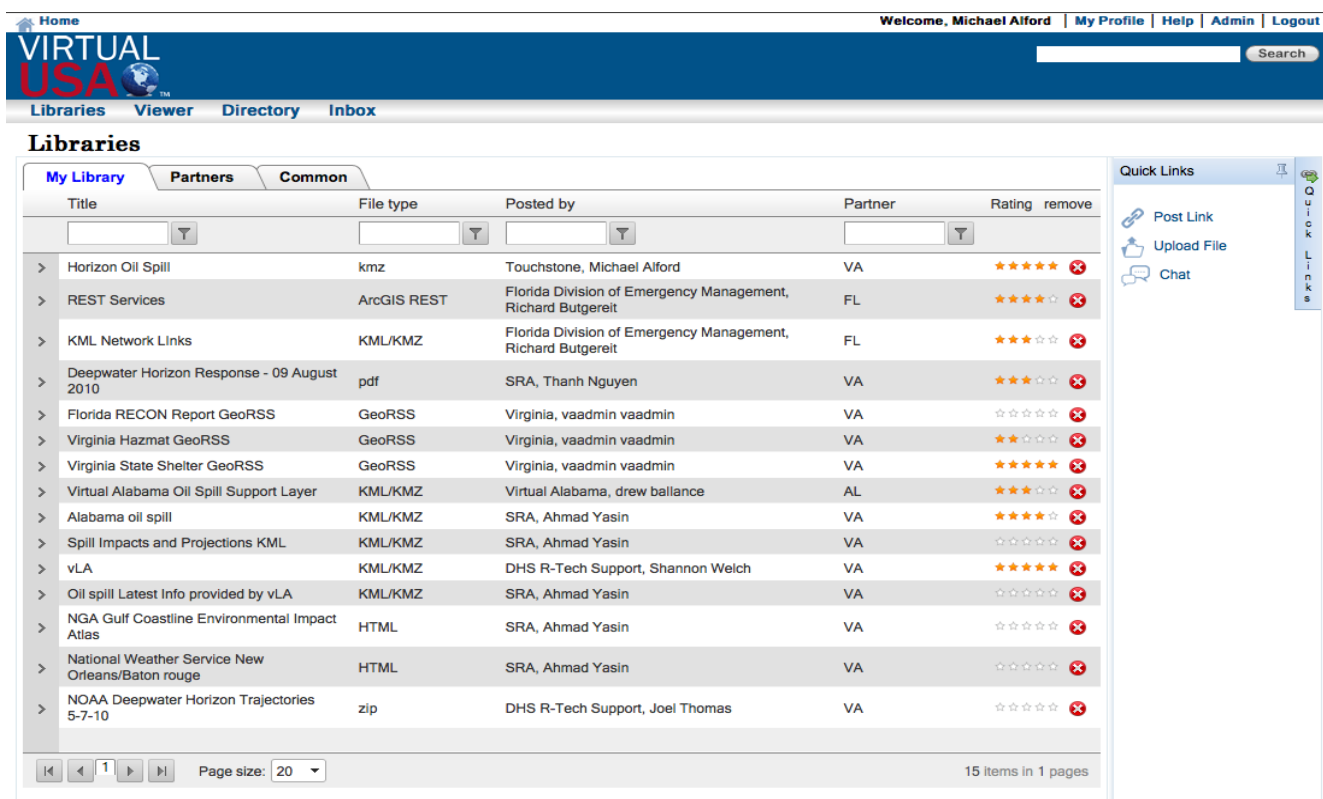

Figure 1. Example of a user's library within vUSA Gen. III featuring information links from participating states.

The Gen III Prototype includes major upgrades to system security, especially when sharing Web links (as opposed to individual files). Partners can now connect their GIS and other data servers directly to the Gen III Prototype Web site. Using this system-level connection, users can manage all data in their libraries (Fig. 1) and efficiently share with specific vUSA users and organizations. All links now flow through the Gen III Prototype and cannot be accessed without valid vUSA credentials.

Other upgrades integrated into the Gen III Prototype include improved user interfaces, online chat for connected users, and direct integration of vUSA core libraries into participating state map viewers. Additionally, an opt-in directory allows vUSA participants to efficiently query and find potentially valuable information from other vUSA participants. Gen III Prototype users can set preferences that allow the system to provide notification when information matching their needs becomes available. Users can also proactively alert other users about critical, newly-available information.

Next Steps

S&T will conduct a regional information-sharing demonstration using the Gen III Prototype with states in the PNW Pilot in December 2010. S&T will then incorporate lessons learned and feedback from the PNW Pilot states and conduct a functional assessment of the Gen III Prototype by the end of March 2011.

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