The NCR Data Exchange Hub (DEH)

Solution

The NCR DEH is a collection of data models, data exchange standards, and information schemas which support data transactions between regional and/or local applications and data stores. It neither replaces existing applications nor functions as an information portal. This framework, operational in February 2010, is capable of supporting information sharing between local, state, federal and regional applications. It is designed to be highly reusable by localities for emergency management and non-emergency management information sharing.

Agency Overview

NCR encompasses the District of Columbia and parts of Maryland and Virginia, including the cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park; the counties of Arlington, Fairfax, Loudoun, and Prince William in Virginia; and the counties of Frederick, Montgomery, and Prince George's in Maryland, which include the municipalities of Bladensburg, Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Rockville, and Takoma Park. These jurisdictions, operating as the regional partnership of the Metropolitan Washington Council of Governments (MWCOG), have been working together since 1957 to implement intergovernmental policies, plans, and programs.

In 2005, the MWCOG Chief Information Officers (CIOs) Committee established the NCR Interoperability Program (NCRIP) (http://www.ncrnet.us/). NCRIP was a regional initiative to create a common communications infrastructure and enhance systems interoperability for public safety and emergency response using funding from the U.S. Department of Homeland Security Urban Area Security Initiative Grant Program. The objective of the program was to establish the information technology architecture needed across the region to strengthen the flow of information between Emergency Support Functions (ESFs).

Background

The DEH is predicated on a comprehensive framework that addresses not only the technology needs but also the business, applications, and data requirements for regional interoperability. Using the National Information Exchange Model (NIEM), the program focused on four initial Information Exchange Packet Documentations (IEPDs) to define certain electronic transmissions of information from one computer system to another.

Three pilots were instrumental in defining standards for the DEH and designing a standard development methodology.

- The ***NCR Resource Typing Data Exchange*** involved exchanging information about the inventory of emergency resources from DC, Fairfax County, Frederick County, Loudoun County and Prince George's County.
- The ***NCR Crisis Information Management System (CIMS) Data Exchange*** demonstrated information sharing between local government EOCs and federal systems like the Homeland Security Information Network (HSIN) to provide a common operating picture. Emergency Management agencies participating in this exchange include: DCEMA; MEMA; and the NOVA WebEOC users.
- The ***NCR Fire RMS/CAD Incident Mapping Data Exchange*** demonstrated the feasibility of extracting incident data from existing Records Management Systems (RMS) or Computer Aided Dispatch (CAD) systems, the translation of data into a NIEM-compliant data standard, and ease of accessibility to the data by all NCR jurisdictions through the Web.

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Application

The CAD2CAD Exchange is the first operational data exchange application to utilize the DEH framework. CAD2CAD allows the sharing of non-sensitive, fire Computer Aided Dispatch (CAD) data between the operational fire CAD systems of Alexandria, Arlington, and Fairfax. By providing the real-time status of fire and EMS units and allowing jurisdictions to directly request resources from one another for mutual aid response, the ***Unit Status*** and ***Request for Resource*** services have significantly reduced the time needed to dispatch resources and have improved incident response times and service to the community. While initially supporting the fire CAD data exchange, the DEH framework can scale to support other fire, police, and emergency management data exchanges needed in current and upcoming NCR grant funded programs and projects.

Standards

The NIEM IEPDs developed for the NCR pilot exchanges served as a successful demonstration of NIEM's ability to meet the needs of a complex, multijurisdictional project. The Computer-Aided Dispatch Exchange is the first NIEM-based operational pilot exchange and was implemented on February 18, 2010. The Computer-Aided Dispatch Exchange IEPD is NIEM-conformant and leverages the Law Enforcement Information Technology Standards Council (LEITSC) NIEM 2.0 CAD RMS IEPDs. The NCR DEH development team worked directly with LEITSC representatives to improve the NIEM 2.0 CAD RMS IEPDs to support additional functionality required in the CAD Exchange. As a result, the feedback provided enabled LEITSC to update its core set of CAD and RMS NIEM 2.0 IEPDs to make them more effective tools for others. The use of NIEM standards was nationally affirmed when CAD2CAD received the "Best of NIEM" award in August 2011.

Benefits to the Region

Just as NIMS facilitates coordination between emergency responders from different agencies or jurisdictions, the DEH holds the promise of facilitating the flow of information between disparate IT systems. While these systems store data differently, with different software and data structures, the DEH will allow communication between systems via a mutually understood IT structure and terminology. The DEH architecture is designed to achieve implementation of this common IT structure across all ESFs in the region.

The DEH architecture provides the following benefits to regional First Responders:

- ***Improved Situational Awareness –*** The DEH provides increased awareness of the available data stores within the region and the business processes they support. Data is structured using a common vocabulary describing both the data and emergency resources available in the region.
- ***Secure Flexible Access –*** The DEH provides secure access to the heterogeneous data stores held around the region. Access will be controlled through a single log-on, allowing users to access all systems for which they have privileges.
- ***Increased Productivity and Reduction in Response Times –*** The DEH provides a framework that maps data to processes. The overlap between processes performed across ESFs in the region will become apparent and processes can be refined to facilitate timely decision making.
- ***Tools Supporting Today's Business Needs –*** The DEH provides a set of basic IT Services, including Incident Management, Change Management, Release Management, and Configuration Management. This allows users to focus on business needs when selecting technology solutions.
- ***Framework for Supporting Future Business Needs –*** The DEH provides a structured approach for implementing, monitoring and maintaining regional IT systems and applications, ensuring interoperability at the data level. Strategies, policies, processes and procedures for implementing regional IT systems promote interoperability.

Long-Term Vision

In line with the visions outlined in the Strategic Plan for Interoperability, the NCR has established the Interoperable Communications Infrastructure (ICI). The ICI includes the DEH and the NCRNet (a regional fiber backbone connecting the NCR jurisdictions). The infrastructure provides basic IT functions related to security, network, exchanges, and support of regional applications for NCRNet. Regional executive committees are currently finalizing Operations, IT Service Support, and Sustainment plans for the ICI.