

Emergencies demand real-time data. Yet, most of today's efforts to improve interoperability have been focused on wireless voice communications. Led by state and local public safety experts and supported by the Department of Homeland Security SAFECOM program, wireless first responder interoperability is moving forward. While voice or radio interoperability is a critical need for responders at the scene, it represents only one side of the interoperability equation.

The Need

The National Incident Management System (NIMS) calls for an interoperable emergency data communications system linking emergency *agencies* – not just individual first responders -- at all levels of government with other emergency agencies, with the private sector and with nongovernmental organizations. It is simply impossible to achieve these requirements without interoperable, interagency data communications.

Architectural Layers

There are several building blocks (Figure 1) that must be in place to achieve effective data interoperability in a locality, state or region. Some of these layers are shared resources while others are components that will be unique to individual agencies. These needed layers include data *transport*, shared emergency response *data standards*, shared *facilitation services*, individual *agency applications* and the *policies and protocols* that govern the use of the system when data interoperability is achieved.

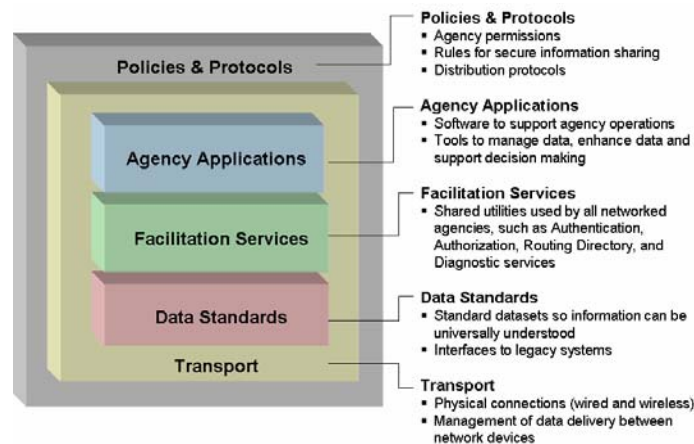


Figure 1. Architectural Layers for Achieving Interoperability

The Result

Interoperability achieved with these architectural layers enables the integration of data providers to data consumers. Agency systems as well as other discipline-specific systems can be integrated across the entire emergency response spectrum. Real time data can be collected for all types of hazards. Agencies will know immediately when an emergency event occurs. Responders will receive timely information allowing them to provide more effective response — and to reduce injuries and save lives in the process.

Transport represents the networks used for communications. This layer manages the end-to-end delivery of messages and determines how data are transferred between network devices. It manages user sessions and dialogues and controls establishment and termination of logic links between users. The framework requires reliable and secure broadband data connections using Internet protocols.

Data Standards create a common language that enables data sharing between individual agency application systems. Recently many XML standards efforts have been launched by the emergency response community. Practitioners develop the emergency message standards and working with the vendor community these standards are field tested prior to submission to a standards body. To date, these efforts have resulted in many XML standards including the Common Alerting Protocol (CAP), the Vehicular Emergency Data Set (VEDS) and the Emergency Data Exchange Language (EDXL) suite of standards.

Facilitation Services are common shared tools, services and resources offered through a collective effort of the emergency response community. They enable interoperability and are available for use by authorized emergency entities. These services include, but are not limited to, security, diagnostics, routing directory, identity rights management, digital rights management, discovery and transformation services.

By using these facilitation services, agencies do not have to spend their limited funds creating and maintaining these functions on their own. Some agencies have already started to create some of these services, but struggle to maintain them. Take the case of a simple routing directory. Data cannot be routed without a directory of agencies and their electronic addresses. Each user or vendor can create its own, which by definition ensures less quality, less comprehensiveness, and less accuracy. Rather than the inefficient profusion of single purpose directories, the better, more efficient alternative would be a shared utility, owned and managed by all of the emergency response professions collectively. The Emergency Provider Access Directory (EPAD) was designed for this very purpose under a grant from the Department of Justice. It is a secure registry where authorized agencies enter their name, contact information, professional function, level of government, geographical areas of interest for each type of incident, and emergency data delivery address(es). The simple act of registration supports the automatic routing of vital information about a mass emergency or a single event quickly and securely.

Agency Applications include systems such as complex Computer Aided Dispatch Systems (CAD), web-based emergency management tools, local and statewide GIS systems, hospital capacity reporting systems, and other applications. Agencies are encouraged to purchase systems that best meet their needs. However, in order to operate in the NEARS framework, these applications must be able to send and receive XML messages to other applications in standardized formats. It should not matter to a 9-1-1 CAD system that it is receiving data from an emergency management tool about a flood, a telematics message from OnStar, a bio-terrorism alert from the Center for Disease Control (CDC), or data from a wireless or Voice over Internet Protocol (VoIP) call. The same data interface should be used.

Policies and Protocols complete the interoperability framework. They determine rules for operating within it and are developed by the emergency responders using the framework. Does a hospital have the same privileges as the county Department of Transportation (DOT), the 9-1-1 center, the police, or the towing company? Who has access to what data and who is allowed to send what messages? Some of these policies are already in place today. All of these policies and protocols need to be addressed by the organizations using the system before this type of architecture is deployed.

For a copy of the entire Interoperability White Paper, please contact COMCARE at info@comcare.org or visit the COMCARE website.