Interoperability Overview

Emergency responders—emergency medical services (EMS), fire-rescue personnel, and law enforcement officers—need to share vital data or voice information across disciplines and jurisdictions to successfully respond to day-to-day incidents and large-scale emergencies. Many people assume that emergency response agencies across the Nation are already interoperable. In actuality, emergency responders often cannot talk to some parts of their own agencies—let alone communicate with agencies in neighboring cities, counties, or states.

Developed with practitioner input by the Department of Homeland Security’s SAFECOM program, the Interoperability Continuum is designed to assist emergency response agencies and policy makers to plan and implement interoperability solutions for data and voice communications. This tool identifies five critical success elements that must be addressed to achieve a sophisticated interoperability solution: governance, standard operating procedures (SOPs), technology, training and exercises, and usage of interoperable communications. Jurisdictions across the Nation can use the Interoperability Continuum to track progress in strengthening interoperable communications.

To drive progress along the five elements of the Continuum and improve interoperability, emergency responders should observe the following principles:

- Gain leadership commitment from all disciplines (e.g., EMS, fire-rescue response, and law enforcement).
- Foster collaboration across disciplines through leadership support.
- Interface with policy makers to gain leadership commitment and resource support.
- Use interoperability solutions regularly.
- Plan and budget for ongoing updates to systems, procedures, and documentation.
- Ensure collaboration and coordination across all Interoperability Continuum elements.

Interoperability Continuum Elements

Interoperability is a multi-dimensional challenge. To gain a true picture of a region’s interoperability, progress in each of the five interdependent elements must be considered. For example, when a region procures new equipment, that region should plan and conduct training and exercises to make the best use of that equipment.

Optimal interoperability is contingent on an agency’s and jurisdiction’s needs. The Continuum is designed as a guide for jurisdictions that are pursuing a new interoperability solution, based on changing needs or additional resources.

Governance

Establishing a common governing structure for solving interoperability issues will improve the policies, processes, and procedures of any major project by enhancing communication, coordination, and cooperation; establishing guidelines and principles; and reducing any internal jurisdictional conflicts. Governance structures provide the framework in which stakeholders can collaborate and make decisions that represent a common objective. It has become increasingly clear to the emergency response community that communications interoperability cannot be solved by any one entity; achieving interoperability requires a partnership among emergency response organizations across all levels of government. As such, a governing body should consist of local, tribal, state, and Federal entities as well as representatives from all pertinent emergency response disciplines within an identified region.

Individual Agencies Working Independently—A lack of coordination among responding organizations.

Informal Coordination Between Agencies—Loose line level or agency level agreements that provide minimal incident interoperability.

Key Multi-Discipline Staff Collaboration on a Regular Basis—A number of agencies and disciplines working together in a local area to promote interoperability.

Regional Committee Working within a Statewide Communications Interoperability Plan Framework—Multi-disciplinary jurisdictions working together across a region pursuant to formal written agreements as defined within the larger scope of a state plan—promoting optimal interoperability.

Standard Operating Procedures

Established operating procedures—formal written guidelines or instructions for incident response—typically have both operational and technical components. Standardized SOPs enable emergency responders to successfully coordinate an incident response across disciplines and jurisdictions. Clear and effective SOPs are essential in the development and deployment of any interoperable communications solutions.

Individual Agency SOPs—SOPs exist only within individual agencies and are not shared, resulting in uncoordinated procedures and/or incompatible data systems among agencies that can hinder effective multi-agency/multi-discipline response.

Joint SOPs for Planned Events—The development of SOPs for planned events—this typically represents the first phase as agencies begin to work together to develop interoperability.

Joint SOPs for Emergencies—SOPs for emergency level response that are developed as agencies continue to promote interoperability.
Interoperability Overview

Emergency responder—emergency medical services (EMS), fire, police services, and law enforcement forces—must work together to save lives and ensure the safety of communities. Interoperability is critical for effective emergency response. However, many people assume that emergency response agencies across the nation are already interoperable. In actuality, emergency responders often find it challenging to communicate with one another, let alone exchange information or share resources efficiently.

Developed with inputs from the Department of Homeland Security’s SAFECOM program, the Interoperability Continuum is designed to guide emergency responders toward the integration of systems and processes that can enhance the performance of the entire system. It identifies five elements of the National Incident Management System (NIMS) that are essential for promoting interoperability among the vast array of agencies and disciplines working together in a local area to provide emergency response organizations across all levels of government.

Interoperability Continuum Elements

Interoperability Continuum contains elements of a strategy to promote interoperability among emergency responders to support the five key elements of the Continuum. When using the Continuum, respondents should follow the basic principles described below to ensure the success of emergency interoperability.

Governance

Establishing a common governance structure for setting interoperability issues will improve the policies, practices, and procedures of many projects by enhancing coordination, coherence, and cooperation, establishing goals and standards, and reducing any internal jurisdictional conflicts. Governance structures provide the framework for the Continuum’s implementation and make decisions that represent a common-voice decision. It has been found that especially clear for the emergency response community, that communication interoperability cannot be solved by one entity, and the Continuum takes an inclusive approach by working across all levels of government and within external entities such as stakeholders from federal and non-federal emergency management jurisdictional disciplines.

Interoperability Continuum Independence—Independently, lacks a lack of cooperation between agencies

Regional Coordination Working within a Statewide Communications Interoperability Plan framework—A dramatic reduction in operations working across the regional framework to perform interagency agreements in advance within the larger scope of a state-wide prioritizing of optimal interoperability.

Standard Operating Procedures

Standard operating procedures—formal written guidelines or documents that provide for uniform procedures to facilitate seamless coordination and to improve on a common-voice solution. Adopted standard operating procedures can be used in the development and deployment of any interoperable communication solution.

Interoperability Continuum Standards—SOPs exist only within individual agencies and are not shared, residing in uncoordinated procedures across different agencies.

Interoperable for Emergency Response (SOPs) for emergency level response that are developed as agencies continue to promote interoperability.

Regional Joint Operations Continuum—Regional joint operations Continuum that provide minimal incident interoperability.

National Incident Management System Integrated SOPs—Regional SOPs that are designed to assist emergency response agencies and policy makers to plan and implement interoperability solutions for data and voice information across disciplines and jurisdictions to successfully respond to day-to-day incidents and large-scale emergencies.

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The role of the Communications Unit Leader is a critical function that requires adequate training and cannot be delegated to an individual simply because that person “knows about communications systems.” Rather, the proper training of these individuals is of significant importance to a region’s ability to respond to unexpected events, and it should prepare them to manage the communications component of larger interoperability incidents by applying the available technical solutions to the specific operational environment of the event.

Training & Exercises
Implementing effective training and exercise programs to practice communications interoperability is essential for ensuring that the technology works and responders are able to effectively communicate during emergencies.

General Orientation on Equipment and Applications—Agencies provide initial orientation to their users with regard to their particular equipment and applications. Multi-agency/multi-jurisdiction training is essential to familiarize users with their particular equipment and applications. A comprehensive and realistic exercise that addresses potential problems is needed. In addition, collaboration among the various disciplines and jurisdictions is critical.

Regular Comprehensive Regionwide Training and Exercises—These comprehensive, regionwide exercises involve the participation of all personnel. The primary objective of these exercises is to assess equipment, systems, and operating procedures as well as to promote and improve communications interoperability and focus on effective information flow. The exercise should address the need for interoperable communications to support the mission of emergency responders.

Structured tabletop exercises promote planning and identify response gaps. In addition, they provide initial orientation to users with regard to their particular equipment and applications. Multi-agency/multi-jurisdiction training is essential to familiarize users with their particular equipment and applications.

Multi-Agency Tabletop Exercises for Key Field and Support Staff—Agencies and disciplines begin working together in developing exercises and provide drill training, which is critical for promoting interoperability across disciplines and jurisdictions. Additionally, management and supervisory training is critical to promoting use of interoperability mechanisms.

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Sustainability

Communications interoperability is an ongoing process, not a one-time investment. Once a governing body is set up, it must be prepared to meet on a regular basis, drawing on operational and technical expertise to plan and budget for continual updates to systems, procedures, and training and exercise programs. If regions expect emergency responders to use interoperable equipment on a daily basis, supporting documentation and the installed technology must be well-maintained with a long-term commitment to upgrades and the eventual replacement of equipment.

Lastly, an interoperability program should include both short- and long-term solutions. Early successes can help motivate regions to tackle more time-consuming and difficult challenges. It is critical, however, that short-term solutions do not inappropriately drive the planning process, but function in support of a long-term plan.

National Frameworks

As an evolving tool, the Interoperability Continuum supports the National Preparedness Strategy and aligns with national frameworks including, but not limited to, the National Response Framework, the National Incident Management System, the National Emergency Communications Plan, and the National Communications Baseline Assessment. To maximize the Interoperability Continuum’s value to the emergency response community, SAFECOM will regularly update the tool through a consensus process involving practitioners, technical experts, and representatives from local, tribal, state, and Federal agencies.

SAFECOM is a communications program of the Department of Homeland Security. SAFECOM provides research, development, testing and evaluation, guidance, tools, and templates on interoperable communications-related issues to local, tribal, state, and Federal emergency response agencies. The Office of Emergency Communications (OEC) supports SAFECOM’s development of grant guidance, policy, tools, and templates, and provides direct assistance to local, tribal, state, and Federal practitioners. The Office for Interoperability and Compatibility (OIC) supports SAFECOM’s research, development, testing and evaluation, standards, and tools such as reports and guidelines. OEC is an office within the Directorate for National Protection and Programs. OIC is an office within the Science and Technology Directorate.

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