DHS Science and Technology Directorate
Next Generation First Responder Technology Integration Handbook

Why it Matters: The Importance of Integrating First Responder Technologies

Every day across the nation, first responders protect our communities, respond to emergencies and save lives, sometimes while using outdated technology. Responders are often overburdened with data and devices; more stand-alone devices are not a solution for making responders safer and more effective and may do more harm than good. Responders need smarter, seamless and state-of-the-art technologies that increase their ability to focus on the mission, rather than distract from it. Technology integration is essential to increasing responder capabilities.

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Next Generation First Responder (NGFR) Apex program has collaborated extensively with responders and industry to identify capability gaps in existing equipment. The collaboration then works toward filling these gaps by integrating current and emerging technologies to improve emergency response, responder safety and situational awareness. To integrate these technologies, the NGFR Apex program developed an architecture that uses open standards to connect on-body responder technologies with improved data analytics and alerts to make responders better protected, connected and fully aware. S&T's NGFR Apex program aims to encourage innovators to develop interoperable technologies that address first responder needs.

What is the Next Generation First Responder Integration Handbook?
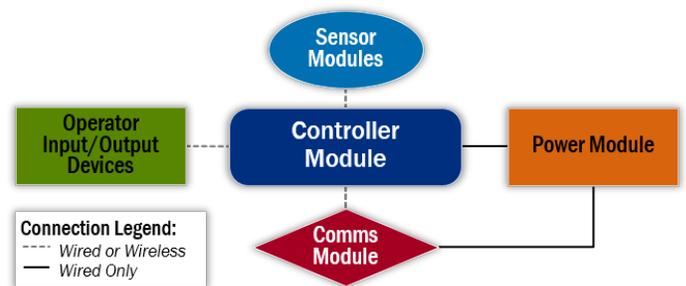
To guide industry in development, design, test and integration of responder technologies, DHS S&T has created the NGFR Integration Handbook, which outlines a "plug-and-play," standards-based environment that enables commercially-developed technologies to integrate with existing first responder infrastructure. DHS S&T does not intend or desire to draft new standards; rather, DHS S&T identifies and recommends existing standards that developers may implement. This handbook will guide industry system developers and vendors on interoperability requirements that may facilitate integration. Through this guidance, the NGFR Integration Handbook will reduce barriers to entry into the first responder marketplace and open doors to entrepreneurs, while lowering costs and increasing choices for public safety organizations.

Who Should Read the Handbook?

The NGFR Integration Handbook is presented in three parts, and targets device and system developers as follows:

Part One is intended for executive audiences who do not necessarily have technical knowledge. It provides an introduction and overview of the NGFR on-body framework and the concepts behind its modular design. It identifies the function of each of the basic modules and how they interact with agency systems.

Part Two targets engineers at a high level. It details the engineering design for module-to-module communications and data transfer from on-body systems to agency systems, including the interfaces, services and standards. The figure below outlines the basic architecture for the NGFR on-body suite, including the five primary modules.

The figure above illustrates the NGFR-recommended components of the NGFR on-body suite as described in the NGFR Integration Handbook.

Part Three primarily targets software developers and engineers to guide their modular development. It provides additional details of the data architecture for modules and their interfaces. It also presents the first responder on-body system requirements extracted from the Project Responder 4 analysis.

How Industry Can Help

DHS S&T invites industry to review this handbook and provide feedback to improve the level of detail of the technical specifications that will deliver interoperable technology to the first responder marketplace. DHS S&T will provide an opportunity for additional comments twice yearly. Participating organizations will be included in the Acknowledgements section of the handbook. Please email NGFR@hq.dhs.gov to request access to the NGFR Integration Handbook or provide feedback.