

# DHS SCIENCE AND TECHNOLOGY

## Next Generation First Responder Integration Handbook

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**Homeland  
Security**

Science and Technology

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# Next Generation First Responder (NGFR) Apex Program

- NGFR develops, adapts and integrates cutting-edge technologies to make responders better protected, connected and fully aware.
- In year 4, NGFR focuses on **integrating, testing and transitioning** NGFR-developed technologies and rolling out the **NGFR Integration Handbook** for industry comment.



## PROTECTED

Defending against life-threatening hazards

- Environmental sensors identify unsafe conditions so responders can exit in time
- Physiological monitoring sensors help responders get medical assistance when they need it
- Enhanced duty uniforms and personal protective equipment keep responders safe, no matter the emergency



## CONNECTED

Having a **lifeline** when it's needed most

- Intelligently-routed communications streamline connectivity and allow responders to focus on the mission
- Deployable networks provide connectivity anywhere, anytime, under any conditions
- Universal data standards make interoperability and information-sharing easy and secure



## FULLY AWARE

Making informed decisions that **save lives**

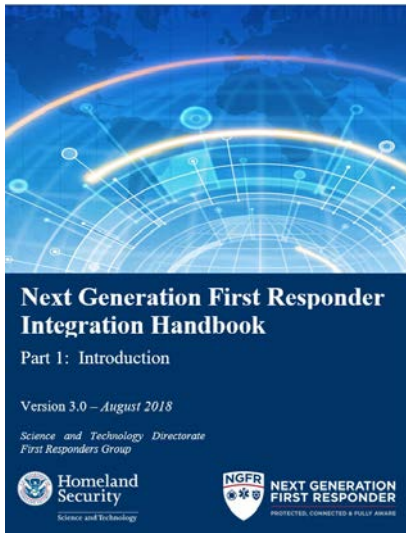
- Situational awareness tools provide critical context even before responders arrive on scene, saving vital time
- Advanced data analytics and alerting tools convey the right information at the right time
- Cutting-edge location-based services ensure that incident commanders know where their responders are and if they need help

# NGFR Integration Handbook

- The NGFR Integration Handbook outlines a “**plug-and-play,**” **standards-based environment** that enables commercially-developed technologies to integrate with existing first responder infrastructure.
- Guides industry system developers and vendors on interoperability requirements that may facilitate integration.
- Reduces barriers to entry into the first responder marketplace and opens doors to entrepreneurs, while lowering costs and increasing choices for public safety organizations.



# NGFR Integration Handbook



## Part 1 – Executive Summary

*Audience* Executives and Planners

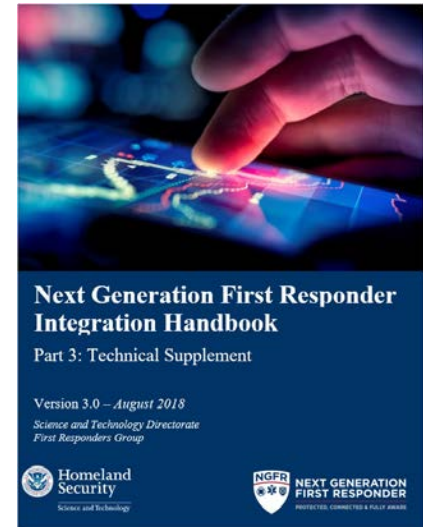
*Description* Provides a high-level overview of the NGFR SmartHub system concept and the various system components.



## Part 2 – Engineering Design

Technical Management

Provides system level view of hardware and software components required to implement the NGFR SmartHub architecture.

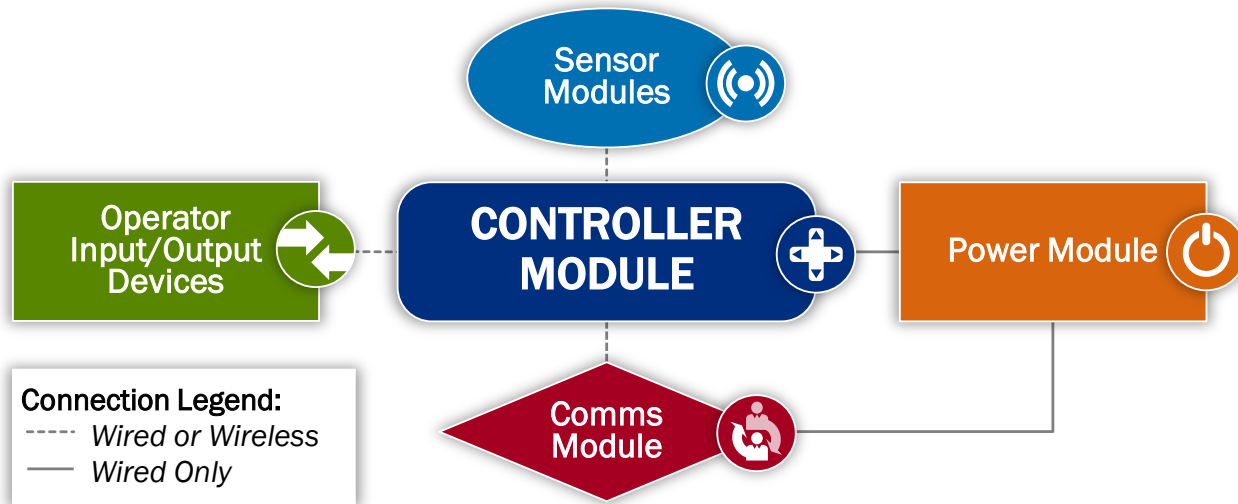


## Part 3 – Technical Supplement

Technical Teams

Provides additional details needed by development and test teams to facilitate integration.

# NGFR Architecture



## Controller Module (self-contained)

- Power Source
- Display
- Manual Input (Keyboard/Touchscreen)
- Personal Area Network (PAN) Comms
- Wide Area Network (WAN) Comms
- Built-In Speaker/Microphone
- Audio/Video Recording
- Geolocation
- Sensor Connections
- Basic Applications

## Communications (Comms) Module

- Internal Short-Term Power Source
- Connect to Power Module
- Connect to Comms Systems/Devices:
  - Bluetooth
  - Wi-Fi
  - LTE
  - LMR
  - SATCOM
  - FirstNet LTE
  - Datacasting
  - Ethernet
- Manage Comms Bandwidth/Priority

## Sensor Modules

- Internal Short-Term Power Source
- Communicate with Controller

## Power Module

- Long-Term Power to all Devices
- Rechargeable/Field Exchangeable

## Operator Input/Output Devices

- External Cameras
- Headset/Microphone
- External Display

# Handbook Cycle

- Conceptually conceived from Project Responder 4 & 5 requirements
- Internally produced by engineers and refined by NGFR team
- Finished July 2017

Version 1.0

Version 2.0

- Validated by DHS S&T performers and updated to reflect current state
- Public Release February 2018

- Received feedback and comment from industry, public safety and federal partners, all incorporated by NGFR Integration Team
- Integration approach tested at NASA JPL
- Public Release August 2018

Version 3.0

# How to Get Involved

- Go to: <https://www.dhs.gov/science-and-technology/ngfr/handbook>
- Download the Handbook
- Download the Comment Matrix
- Send the Handbook to your agency's vendors
- Have Questions? Want to provide comments and feedback?  
Email: [NGFR@hq.dhs.gov](mailto:NGFR@hq.dhs.gov)
- Watch our Live Tech Talk at: <https://www.dhs.gov/science-and-technology/st-live-tech-talks>
- Participate in our upcoming webinars! Topics include:
  - Physiological Monitoring
  - Situational Awareness
  - Location Services – and more!



# Homeland Security

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