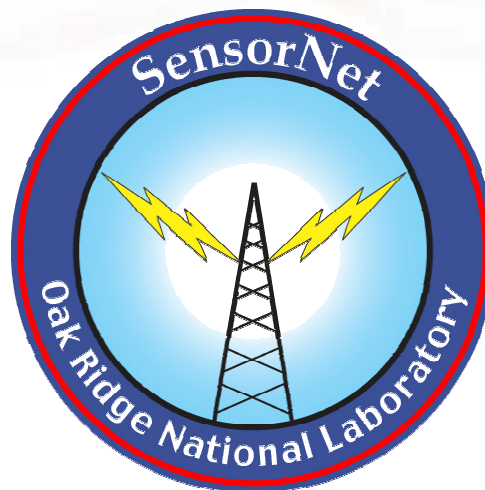


SensorNet

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Presentation

SensorNet

- 1 SensorNet Overview
- 1 Test Beds and Trials
- 1 Government and Commercial Relationships





Objective

Dramatically improve the nation's capability to address a CBRNE event.

Purpose of SensorNet

SensorNet

- 1 Develop the Communications and Information Technology Infrastructure to support a National System for Comprehensive Incident Management in Cooperation with State and Local Governments
 - Common Data Highway for a Comprehensive Set of Homeland Security Sensors
 - Distributed Access with Multi-Level Security, Information Fusion, and a Common Operational Data Base
 - Ultra-High Level of Reliability, Survivability, and Security
 - Scalability Across State, Local and Federal Governments



Key Aspects

SensorNet

- 1 A single infrastructure accommodating simultaneous solutions and their selectable integration (information fusion)
- 1 Open standards to encourage competition for best-in-class systems, services, and pricing
- 1 Partnering with industry to develop a commercially supportable system



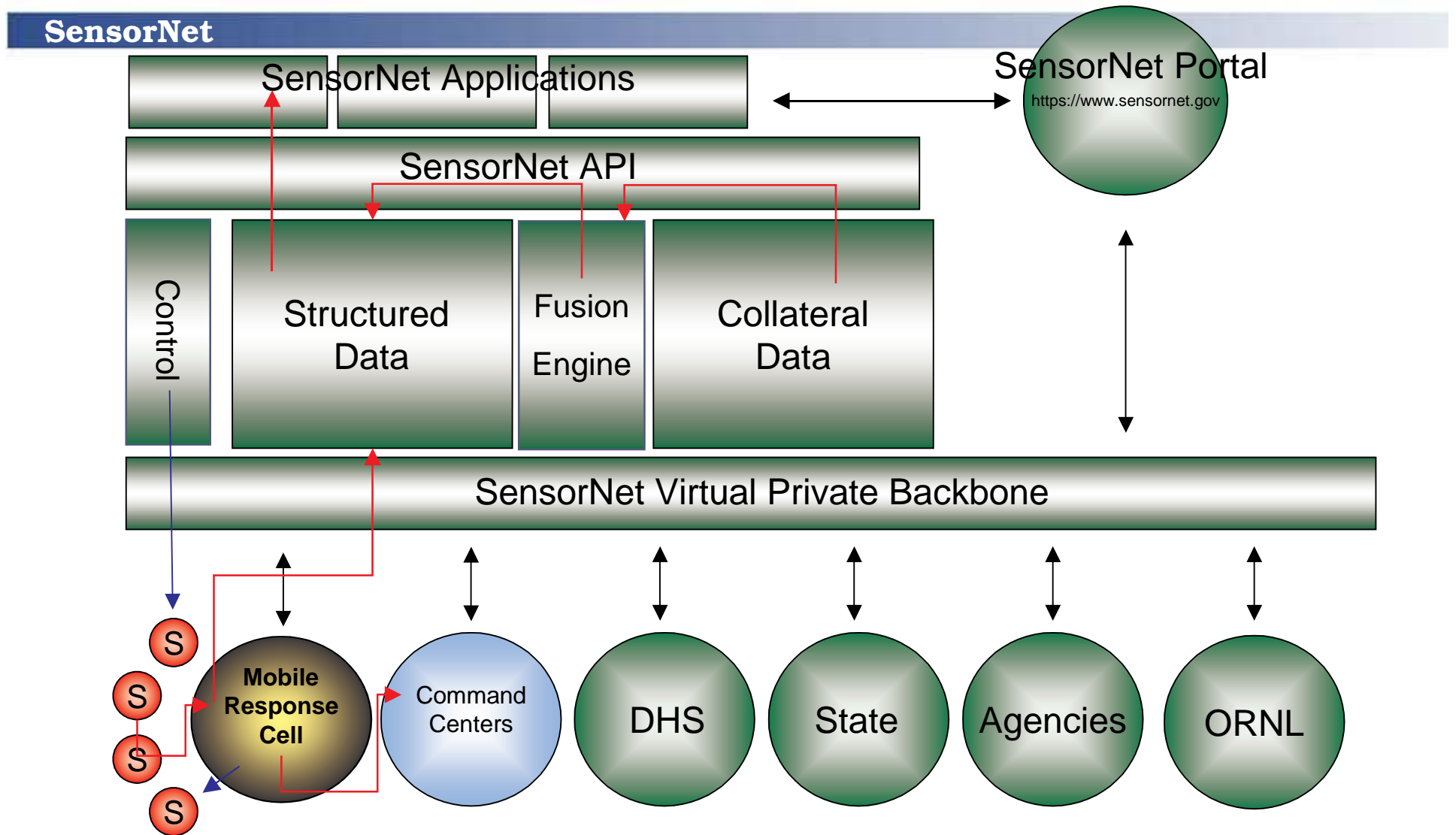
SensorNet – Functional Requirements

SensorNet

- 1 SensorNet Characteristics
 - A System of Systems Infrastructure
 - Real Time Knowledge/Near Real Time Response
 - Integration Of Many Dissimilar Sensor Systems
 - Scalability To Cover The North American Continent and Hawaii.
 - Peer-To-Peer and Conferencing Framework
 - Near-Simultaneous, Interactive Availability to Data and Services
 - High Reliability
 - Self-Organizing/Self-Healing Network Connectivity
 - Distributed Processing
 - Distributed Information Storage
 - Information Assurance
 - Encrypted Communication
 - Trust Architecture
 - Multi-Level Security
 - Access Control
 - Fusion Of Information Into A Common Operational Data Base and Picture.



High Level SensorNet Architecture



Current Testbeds and Trials

SensorNet

- 1 Washington DC
- 1 Eastern Tennessee and the Oak Ridge/Y-12 Complex
- 1 Watt Road in conjunction with DOT



SensorNet Washington D.C. Test Bed

SensorNet

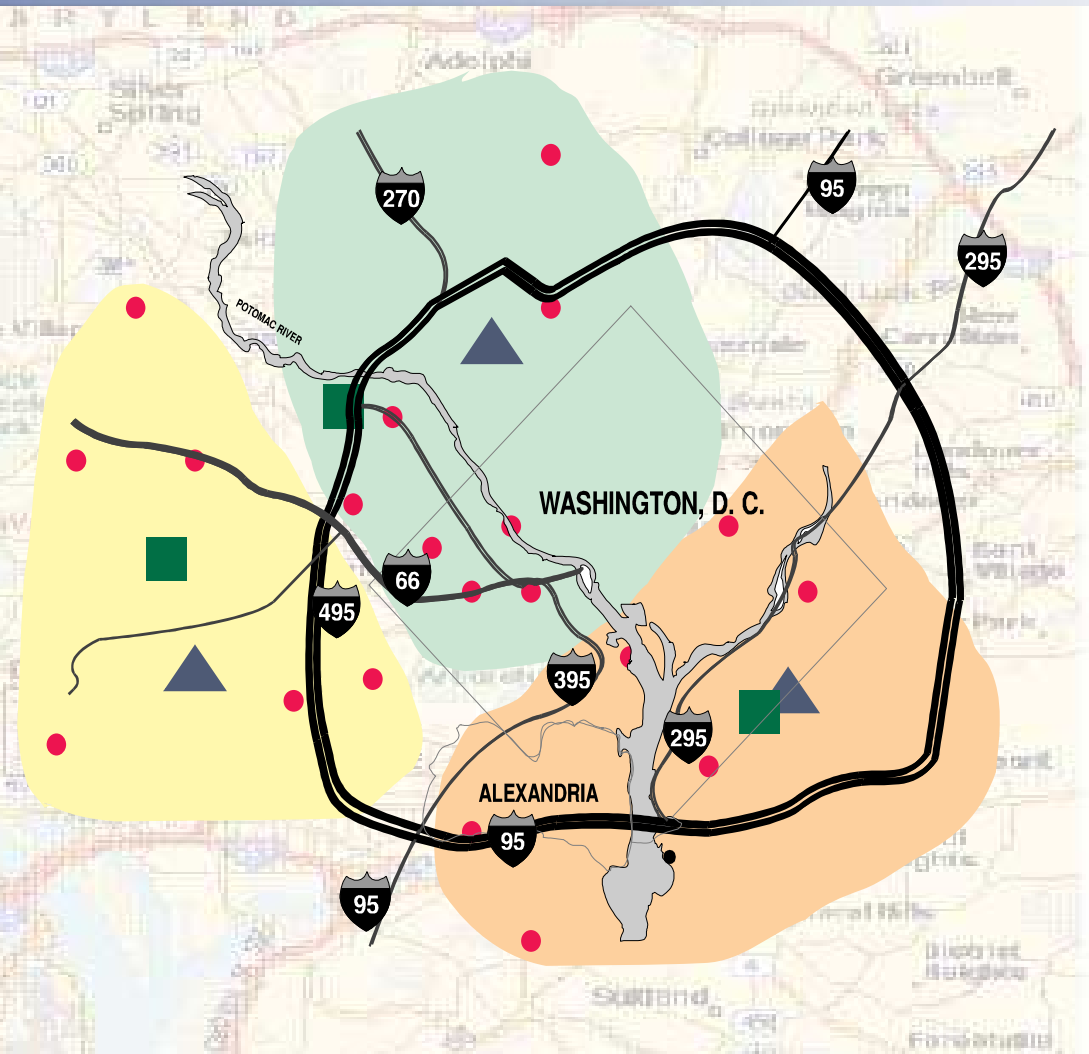
- 1 **Approximately 20 Locations**
- 1 **Roof Top, Street Level, and Cell Tower Sites**
- 1 **Meteorological, Video, Chemical, and Radiological Sensors**
- 1 **Demonstration of Rudimentary SensorNet Architecture**

● **Sensor Locations**

■ **Clusters**

▲ **Satellite Uplink**

■ **Fiber Co-Location Facility**



Washington D.C. Test Bed Uses Meteorological, Chemical, and Radiological Sensors at Roof Top, Street Level, and Cell Tower Sites

SensorNet

1 Sensors

- Meteorological Sensors (All)
 - **Wind Speed**
 - **Wind Direction**
 - **Humidity**
 - **Barometric Pressure**
 - **Temperature**
- Nuclear
 - **Gamma Ray Counters (8)**
 - **Gamma Ray Spectrometers (2)**
- Chemical
 - **Chemical Agents (4)**
 - **Toxic Industrial Chemical (1)**
- Video (All)

1 Locations

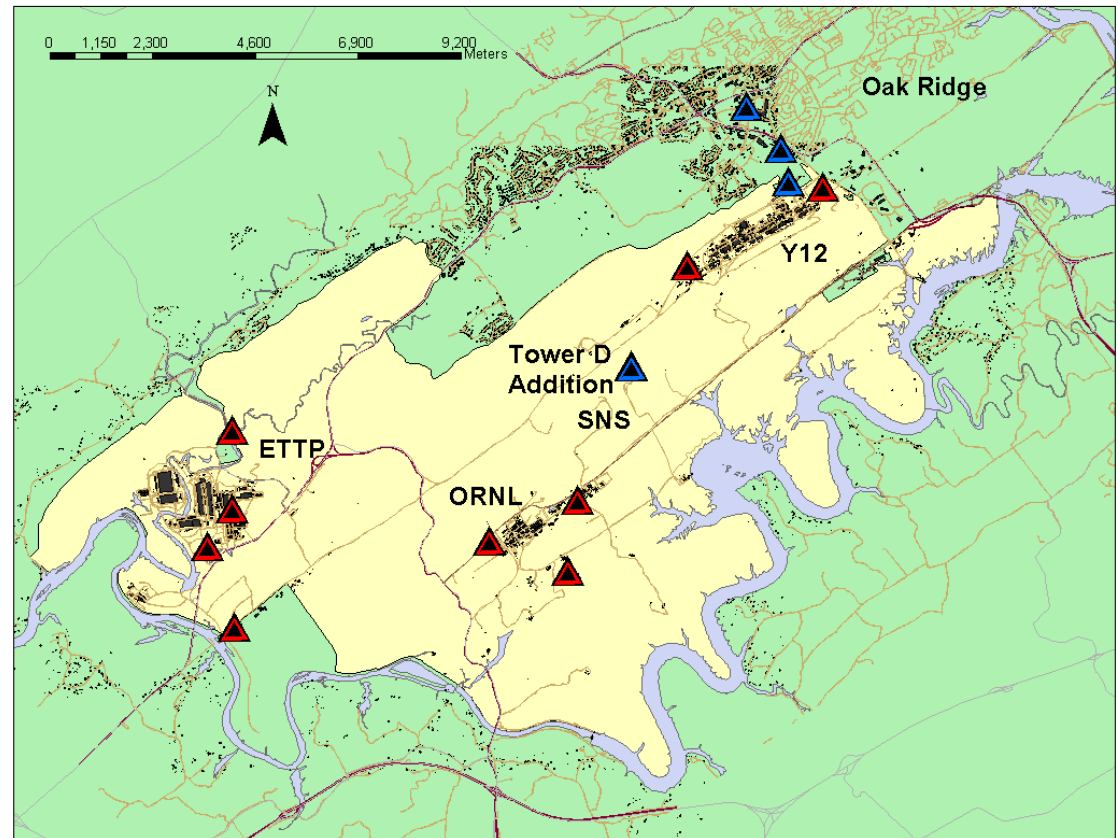
- **Hoover Building**
- **National Academy of Science**
- **National Arboretum**
- **NOAA**
- **DOE Forrestal Building**
- **DC Municipal Building**
- Naval Research Laboratory
- National Zoo
- HART
- Pentagon
- Navy Annex
- Dirksen Building
- Smithsonian Metro Station
- Langley
- Bailey CrossRoads
- Fort DuPont Park
- American University
- Fort Totten
- Naval Air Station



ORNL/Y-12 Participation in the SensorNet East Tennessee Test Bed

SensorNet

- 1 **Remote Communications Center located at ORNL**
- 1 **Sensors in addition to existing meteorological sensors incorporated at ORNL Sites**
- 1 **ORNL Emergency Management personnel assist in guiding the development of the Graphical User Interface for information display**
- 1 **Regional SensorNet data incorporated into ORNL Emergency Response**



SensorNet and DOE 21st Century Commercial Vehicle System

Demonstration At Watt Road

SensorNet

- 1 **2nd Busiest Truck Weigh/Inspection Station In US**
- 1 **Joint SensorNet/ITS Sensor Node**
- 1 **Sensors**
 - Vehicle Critical Safety Systems
 - Driver Credentials
 - **Meteorological**
 - Air Quality
 - **Video**
 - Toxic Industrial Chemical
 - Hazardous Materials
 - Radiological
 - **Nuclear Portal Monitors**
- 1 **ITS Information Network Coupled to SensorNet Information Network**



Current DOD Sponsored SensorNet Development

SensorNet

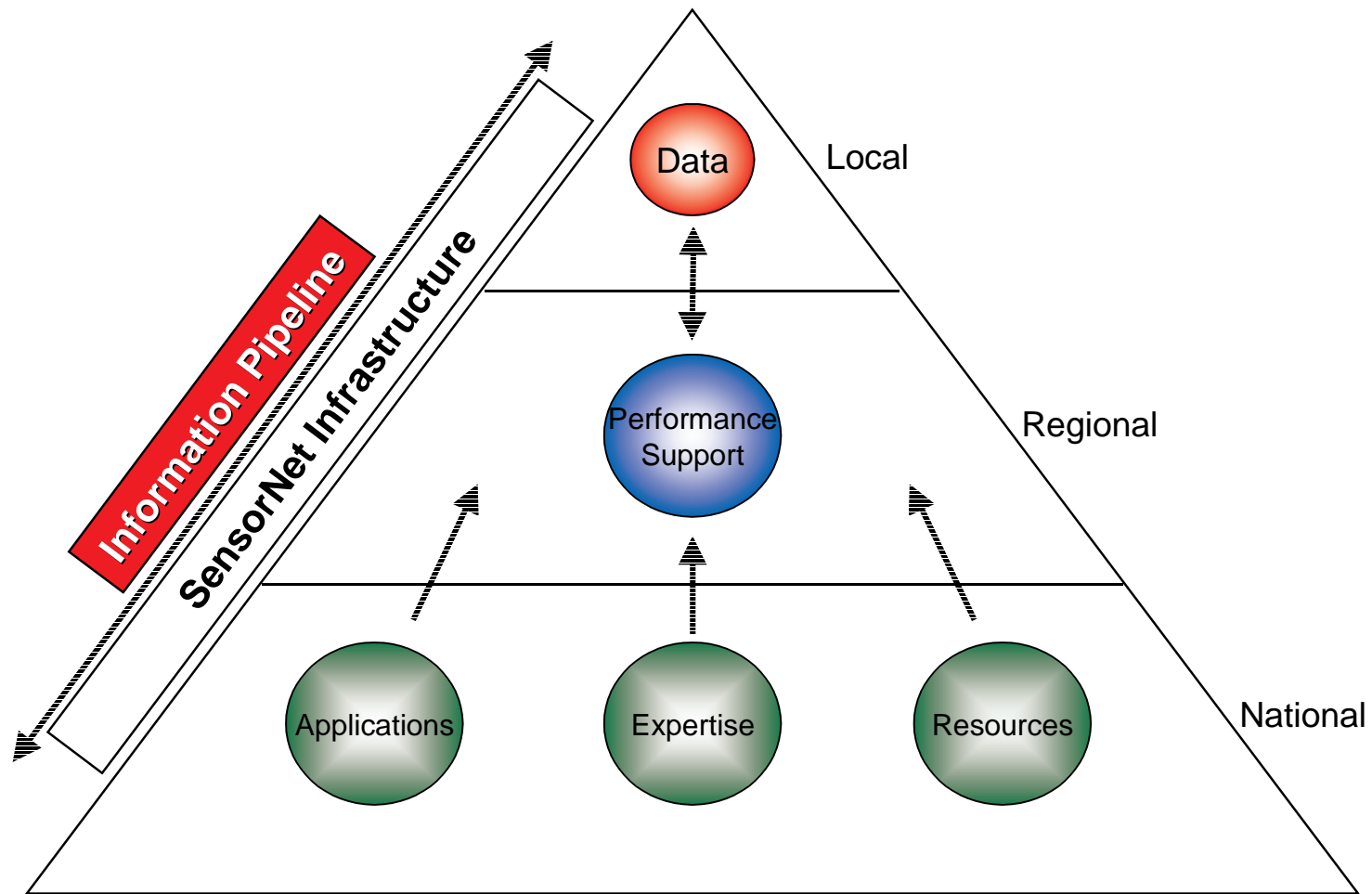
Sponsored by the Office of Naval Research:

- 1 **Task 1.** Develop the information technology infrastructure and communications architecture for a common data highway to support comprehensive incident management.
- 1 **Task 2.** Provide a test bed for this technology infrastructure and communications architecture to develop and determine pertinent system characteristics and performance, cost, information and system scalability issues.
- 1 **Task 3.** Develop an operational prototype.



SensorNet's Hierarchical Architecture

SensorNet



Government and Industry Partners

SensorNet

- 1 National Oceanographic and Atmospheric Administration
- 1 Nuc Safe
- 1 Exploranium
- 1 American Tower Corp
- 1 Eigensoft
- 1 Keyhole
- 1 Oracle
- 1 Smiths Detection
- 1 Far West Technologies
- 1 Dielectric

