Presentation

1. SensorNet Overview
2. Test Beds and Trials
3. Government and Commercial Relationships
Objective

Dramatically improve the nation’s capability to address a CBRNE event.
Purpose of 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

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

SensorNet

SensorNet Portal
https://www.sensornet.gov

SensorNet Applications

SensorNet API

Structured Data
Fusion Engine
Collateral Data

SensorNet Virtual Private Backbone

Mobile Response Cell
Command Centers
DHS
State
Agencies
ORNL

ORNL DHS State Agencies

Control
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

1. Approximately 20 Locations
2. Roof Top, Street Level, and Cell Tower Sites
3. Meteorological, Video, Chemical, and Radiological Sensors
4. Demonstration of Rudimentary SensorNet Architecture
## Washington D.C. Test Bed Uses Meteorological, Chemical, and Radiological Sensors at Roof Top, Street Level, and Cell Tower Sites

### SensorNet

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<thead>
<tr>
<th>Sensors</th>
<th>Locations</th>
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<td>- Meteorological Sensors (All)</td>
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<td><strong>National Arboretum</strong></td>
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| - 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) |
Remote Communications Center located at ORNL

Sensors in addition to existing meteorological sensors incorporated at ORNL Sites

ORNL Emergency Management personnel assist in guiding the development of the Graphical User Interface for information display

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

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.

2. **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.

3. **Task 3.** Develop an operational prototype.
SensorNet’s Hierarchical Architecture

- **SensorNet**
  - **SensorNet Infrastructure**
  - **Information Pipeline**
  - **Local**
  - **Regional**
  - **National**
  - **Data**
  - **Performance Support**
  - **Applications**
  - **Expertise**
  - **Resources**
# Government and Industry Partners

1. SensorNet  
   - National Oceanographic and Atmospheric Administration  
   - Nuc Safe  
   - Exploranium  
   - American Tower Corp  
   - Eigensoft

1. Keyhole  
1. Oracle  
1. Smiths Detection  
1. Far West Technologies  
1. Dielectric