

Global Standards for Hazard Detection

The US Department of Energy's Oak Ridge National Laboratory (ORNL) and strategic partners, including the National Oceanic and Atmospheric Administration (NOAA) and the private sector, are designing and developing SensorNet, a comprehensive nation-wide system for real-time detection, identification and assessment of chemical, biological, radiological, nuclear and explosive hazards. SensorNet will deploy a variety of sensors at strategic locations such as cellular communication towers and truck weighing stations, connected by secure and redundant communication channels to local, regional and national operations centres. Automated predictive plume modelling will provide rapid assessment of the direction and impact of toxic airborne releases. The objective, of course, is to save lives in the event of an accident or a terrorist attack.

SensorNet is based on standards. Modular and open system architecture for hardware, software and communications allows for a choice of commercial off-the-shelf products and future seamless upgrading of the system. Also, adherence to an open, common architecture will result in ongoing competitive development of new technologies that will improve SensorNet and find other uses globally. The development of these technologies will enhance economic growth and airborne hazard protection; also weather analysis and prediction, traffic control, aircraft surveillance, inventory tracking, earthquake monitoring and environmental management worldwide.

ORNL and NOAA are active participants in the Open Geospatial Consortium, Inc. (OGC) Sensor Web Enablement (SWE) effort to develop a comprehensive, globally accepted set of standards for communicating with any type of existing or yet-to-be-developed sensor. Within the OGC international consensus process, SWE is producing a vendor-neutral, evolutionary interoperability framework for Web-based discovery, access, control, integration, analysis, exploitation and visualisation of multiple online sensors, sensor-derived data repositories and sensor-related processing capabilities.

A key OGC goal is to reach consensus on the best ways for distributed geoprocessing systems to communicate with each other across the Web. The OGC focus on 'Enterprise Integration' means that all OGC standards will fit well in Web-based information architectures designed to accommodate diverse stakeholder requirements and diverse technologies. By developing sensor interface, schema and encoding standards consistent with this framework, OGC members are making it possible for all kinds of measurements at known locations to be used in decision making of many kinds.

It is hard to overstate the value of participating in such international consensus processes. Part of the value can be expressed as, 'Get on board! The train is leaving the station!' And partly it is a matter of making the standards as good as they can possibly be for the benefit of present and future generations. Those who will use them develop the best standards. SensorNet benefits from making the global sensor systems industry as good as it can possibly be, so we who are building SensorNet would be pleased to see increased participation in OGC by the world's sensor users and providers.