

## About This Standard

**Current Status** *Emerging*

**Standard Identifier** OGC SensorML v1.0.0

### **Title of Standard**

OpenGIS Sensor Model Language (SensorML) Implementation Specification, Version 1.0.0  
[OGC 07-000], 17 July 2007

### **Standards History**

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2009-07-30	2009-07-30	n/a	2009-07-30	2009-07-30	n/a

### **Standards Body**

[OGC](#)

[Broken Link?](#)

### **URL to Access or Acquire**

<http://www.opengeospatial.org>

### **Working Group**

#### **Primary Owner**

Geospatial Intelligence (GWG)

#### **Secondary Interest**

No Secondary Interest

### **Service Area**

GEOINT: Geospatial

### **KIPs**

No KIP Found

### **Standard Applicability**

#### **2009-07-30**

This standard is applicable to the development of systems that require the ability to describe, discover, acquire/retrieve and process sensor-based geographic data in a web browser.

### **Standard Abstract**

#### **2009-07-30**

SensorML V1.0.0 specifies models and XML encoding for the core SensorML, as well as the definition of several SWE Common data components utilized throughout the SWE framework. The primary focus of SensorML is to define processes and processing components associated with the measurement and post-measurement transformation of observations. The purposes of SensorML are to: Provide descriptions of sensors and sensor systems for inventory management Provide sensor and process information in support of resource and observation discovery Support the processing and analysis of the sensor observations Support the geolocation of observed values (measured data) Provide performance characteristics (e.g., accuracy, threshold, etc.) Provide an explicit description of the process by which an observation was obtained (i.e., it's lineage) Provide an executable process chain for deriving new data products on demand (i.e., derivable observation) Archive fundamental properties and assumptions regarding sensor systems

### **Profiling Questions**

#### **GEOINT: Geospatial**

- Does your system require the ability to describe, discover, acquire/retrieve and process sensors (parameters and processes) and sensor-based geographic data and information in a web browser?

### **Products Incorporating This Standard**

There are 10 registered OGC compliant software vendors that have developed SensorML V1.0.0 products. See <http://www.opengeospatial.org/resource/products> Numerous applications have adopted SensorML V1.0.0, including these three applications: NASA MSFC SMART- Organization: NASA Marshall Space Flight Center R sEau water portal - Organization: Environment Canada PULSENET - Organization: Northrop Grumman TASC

### **Relevant Information**

This citation was authored by the GWG Information Transfer and Services Architecture (ITSA) Focus Group.

### **Implementation Guidance**

See the Technical Maturity section for some of the known SensorML V1.0.0 harmonization issues.

### **Standard Selection Criteria**

#### **Interoperability/Supportability**

SensorML V1.0.0 specifies models and XML encoding for the core SensorML, as well as the definition of several SWE Common data components utilized throughout the SWE framework. The primary focus of SensorML is to define processes and processing components associated with the measurement and post-measurement transformation of observations. The SWE and SensorML V1.0.0 enables users to access sensors; their location, their capabilities, and the data they acquire along with the ability to process the data through a standards-based, non-proprietary web interface/service.

#### **Technical Maturity**

This specification is one of five engineering specifications produced under OGC's Sensor Web Enablement (SWE) activity, which is being executed under OGC's Interoperability Program. The initial version was produced during OGC Web Services (OWS) 1.1 Initiative, conducted in 2001. The previous version was produced under the OGC Web Services (OWS) 3.0 Initiative, conducted March 2005 - October 2005. This version is in response to recommendations during the Release for Public Comment (April August 2006), as well as efforts that have been continued since the OWS 3 initiatives and during the OWS 4 Initiative, conducted May 2006 December 2006. SensorML V1.0 was approved as an OGC Standard 23 June 2007. SensorML V1.0.0 is undergoing a revision and harmonization to better align SensorML V1.0.0 with ISO TC211 and OGC Standards. The work includes 1. make the SensorML V1.0.0 UML conformant with ISO 19103, ISO 19118 and ISO 19136 Annex E 2. harmonize between the SWE Common datatypes model and ISO 19103 and ISO 19123 3. harmonize between SensorML and the sensor model to be defined in ISO 19130 4. refactor the SWE Common components into a separate document 5. investigate harmonization between SensorML and OGC Web Processing Service (WPS) 6. harmonize between SensorML and TransducerML 7. further harmonization of metadata with ISO 19115 and 19139 8. harmonize between SensorML event/history with ISO 19108 and 19109 9. harmonize between SensorML and the Abstract Specification documents for spatial positioning

#### **Public Availability**

There are no known patents, copyrights and proprietary restrictions associated with this standard. OGC issues a call for Intellectual Property Rights before any OGC Standard is approved. None were identified for this standard.

#### **Implementability**

NASA MSFC SMART- Organization: NASA Marshall Space Flight Center The goal of the Sensor

Management for Applied Research Technologies (SMART) On-Demand Modeling proposal is to develop and demonstrate the readiness of Open Geospatial Consortium (OGC) Sensor Web Enablement (SWE) capabilities that integrate both Earth observations and forecast model output into new data acquisition and assimilation strategies. R sEau water portal - Organization: Environment Canada The R sEau water portal implemented the OGC SensorML specification to allow for interoperability across monitoring programs in documenting water monitoring stations across Canada PULSENET - Organization: Northrop Grumman TASC Northrop Grumman is utilizing SensorML and conducting an initial proof-of-concept field evaluation for remote unattended sensors in June 2006. MIST Organization: Northrop Grumman TASC Northrop Grumman's Multi-INT Simulation Tool (MIST) is an independent research and develop program which provides a framework/test harness to demonstrate and evaluate sensor management technologies using standards for models-based service architectures. Space Time Toolkit Organization: UAH Space Time Toolkit supports parsing and executing of SensorML processing chains, as well as support for SOS, WMS, WFS, and WCS and allows display of measured or derived observations within a interactive 4D visual display. See [http://vast.uah.edu/index.php?option=com\\_content&view=section&layout=blog&id=10&Itemid=76](http://vast.uah.edu/index.php?option=com_content&view=section&layout=blog&id=10&Itemid=76) for more detail about these applications and others.

### **Authority**

In 1998, under the auspices of the international Committee for Earth Observing Satellites (CEOS), Dr. Mike Botts began development of an XML-based Sensor Model Language for describing the geometric, dynamic, and radiometric properties of dynamic remote sensors. Initial development was funded under a NASA AIST Program. In 2000, SensorML was brought under the oversight of OGC, serving as a catalyst for the OGC Sensor Web Enablement (SWE) initiative. SensorML design has benefited greatly from the interactions of OGC members SWE Working Group. The continued development of SensorML has been supported by the Interoperability Program of OGC, as well as EPA, NGA, the US Joint Interoperability Test Command (JITC), and DISA, SAIC, General Dynamics, Northrop Grumman, SEICORP, Oak Ridge National Labs, and NASA. This work was brought forward, adopted in, and now maintained as an OGC Standard in June 2007.

### **Standard Type**

Non-Military

### **Standard Classification**

Unclassified

### **Keywords for Search**

OGC, Open Geospatial Consortium, XML, geographic information, geospatial, geospatial intelligence., sensor web enablement, sensors