

Space Details

Key:	SNRS
Name:	900026 SENSORS: Ocean Observing System Instrument Network Infrastructure
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Documents

This page last changed on Jul 14, 2008 by [zruble](#).

Here are some links to documents relevant to the project

1. [Design](#)
2. PC104 Configuration

Design

This page last changed on Nov 28, 2006 by [kgomes](#).

The project is currently standing at a point where Tom had taken the SIAM node service and created a web service that can make RMI calls to translate between web service calls and RMI calls. The next step is to take that work and extend it so we can test interfaces that are designed to meet the requirements spelled out in the SENSORS workshop report. There are some related projects as well and we are trying to incorporate information from those into the prototype that we decide to build. One possible overlap is the SNMP project and their declaration of using an Enterprise Service Bus (ESB). This could be the mechanism that transports messages around, but how do we actually make useful conversations? The SOS specification tries to present standard interfaces that can put sensors on the web. It looks like we could setup a SIAM node to be a SOS data publisher and connect it up to a ActiveMQ. In theory the ESB would actually give us the slippage to put an interface up that is a web service interface that interacts with SOAP messages. In order to match the SOS specification, SOS messages could be translated to WS message calls. But in order to do that, the WS interface needs to support similar methods. So what do those methods need to look like?

UW Instrument Interactions

This page last changed on Jun 19, 2008 by [kgomes](#).

This is a quick set of instructions on how to check, stop and restart the siam service for talking to the UW instruments.

1. ssh into fangtooth.shore.mbari.org under the ops account (ask one of the sensors project folks for the password)

```
ssh ops@fangtooth.shore.mbari.org
```

2. Change to the correct directory by running:

```
gosiam
```

3. Check on the current status by running:

```
listPorts loc -stats
```

You should see something like:

```
SIAM version $Name: $
0 DEBUG NodeUtility [main]: getNodeURL(): input=loc
22 DEBUG NodeUtility [main]: Get node proxy from rmi://loc/node
53 DEBUG SiamSocketFactory [main]: SiamSocketFactory.createSocket() - host=loc, port=1099,
server host=loc
54 DEBUG SiamSocketFactory [main]: return new Socket(host, port)...
121 DEBUG SiamSocketFactory [main]: SiamSocketFactory.createSocket() - host=134.89.13.33,
port=48506, server host=loc
121 DEBUG SiamSocketFactory [main]: return new Socket(host, port)...
Node 1611 has 2 ports
```

Port name	ISI-ID	Service	Status	S	:	E	:	R
/dev/ttyUW00	1608	WETLabs ECO Chlorophyll Fluorometer	SAMPLING	5961	151	459		
/dev/ttyW200	1615	WH Sentinel ADCP 150kHz s/n 6501	SAMPLING	10654	454	454		

4. If there are problems, or the S:E:R numbers don't change over the course of 30 minutes or so, it is probably hung and will need to be restarted. This can be done by:

```
exitNode loc
```

5. If the system is really wedged and that does not do the trick, you will have to search for the process using:

```
ps -ef | grep java
```

and you should see something like:

```
ops      10451 10447  0 May06 ?        00:50:47 java -cp /home/ops/siam/classes:/home/ops/
siam/jars/javax.jar:/home/ops/siam/jars/log4j-1.2.13.jar:/home/ops/siam/jars/XModem.jar:/
home/ops/siam/jars/jddac-common.jar:/home/ops/siam/jars/jddac-probe-j2me.jar:/home/
ops/siam/jars/instrument-proxy.jar:/home/ops/siam/jars/apache-activemq-4.1.1.jar:/
home/ops/siam/jars/spring.jar:/home/ops/siam/jars/jaxb-xjc.jar:/home/ops/siam/jars/
activation.jar:/home/ops/siam/jars/stax-api-1.0.1.jar:/home/ops/siam/jars/jaxb-api.jar:/
home/ops/siam/jars/jaxb-impl.jar:/home/ops/siam/jars/jaxb1-impl.jar:/home/ops/siam/
jars/ssds-client-pub-bob.jar -Djava.security.policy=/home/ops/siam/properties/policy -
Djava.rmi.server.codebase= -Djava.rmi.dgc.leaseValue=300000 -Dsiam_home=/home/ops/siam
-Dlog4j.threshold=INFO -Dsiam.exit.script=/etc/siam/postSIAM -Dsiam.node.log=/home/
ops/siam/logs/fangtooth.200805060900 -Dsiam.log4j=/home/ops/siam/properties/siam.log4j
moos.deployed.PublishingNodeTest -publish
```

The first number is the process ID (PID) and you can kill it using:

```
kill -9 10451
```

where you would substitute in your PID instead of the 10451 listed here.

6. Now that SIAM is shutdown, you should be able to restart it using:

```
nodeTestPub -publish &
```

The '-publish' option sends data to SSDS and if you add a -sensors flag it will publish to the JMS queues connect to the Enterprise Service Bus (ESB).

Drawings

This page last changed on Jul 03, 2007 by [kgomes](#).

Here are some drawings created for the SENSORS Project:

Memos and Minutes

This page last changed on Nov 16, 2006 by [kgomes](#).

1. Email Archive
2. Memos
3. [Meeting Minutes](#)
4. Notes and News
5. [References](#)

Meeting Minutes

This page last changed on Mar 13, 2007 by [kgomes](#).

1. [November 16, 2006](#)
2. [November 17, 2006](#)
3. [SNMP Telecon January 23, 2007](#)
4. [Design Meeting March 13, 2007](#)

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Bob Herlien and Kevin Gomes sat down to chat about what the goals of the SENSORS project should be and walked through some of the basic technologies surrounding web services. With the implementation of the basic RPC style web service that Tom did, we feel like we are really at a point where we need some interface definition to work from. There are many possible candidates for this definition for example:

1. OGC's SOS documents
2. IEEE 1451
3. An effort in looking to write a WSDL that incorporates 1451 functionality
4. Rick McMullen in the CIMA project stated there was a WSDL defined for making sensors first class members of the grid

We have not been able to get the CIMA WSDL or the porting of 1451 to WSDL. The next most likely candidate, it seems, is OGC's SOS. Our goals for the rest of 2006 is to:

1. Find or design a tractable interface (most likely in WSDL) to define sensor interface to infrastructure.
2. Implement a web service interface to support that WSDL and connect up to SIAM infrastructure to see it operating on MARS prototype.

Action items:

1. Bob will keep reading up on Web Services and OGC stuff
2. Kevin to contact Matt to see if 1451 to WSDL was ever finished
3. Kevin and Bob to talk with Luis about OGC SOS to see if there is an interface that is a fairly firm candidate to write a service to.

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Attendees:

1. Duane Edgington
2. John Graybeal
3. Luis Bermudez
4. Bob Herlien
5. Kevin Gomes

Notes

1. John ran through the Data Aggregation slides.
2. GRIDcc
3. ESB, NCSA, UCSD

Design Meeting March 13, 2007

This page last changed on Mar 13, 2007 by [kgomes](#).

Goal: The goal of this meeting is to design instrument interfaces to meet the stated goals of the SENSORS Workshop Report and also show how SIAM's Plug and Work can be utilized on the MARS testbed.

- What is the information model we are working with. Information Model
- What are the services to interact with that model. [Behaviors Services](#)
 - Set of interactions (what interactions does the instrument need to satisfy)
- What are the behaviors we are capturing (Workshop requirements table)

We should end up with a set of interaction patterns (message based) and the contents of those messages to meet the observatory needs

Participants:

- Matthew Arrott
- Kevin Gomes
- Bob Herlien
- Duane Edgington
- Tom O'Reilly

Resources: These are resources that were utilized (or referenced) during the design work.

1. [Sensors Workshop Report](#)
2. IEEE 1451.0 (Released Yet?)
3. [IEEE 1451.1](#)
4. [IEEE 1451.2](#)
5. [JDDAC User's Guide](#)
6. [GRIM](#)
7. [Enterprise Integration Patterns](#)
8. [OGC Sensor Observation Service](#)
9. [OGC Sensor Planning Service](#)
10. SSDS and SIAM
11. Antelope

Requirements from SENSORS Report

Requirement ID	Requirement Description	Priority	Status
R1	The system shall provide a means for the user to configure the sensor parameters	High	Not Started
R2	The system shall provide a means for the user to monitor the sensor status	High	Not Started
R3	The system shall provide a means for the user to control the sensor operation	High	Not Started
R4	The system shall provide a means for the user to store the sensor data	Medium	Not Started
R5	The system shall provide a means for the user to retrieve the sensor data	Medium	Not Started
R6	The system shall provide a means for the user to delete the sensor data	Medium	Not Started
R7	The system shall provide a means for the user to export the sensor data	Medium	Not Started
R8	The system shall provide a means for the user to import the sensor data	Medium	Not Started
R9	The system shall provide a means for the user to backup the sensor data	Medium	Not Started
R10	The system shall provide a means for the user to restore the sensor data	Medium	Not Started

Marine Observatory Component Model



Behaviors_Services

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- How do instruments appear as a resources on the network?
 - SIAM: Has to take initiative because of safety concerns.
 - instrument plugged in, then scanport (plug and work).
- Classes of instruments
 - Dumb instrument all the way to plugging in a computer
- Five services:
 - Streaming Interface (generate and listen)
 - Data and Metadata Acquisition
 - Instrument Identification is metadata (1451 idea of metadata)
 - Automatic sequencing of data
 - Event
 - Management Interface
 - State of Health
 - Reset Cycle (Power reset, logical reset, safe mode)
 - Generic commands "shutdown", instrument would then do what it needed to and reply "OK".
 - Statement of/Request for Capability
 - Power should have information model to capture peak, etc.
 - Statement of Capacity/Request for Allocation (power/bandwidth/storage)
 - Some form of time service (get time- both ways)
 - Control Interface (these have to come with identity of actor that sent it)
 - Is this identity allowed to do the request? (Needs a handle to a decision maker upon creation). Call identity provider for authentication. Policy decision service can be called also.
 - Perform/Execute
 - get/setChannel (Property, parameter, etc.)
 - updateChannel
 - Pub/sub
 - Channel subscribe
 - Perform Action (this is more than get/set, you can send whole XML) - asynch (get back key to monitor progress)
 - Life-cycle Services (logical device management)
 - Plug and Work Services (physical device management)
- AMQP
 - Apache QID
- JMS with broker

SNMP Telecon January 23, 2007

This page last changed on Jan 23, 2007 by [kgomes](#).

- Need to get to work
- John working on deployment diagram (machine names) by Thursday.
- NCSA progress - no progress
- Get MULE up and running by next week.

References

This page last changed on Jun 22, 2007 by [kgomes](#).

Here are some references that were utilized in the SENSORS project:

SENSORS Project Generated

1. [SENSORS: Ocean Observing System Instrument Network Infrastructure \(Workshop Report - PDF\)](#)

Technology Stack

1. 1451
 - a. [IEEE 1451.1 Specification](#)
 - b. [IEEE 1451.2 Specification](#)
2. DIGI Connect
3. OceanWorks
 - a. [SIIM Products used on VENUS](#)
 - b. [SIIM Data Sheet](#)
4. JavaSpaces
 - a. [Shoal Project](#)
5. OGC
 - a. [OGC SOS Specification](#)
6. Other
 - a. [DataAccessAtMBARI.pdf](#) presentation by Graybeal summarizing data aggregation and access concepts

Related project called SNMP that SENSORS is participating in:

1. [SNMP Wiki Page](#)
2. [GRIDCC](#)