Devices and Standards

Summary of Talk to Q2O Workshop

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Problem Description

The Problem

As the number of ocean observing systems increases, our ability to effectively integrate their sensors and data declines.

How can we achieve interoperable and scalable deployment of sensors in our oceans?

OOSTethys Example

This interoperability demonstration represents an effort to develop a Web Services Architecture for Ocean Observing. We are seeking participants who would like to serve their in-situ salinity and/or sea water temperature data via SOS based Web Services. Read how at the OOSTethys site.

SOS Realtime Map   **93 Platforms reporting:**   sea_water_salinity

Map   **Satellite** Hybrid
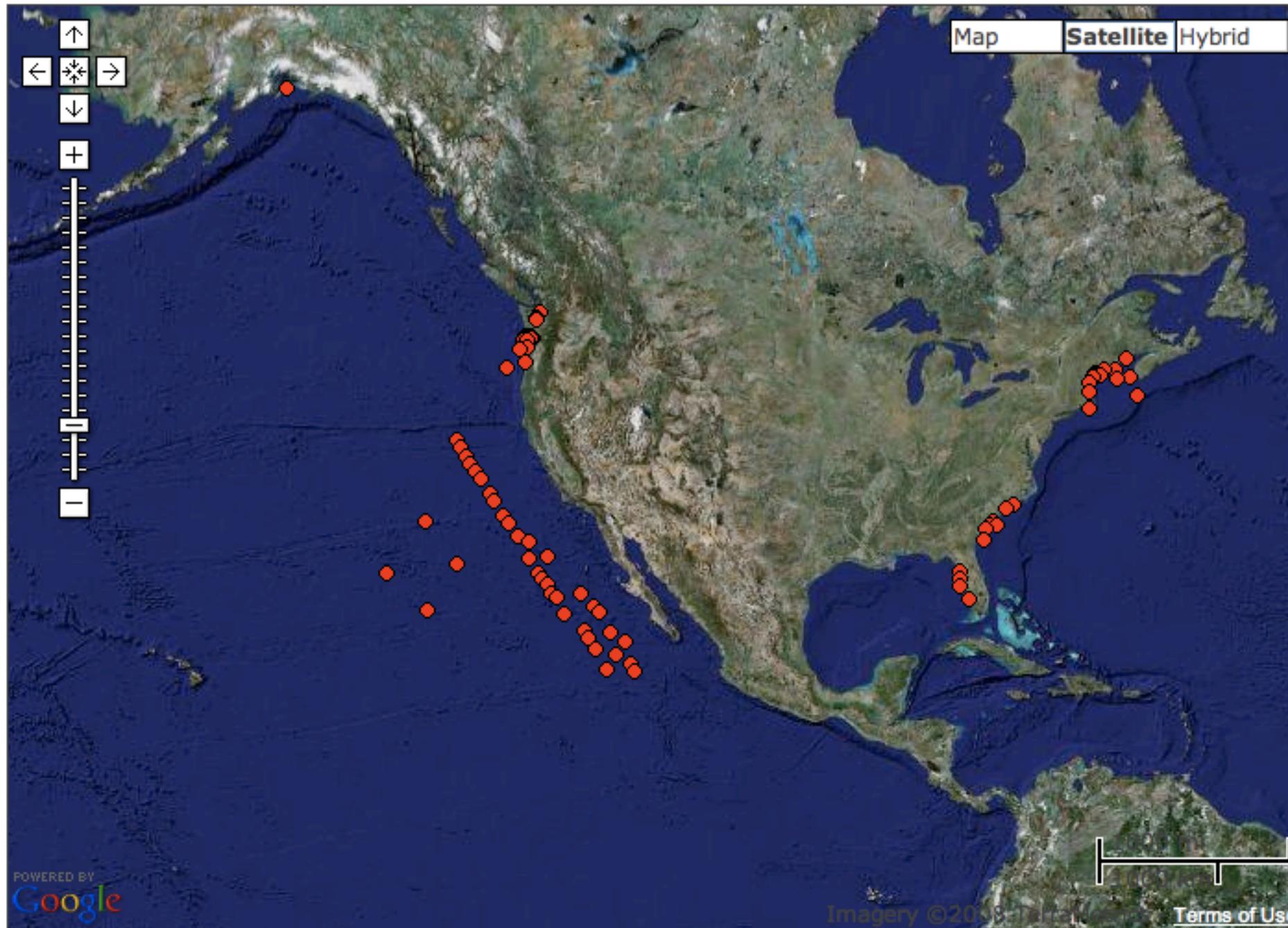
IOOS Variables:
Salinity
Mapped to:
sea_water_salinity
R_SALINITY

Zoom To:
– select –

Organizations:
– All –

- **OOSTethys.org**

- **How this map was produced**

- **Mapserver Version**

- **SOS Registry**

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Motivations (= Use Cases)

- Track your device's configuration and QA through time
- Keep your device configuration and QA with the device
- Build plug-and-work systems (no reprogramming!)
- Find devices (in store, in lab, in situ) matching needs
- Identify device that is the source of given data
- Reprocess and analyze device-generated data
- Real-time & archival system configuration descriptions

Device Life Cycle

Benefits Phase

Investment Phase

Device Developers

Observatory Operators

Software Developers / Systems

Marine Technicians

START

END

No Built-In Storage

Built-In Storage

Track Deployments Using Metadata

Move Devices Around & Across Observatories

Control Device Based on Metadata

Parse Output Based on Metadata

Access Device Based on Metadata

Write Device Metadata to CD/DVD/Registry

Build Usable Storage into Device

Buy Regular Device

Write Device Metadata to Storage

Build Storage Device Add-On

Buy Self Describing Devices

Buy Storage Device

Copy Metadata to Storage

Read Device Metadata from Storage

Install Device on Observatory

Configure Device & Update Metadata

Write Drivers for Devices

Write Drivers for Devices

Automated Interoperable Devices Scenario

Sensor Interoperability Activities

List of sensor interoperability activities, including those from MMI and ACT workshops.

Introduction

This document lists the activities relating to sensor interoperability, starting with those proposed by the ⊕Alliance for Coastal Technologies Enabling Sensor Interoperability workshop, and the MMI Sensor Metadata Interoperability workshops. The document lists any known activities that might be discussing the described activities, as well as individuals interested in them.

Both workshop reports have been published online:

- Alliance for Coastal Technologies ⊕Enabling Sensor Interoperability Workshop Report
- Marine Metadata Interoperability Sensor Metadata Interoperability Workshop Report

The two organizations have submitted a proposal to the NSF INTEROP solicitation, to address some of these goals. If you are interested in learning more, please contact John Graybeal at MBARI (MMI), and/or Mario Tamburri at the University of Maryland (ACT).
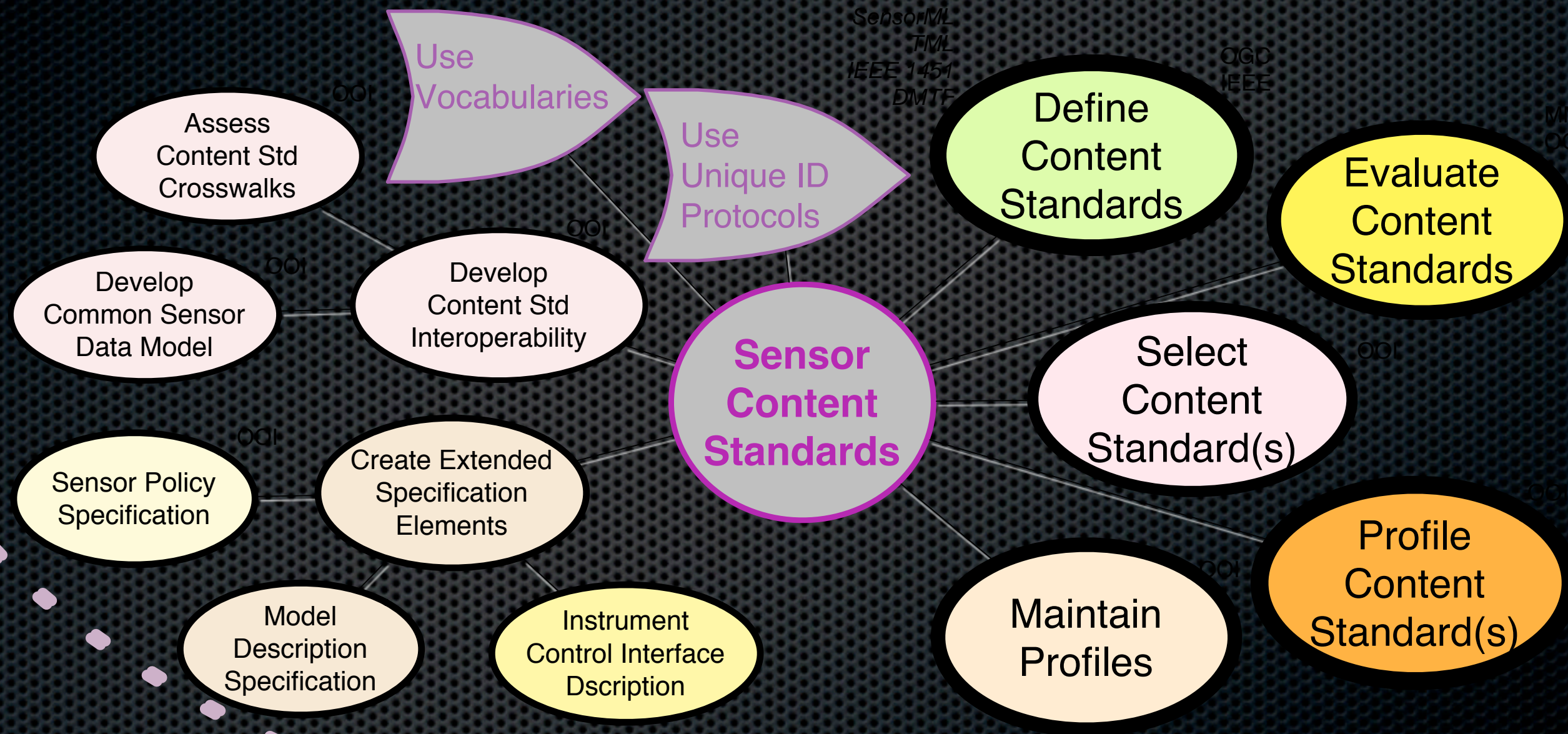
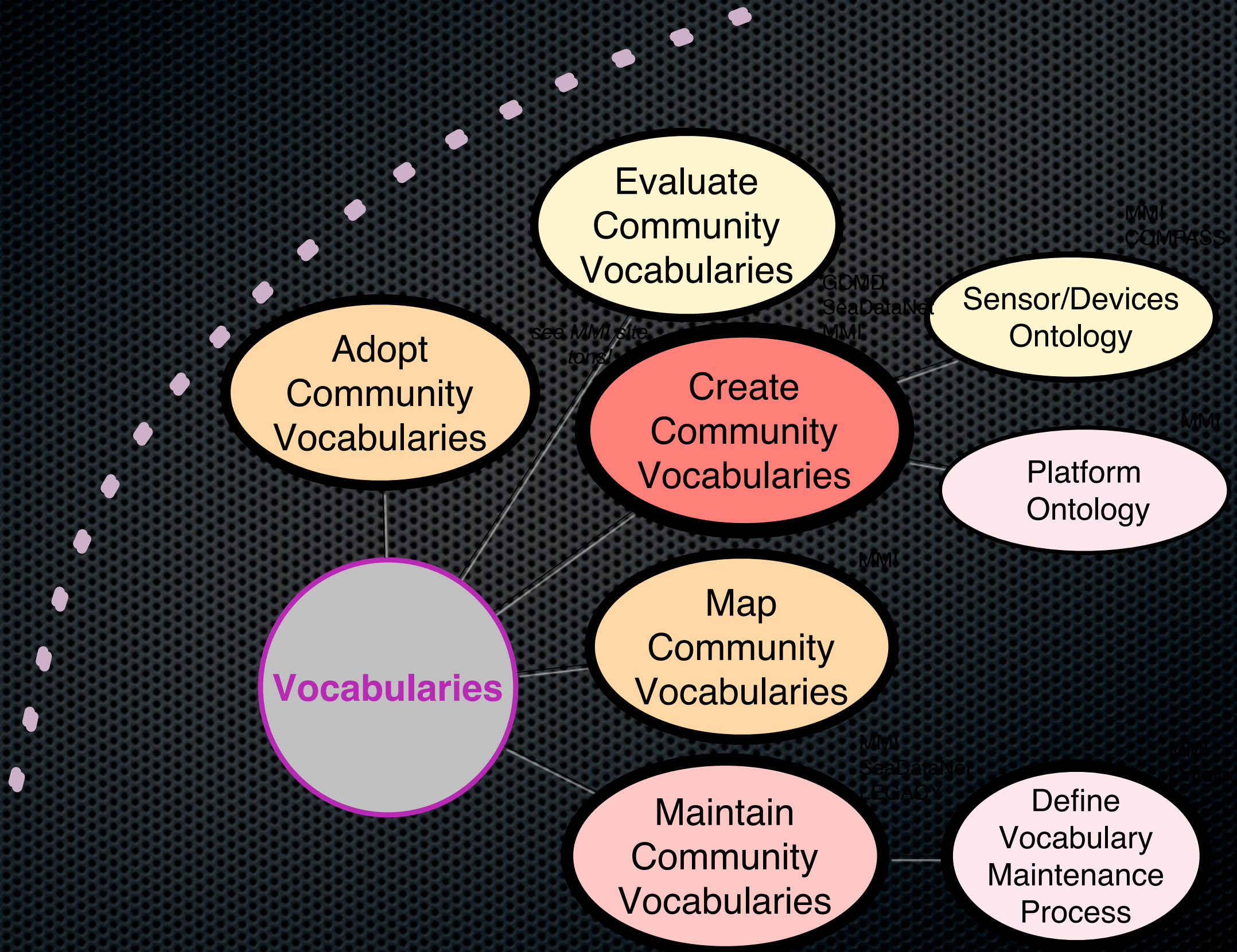## Interoperability Activities Table

Activities Table

Reference	Activity Title	Description	Leads	Comments
SMI C1	CS Feature matrix	Create a feature matrix of content standard specifications	MMI	NOAA/IOOS may add resources
SMI C1.1	Characteristics/needs	Document key characteristics and best practices for their development		
SMI C1.2	Relevant references	Point to relevant references on each specification		
SMI C1.3	Ops best practices	Document best practices for filling out content specifications, minimal stds		CS developers should contribute
SMI C2	Mfg enrollment	Determine if there is a clear direction to enlist manufacturer support	MMi/ACT	
SMI C3	Sensor description registry	Create a sensor description registry for storing sensor model descriptions.	TAMU/SCOOP	Consider ebxmlrr implementation.
SMI C3.1	Registry requirements/best practices	Define requirements and best practices for sensor registries.	⊕Open Ontology Repository Initiatve?	ISO 19135 may fully address this.
SMI C4	Sensor description examples	Create working examples of sensor model descriptions, populate registry	LDEO-TAMU- PDC-WHOI-ACT	
SMI C5	Specification validation templates	Create validating templates for each specification and put them in a sensor description template registry		

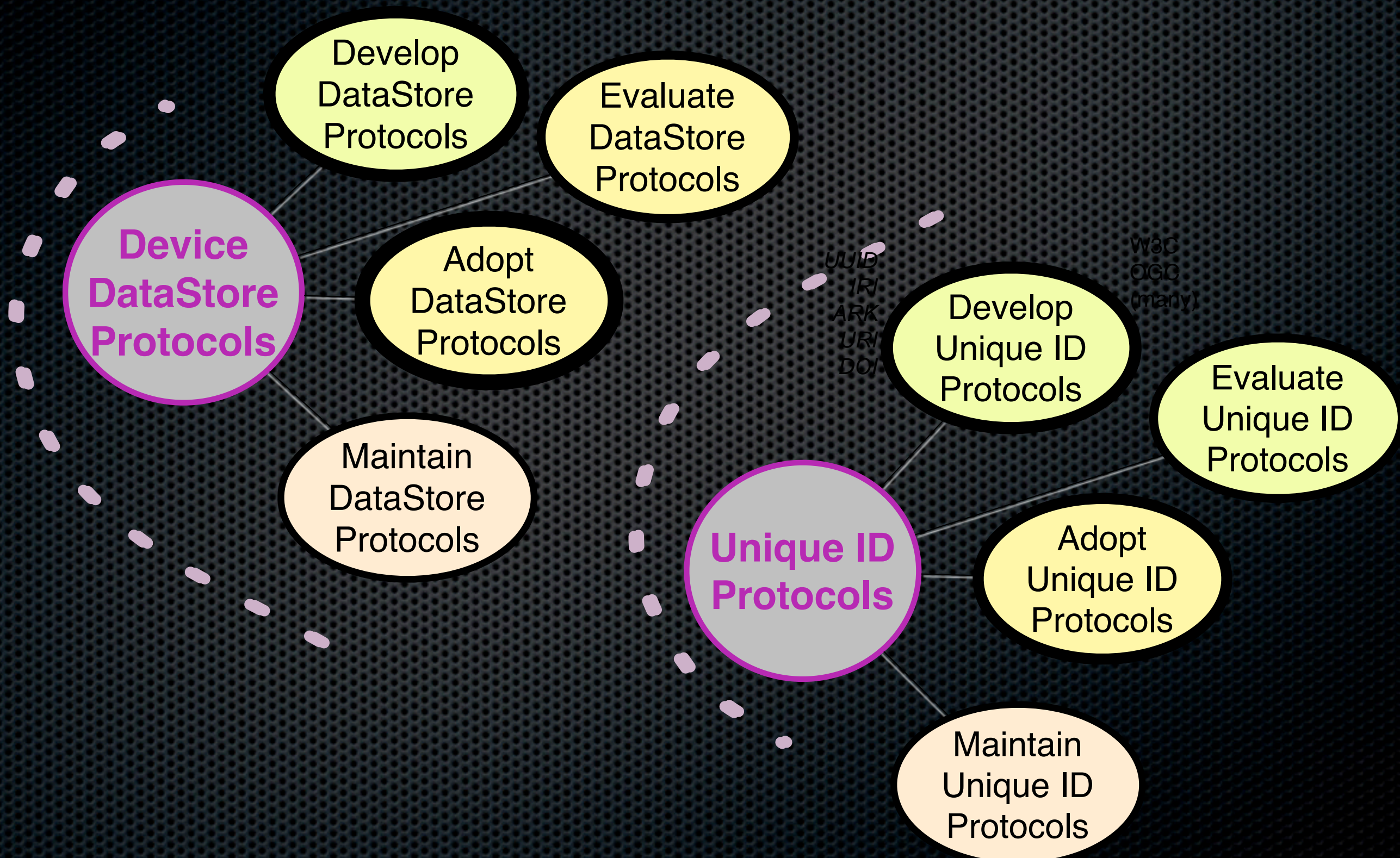# Activities: Content Standards

Activities: Vocabularies

Activities: Protocols

Strategic Planning

Virtual Ocean Observatory Research Program

Ocean Observing Symposia

Instrument Interoperability Forums

Create Programs & Initiatives

Ocean Observing Instruments "Plug-Fests"

Instrument Conformance Program

Manufacturers Consortia

Interoperable Ocean Observing Standards Body

Create Collaborations

Strategic Planning and Management

Define Project Management Plan

Requirements

Activities

Priorities

Schedule

Form Working Groups

Identify and Engage Program Managers

Initiate Outreach

Identify and Engage Funding Sources

marinemetadata.org/smi

References

* http://oostethys.org
  Exemplar of metadata-rich data system

* http://marinemetadata.org/deviceinterop
  A list of device interoperability efforts and ideas

* http://marinemetadata.org/smiactivities
  Detailed activities (bubbles) for device interoperability

* http://marinemetadata.org/csdevices & /vocabdevices
  Device-related content standards and vocabularies

* http://marinemetadata.org/smiworkshopreport
  MMI report on device metadata interoperability

* http://marinemetadata.org/ontdevices
  Device ontology development effort