# Draft Workshop Report

## Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)
## Technical Workshop
## Consortium for Ocean Leadership, Washington DC
## 7-8 June 2011

The Interagency Working Group on Ocean and Coastal Mapping sponsored this technical workshop to:

- recommend technical methods and standards;
- provide estimates of time requirements; and
- identify nontechnical risks and challenges;

that will be used to create a plan for development of a new OCM Inventory. Although the Inventory will initially be limited to major federal repositories of bathymetry and coastal elevation data, it will later be expanded to include other types of ocean and coastal mapping data (especially sub-bottom profiles and land/seafloor images); data holdings at minor federal repositories, regional, state, thematic, and academic repositories, and additional repositories that may be built; plans and requirements for new data acquisition; and data services.

The product of the workshop will be a written document providing guidance to Federal repositories for enabling compatibility with the OCM Inventory. The document will include the elements discussed in this workshop report: metadata requirements, standards, vocabularies, and translators (ontologies); technical standards for data services, technical governance, portals, and a register of participating repositories; and communication requirements for engaging Federal agencies and working with other projects. Many elements of the document were completed during the workshop. This report includes a plan for completing the remainder.

The new OCM Inventory will provide discovery and access to data and products as required under the Ocean and Coastal Mapping Integration Act that are also essential for the prototype information system called for by the National Ocean Council to support coastal and marine spatial planning. Release of the NOC prototype is scheduled for August 2011. Federal agencies should implement these steps for their bathymetry and coastal elevation data before *(when?!)* or provide a plan with timeline for implementation. When the recommended actions are completed, the public will be able to search for, identify, and retrieve bathymetry and coastal elevation data collected by the federal government (and government will be able to effectively plan data acquisitions based on complete knowledge of existing data).

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## Background

This workshop was the second of two meetings sponsored by the IWG-OCM in order to plan a new way of developing the OCM Inventory. The first workshop, held at the National Geophysical Data Center in Boulder on 12-13 January 2011, included presentations from major federal ocean and coastal mapping data centers and from related activities including the national ocean council and the R2R Program. The January workshop recommended a general approach and resulted in a Requirements Development Document (see Appendix 2).

The OCM Inventory is a project of the Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM) of the Subcommittee on Ocean Science and Technology (SOST), in

response to the findings of the U.S. Ocean Action Plan (2004) and in support of the Ocean and Coastal Mapping Integration Act of 2009. The OCM Inventory will be a comprehensive national list of ocean and coastal mapping data and activities, including a clearinghouse for data and interpretive information as well as a registry of completed and projected mapping activities, accessible through a web portal. The Inventory would reduce duplicate mapping efforts, facilitate cooperative mapping activities, and improve data discovery and accessibility. The goals of the inventory are captured in the pending Report to Congress on Progress Made in Implementing the Ocean and Coastal Mapping Integration Act:

- it will be built on and integrate the individual web map services of the primary Federal data repositories,
- it will provide metadata and depict geographic coverages of the data,
- it will utilize common terminology/vocabularies,
- it will be dynamic in reflecting changes in the data repositories, and
- it will adapt to changes in technology.

Participants in the January 2011 workshop agreed that the inventory should also:

- Allow users to search for metadata in a meaningful way.
- Provide metadata that is sufficient to answer the basic question, "Are the data useful for and in a format that supports my purposes?"
- Provide users with the capability to develop data collection partnerships by providing information regarding organizations that need OCM data or are planning to collect data.

An incremental approach to development of the OCM Inventory was approved at the January 2011 workshop. The first step will be coordination of major federal repositories of bathymetry and coastal elevation data, in order to provide this foundation data quickly for the prototype national portal for coastal and marine spatial planning. The order of subsequent steps is not defined, but they will expand the Inventory to include: (a) other types of ocean and coastal mapping, starting with sub-bottom profiles and imagery of the seafloor and coastal land surface; (b) plans and needs for data acquisition; (c) data services; and (d) information from sources other than the major federal repositories.

The January 2011 workshop also produced a high-level OCM Inventory Requirements Document that lays out the services the national inventory should provide (see Appendix 2). The requirements in this document served as the basis for this June 2011 technical workshop.

## Technical Workshop Program

The workshop included technical experts from major federal repositories of bathymetry and coastal elevation data, as well as participants with expertise in metadata, semantics, and online

services for data discovery. All IWG-OCM Agencies were invited to send representatives to the workshop (see announcement in Appendix 1). The list of workshop participants is provided in Appendix 3.

The workshop began with a summary of previous work on the OCM Inventory and discussion of the workshop goals. A shared foundation for technical discussions was provided by a series of presentations:

- Review of the Inventory Requirements Document, presented by Eddie Wiggins
- Remote presentation on the ESRI Geoportal server, presented by Marten Hogeweg of ESRI.
- Summary of information provided by major federal repositories in response to pre-workshop questions, presented by Robby Wilson of NOAA.
- Update on development of the CMSP Information Management System and Portal, presented by Doug Vandegraft of BOEMRE.
- Update on UNOLS/ECS work on shared standards for ISO metadata and vocabularies, presented by Anna Milan of NOAA.
- Advice on effective methods for encouraging production of high-quality metadata, presented by Lynda Wayne of FGDC.

Following the presentations, workshop participants divided into groups to discuss metadata, technology, and communication elements of a guidance document to enable federal repositories to achieve compatibility with the OCM Inventory. At the end of the workshop, recommendations from the groups were integrated into a consistent draft document, and plans were made to complete the guidance document including specific tasks, assignments, and a time line. The full workshop agenda is provided in Appendix 4.

## General Recommendations

The recommended method for building and maintaining an up-to-date OCM Inventory is that individual agencies and organizations should agree:

- to expose their metadata via services that could be picked up by search engines; and
- to apply a limited number of controlled vocabularies.

The vocabularies of the agreement will be registered so that they are versioned, available via the web, and potentially related via ontologies. By participating in these agreements, agency repositories create a system that supports a front end to a national inventory. Using a services approach will mean that the real inventory is distributed rather that all in one catalog. The national inventory is thus virtual and a search capability could be provided from an IWG-OCM.gov Web site that could be served by any of the agencies.

This approach is based on the obligation of each agency collecting/holding OCM data to create metadata (not a new requirement) and the work of the OCM group over the last few years to strengthen agencies' metadata, which was published to Geospatial One-Stop. The approach uses existing technology to harvest the metadata from Web services or Web-accessible folders that describe the basic data characteristics:

- **Who** (USGS/NOAA/USACE - include url to data page if exists);
- **What** (bathy/topo/lidar - use controlled vocabularies for consistency);
- **Where** (geographic extents via bounding box, donut holes, polygons, web services to draw map);
- **When** (start/end date of survey; buoy stream; etc); and
- **Why** (abstract to help user determine if data meet their needs including limitations or restrictions).

Existing technology will integrate this information into an inventory that has a useful public interface so the returns can be limited to a meaningful result. The returns can include embedded web maps built from the web service. This method is sustainable and scalable. Agencies can partner with other agencies to host their data in web services and update their metadata with the Web service address. The metadata, Web-accessible folders, and Web services that are required for the OCM Inventory can be used and re-used to support other inventories, discovery methods, and requirements - such as CMSP information management system, integrated agency inventories, regional or topical inventories that support specific programs.

Details of the plan will be made available in a guidance document that will be distributed to the agencies that produce OCM data. This workshop report provides preliminary guidance and a plan for producing the final guidance document.

## Risks and Obstacles

Workshop participants identified the following risks and obstacles for the general approach proposed in this document, and recommended measures for achieving success.

**Unifying portal.** Does there presently exist a portal that will consolidate all the OCM Inventory information and present a consolidated view that is identified with IWG-OCM? Workshop recommendation: *what?*

**Compatibility with larger OCM community.** Ultimate success of the OCM Inventory will require participation of all producers and consumers of OCM data, Will this approach, which was developed by representatives of major federal data repositories, be technically feasible for state agencies and academic departments? Workshop recommendation: Send workshop report to technical groups supporting CMSP regional planning teams for review before guidance document is finalized.

**FGDC/ISO format transition.** The geospatial community is in a period of transition between metadata using the 1998 FGDC standard and the ISO 19115 standard. Much existing metadata is in FGDC format and agencies have few resources for translating to the new standard. Workshop recommendation: start with an approach that can make use of metadata in either form, with the intention of providing efficient, low-cost metadata translators when they are available.

**Limited funding and outdated technology.** Agency repositories are based on older computer systems and do not have funding to implement newer systems. Workshop recommendation: *what?*

**Confusion with the previous approach.** Past OCM Inventory efforts focused on encouraging agencies and organizations to provide metadata to geodata.gov using the Geospatial One-Stop metadata standards. The new approach will require re-education. Workshop recommendation: *what?*

**ESRI ArcGIS 10 transition.** Some agencies use ESRI ArcGIS to create metadata, and need to adjust to the different capabilities of version 10. Workshop recommendation: *what?*

## Guidance Document: Elements and Tasks

### Metadata Group_____

### *Metadata requirements*

*Person or organization responsible:* _____

*Points of contact for agencies, responsible for agencies' delivery of metadata content:*

| | |
|---|---|
| NOAA | |
| USGS | |
| USACE | |
| BOEMRE | |
| Others? | |

*Product: Written guidance on minimum metadata elements and standards/templates for compatibility with OCM Inventory.*

*Time considerations: Precedes work on all other elements except for **Technical governance structure, Data collection registry,** and **Coordination with other projects**. Decisions completed at technical workshop; guidance to be written within one week after workshop.*

Technical recommendations:

- Metadata will be provided using FGDC or ISO standards, in an xml format.
- Metadata will be made available by agencies in a web accessible folder that can be resolved by existing portals such as GOS and data.gov as well as a potential future OCM Portal application.
- In addition to the metadata elements listed in the requirements document, guidance will request that metadata for data services also include a URL for a programmatic access, for example an OGC GetCapabilities or WSDL. Any further changes will be dealt with through the technical governance structure.

Risks and obstacles related to metadata requirements:

## *Standards for metadata ID's, time, and place*

*Person or organization responsible: _____*

*Product: Written guidance on use of metadata ID's to ensure uniqueness and for how time and geographic coverage should be expressed in metadata elements for compatibility with OCM Inventory.*

*Time considerations: Follows **Metadata requirements**, precedes **Publication of guidance**.*

Technical recommendations: This element should consider the range of standards available within FGDC and ISO metadata elements, as well as the products of the Spatial Extents for Marine Gazetteers Project.

Examples and templates:

Risks and obstacles related to implementation of standards for ID, time, and place:

## *Metadata vocabularies*

*Person or organization responsible: _____*

*Product: Written guidance on vocabularies to be used, in the future, for particular metadata elements for compatibility with OCM Inventory.*

*Time considerations: Follows **Metadata requirements**, precedes **Vocabulary translators**.*

Technical recommendations: This element will make use of the U.S. ECS/UNOLS work underway to define schemas and vocabularies and the procedures and criteria recommended by the WHOI/USGS/NOAA Workshop on Discovery Metadata for Coastal and Marine Spatial Planning to evaluate and recommend metadata data elements and controlled vocabularies.

The following metadata elements have existing controlled vocabularies that will be recommended:

In addition, controlled vocabularies need to be chosen for recommendation as standards for these fields:

Risks and obstacles related to implementation of standard vocabularies:

## *Vocabulary translators (ontologies)*

*Person or organization responsible: _____*

*Product: Written guidance on implementation of vocabulary translators to enable legacy metadata records to be compatible with OCM Inventory.*

*Time considerations: Follows **Metadata vocabularies,** precedes **Publication of guidance**.*

Technical recommendations:

Risks and obstacles related to implementation of vocabulary translators:

## Technology Group_____

## *WMS integration*

*Person or organization responsible: _____*

*Product: Written guidance on configuration of OGC WMS services to be compatible with OCM Inventory, including guidance for both ISO (using service metadata standards ISO 19119) and FGDC.*

*Time considerations: Follows **Metadata requirements,** precedes **Publication of guidance**.*

Technical recommendations:

- For ISO use: <srv:connectPoint> Action Item: URL to template?
- For FGDC use: <networkr>  Action Item: URL to template?

Risks and obstacles related to WMS integration:

## *Technical governance structure*

*Person or organization responsible: _____*

*Product: Written guidance on structure and functions of technical governance that will allow OCM Inventory to change with new technology, stakeholders, and requirements.*

*Time considerations: Begins at technical workshop, precedes* ***Publication of guidance****.*

Technical recommendations:

Risks and obstacles related to technical governance:

## *Data collection register*

*Person or organization responsible: _____*

*Products: (1) Identification, and if necessary, negotiated agreement with an existing service registry to host a register that lists the services that constitute the OCM Inventory. (2) Written guidance on procedures to register a repository's data service with the OCM Inventory.*

*Time considerations: Begins at technical workshop, precedes* ***Publication of guidance****.*

Technical recommendations:

Risks and obstacles related to data collection register:

## *OCM Inventory portal*

*Person or organization responsible: _____*

*Products: Written guidance to allow selection and/or configuration of one or many data portals that will produce an integrated view of the total OCM Inventory.*

*Time considerations: Begins at technical workshop, precedes* ***Publication of guidance****.*

Technical recommendations:

Risks and obstacles related to Inventory portal:

**Communication Group_____**

## *Coordination with other projects (CMSP NIMS, data.gov, MMC, etc.)*

*Person or organization responsible: _____*

*Products: Written communication plan to ensure mutual awareness and to enable cooperative efforts between the OCM Inventory and other projects.*

*Time considerations: Begins at technical workshop, precedes* ***Publication of guidance****.*

Technical recommendations:

Designate liaisons with the CMSP information management system and other activities.

Risks and obstacles related to project coordination:

## *Developing the compelling message*

*Person or organization responsible: _____*

*Products: Written statement expressing the value to the agency of improving its data repository and services to achieve compatibility with the OCM Inventory, which will help ensure agency engagement and commitment.*

*Time considerations: Begins at technical workshop, precedes* ***Publication of guidance****.*

Technical recommendations:

Risks and obstacles related to compelling message:

## *Publication of guidance document for Federal repositories*

*Person or organization responsible: _____*

*Products: Written document providing guidance for enabling compatibility with the OCM Inventory.*

*Time considerations: Follows all other activities. Draft should be delivered within 6 weeks of other preceding documents completion.*

Technical recommendations:

Risks and obstacles related to publication of document:

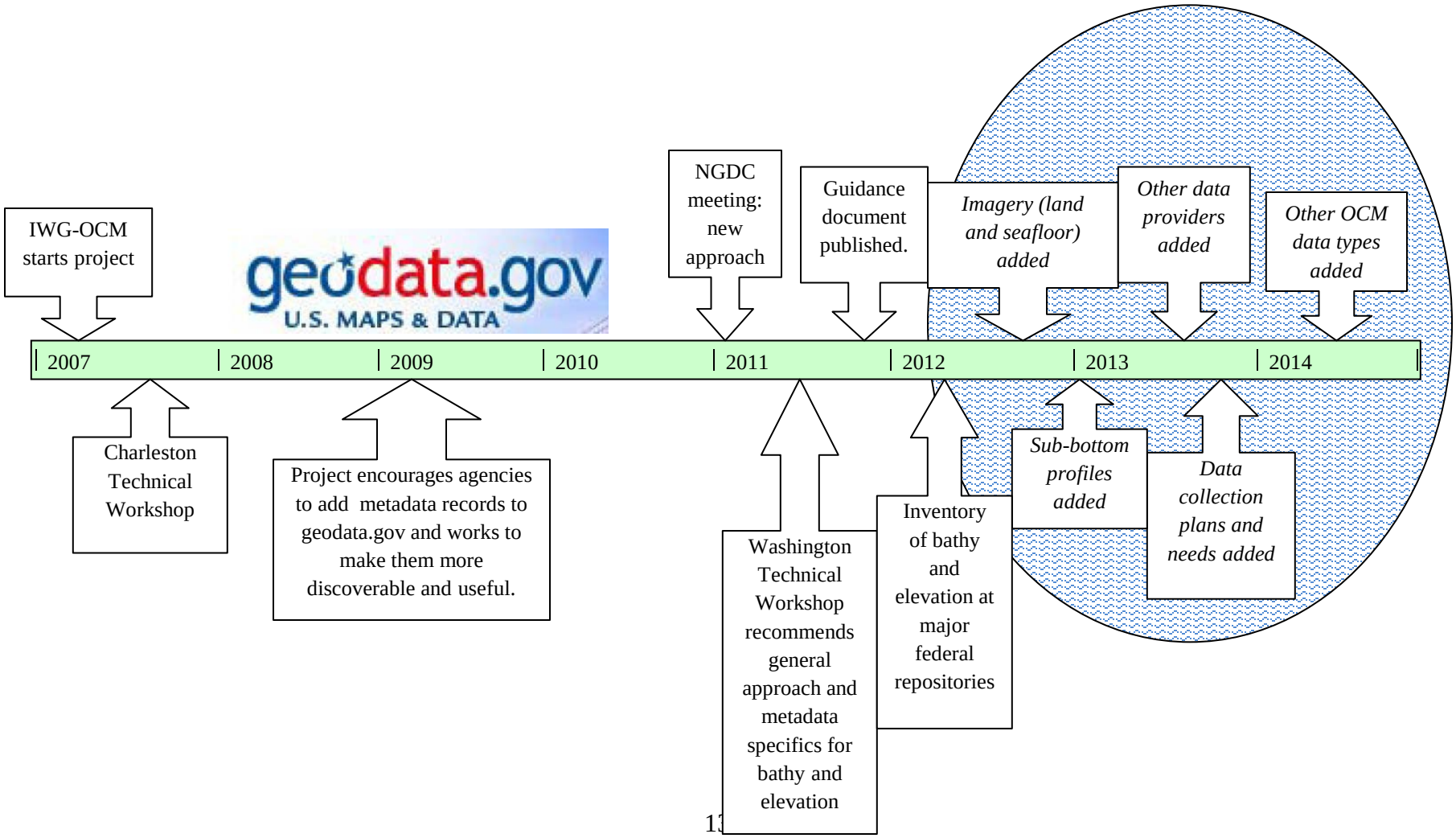
## Timeline, Milestones

| | |
|---|---|
| June 7-8, 2011 | Technical workshop |
| June 22, 2011 | Final version of workshop report |
| August 31, 2011 | Deliver to IWG-OCM a first draft of guidance document for Federal repositories |
| September 30, 2011 | IWG-OCM agencies and regional technical groups have completed review of guidance document |
| October 31, 2011 | Final version of guidance document for Federal repositories |
| March 31, 2012 | Agencies in compliance with guidance document |

## Timeline to complete work on guidance elements:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| June 7-8 | | | | Technical Workshop | | | |
| June 9-22 | | Metadata requirements written | | Finish workshop report | Technical Governance | Data Collection Register | Compelling Message |
| June 23-July 6 | Standards for time and place | Metadata vocabularies | WMS Integration | Coordination with other projects | | | |
| July 7-20 | | | | | | Portal | |
| July 21-August 3 | | Vocabulary translators | | | | | |
| August 4-17 | | | | | | | |
| August 18-31 | | | | Compile complete draft of guidance | | | |

# OCM Inventory History and Proposed Future



## Appendix 1: Workshop Announcement

The workshop was originally scheduled for April 19-20. The following announcement was sent to IWG-OCM Agencies.

**SAVE THE DATE - OCM INVENTORY TECHNICAL WORKSHOP (19-20 April 2011, Washington, DC)**

Rebecca.Arenson to: Jeff Lillycrop, John Haines, John C Brock, Eddie Wiggins (USACE), Vandegraft, Doug L, Roger L Parsons, Wayne Estabrooks, Robin J. Pender, Brian Midson, Jonathan Westcott (FEMA), Roger Johnson, Rebecca Arenson, Macon, Christopher L, Lora Clarke, Taylor, Christine, Hankin, Erik R, Bontempi, Paula (HQ-DK000), Abigail Graefe, Howard J. Cohen, Parker, Frank, Berkson, Jonathan, mark blankenship, Andy Armstrong, Tim Battista, Julie Bosch, Paul Bradley, Stephen K. Brown, Gabrielle Canonico, Bryan Costa, James M Crocker, Mimi D'Iorio, David Fischman, Nina.Garfield, Steve Giordano, George Graettinger, Laura Rear McLaughlin, Tony Lavoi, Garry Mayer, John Mcdonough, Susan McLean, Guy Noll, Chris Parrish, Roger L Parsons, Steve Rohmann, Nicholas Schmidt, Gene Smith, Peter Stone, Mitchell Tartt, Sidney Thurston, Samuel Walker, Robert Wilson, Joseph A Pica, Cecile Daniels, Gerd Glang, Lisa Taylor, Mashkoor Malik, mark blankenship, Hankin, Erik R, Lora Clarke, Sylvester, Charlene S SAM, Lisa Taylor, Jim Holik, Roger Johnson, Siobhan Collins, Jim Illg, Frances L Lightsom, Joshua Murphy, Jihong Dai, christopher fox, Donald Collins, Jon Childs, John C Cartwright, Mary Boatman, Wozencraft, Jennifer M SAM, Patrick E. Hart, Peter Triezenberg — 03/01/2011 04:46 PM

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Please see the announcement below from the IWG-OCM Inventory Project Team for the April 19-20, 2011 Ocean and Coastal Mapping Inventory Technical Workshop.

The two attachments are: 1) an executive summary of the January 2011 OCM Inventory Workshop and 2) the inventory requirements development document. And as noted below, please provide the names and contact information of your agency representatives to me ( Rebecca.Arenson@noaa.gov) no later than 1 April 2011.

Thanks - Rebecca

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What: National Ocean and Coastal Mapping Inventory Technical Workshop

Sponsor: Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM)

When: 19 and 20 April 2011

Where:
Coastal States Organization
Hall of the States
444 North Capitol Street NW
Washington, D.C.

Background: The IWG-OCM sponsored the first of two OCM Inventory Workshops on 12 and 13 January 2011 (executive summary attached). The second workshop - scheduled for 19 and 20 April 2011 – will focus on addressing the technical issues required to move the inventory development forward.

Workshop Deliverable - A clearly defined and unobstructed path forward to create a national inventory of ocean and coastal data and data acquisition plans – with an initial focus on elevation data - by coordinating Federal data services and metadata standards so that data from all the major federal repositories can be discovered through any geospatial web portal. See attached OCM Inventory Requirements Development Document

The path forward will:

1. enable the inventory to be expandable, first to the remaining framework OCM data types and then to other OCM data types;
2. enable the inventory to be expandable to include elevation and other OCM data from repositories other than the major federal ones, including minor federal repositories, regional, state, thematic, and academic repositories, as well as potential repositories that may be built to archive data from sources that cannot maintain their own repositories.;

3. be sufficiently compelling such that agency representatives can recruit necessary management support within their agencies;

4. be sufficiently detailed such that agency representatives will be able to initiate projects or activities that lead to successful data discovery through any geospatial web portal. These implementation details might consist of metadata templates, vocabularies for particular metadata fields, and defined formats for other metadata fields;

5. use existing geospatial portals for data discovery, unless the technical workshop recommendations include a plan for producing a dedicated OCM Inventory portal to include existing budget and program constraints; and

6. include - or will enable the inventory to be expanded to include - data services and plans for data acquisition.

Additional workshop information will be distributed shortly. Please identify representatives from your agency who have the requisite technical knowledge to participate in this workshop, and provide those names and contact information to Rebecca Arenson ( Rebecca.Arenson@noaa.gov) not later than 1 April 2011. We look forward to your participation.

Respectfully,

IWG-OCM Inventory Project Team:
Fran Lightsom, USGS
Eddie Wiggins, USACE
Roger Parsons, NOAA


IWG-OCM Jan 2011 Inventory Workshop Executive Summary.pdf


OCM Inventory RDD 110301.pdf

## Appendix 2: OCM Inventory Requirements Development Document

To be inserted in final report.

## Appendix 3: List of Workshop Participants

## Appendix 4: Workshop Agenda

## Appendix 5: Acronyms and Abbreviations

| | |
|---|---|
| BOEMRE | Bureau of Ocean Energy Management, Regulation, and Enforcement |
| CMSP | Coastal and marine spatial planning |
| ECS | Extended Continental Shelf, an interagency project related to the United Nations Convention on the Law of the Sea |
| ESRI | The company that makes ArcGIS, see www.esri.com |
| FGDC | Federal Geographic Data Committee |
| GOS | Geospatial One-Stop, online at www.geodata.gov. |
| ID | Identifier or identification |
| ISO | International Organization for Standardization |
| IWG-OCM | Interagency Working Group for Ocean and Coastal Mapping |
| MMC | Multipurpose Marine Cadastre, online at www.marinecadastre.gov |
| NIMS | National information management system, used to describe a project of the National Ocean Council in support of coastal and marine spatial planning |
| NOAA | National Oceanic and Atmospheric Administration |
| NOC | National Ocean Council, see www.whitehouse.gov/administration/eop/oceans |
| OCM | Ocean and coastal mapping |
| OGC | Open Geospatial Consortium |
| OGC GetCapabilities | OGC common services specification for describing the capabilities of servers |
| R2R | Rolling Deck to Repository: NSF-funded project for management of underway data from UNOLS vessels |
| SOST | Subcommittee on Ocean Science and Technology, part of the National Science and Technology Council |
| UNOLS | University-National Oceanographic Laboratory System |
| USACE | United States Army Corps of Engineers |
| USGS | United States Geological Survey |
| WHOI | Woods Hole Oceanographic Institution |
| WMS | OGC Web Map Service |
| WSDL | Web Service Definition Language |