

EAHC Workshop on Database Design and Management

Incheon, Rep. of Korea
November 5–9, 2012

Executive Summary

As a part of the 2012 EAHC CB Work Programme funded by IHO/ROK Programme of Technical Cooperation, the Database Design and Management Workshop took place from 5th – 9th November 2012. The event took place at the Benekia Premier Songdo Bridge Hotel in Incheon, South Korea, organized and hosted by the Korea Hydrographic and Oceanographic Administration. 18 participants were involved: this includes the 13 trainees from 7 EAHC member states (MS), 1 coordinator from South Korea and 4 guest instructors from the John Pepper Consultancy Ltd, and one from OceanWise Ltd. The instructors were invited with the support of the IHO CB Fund, two of whom were invited from the OceanWise Company and led the lecture sessions; and two of whom were invited from the CARIS Company and led the practical application session. The course curriculum highlighted the SDI theory with the inclusion of MSDI and NSDI. Participants from each nation shared their MSDI and NSDI national work experience.

1. INTRODUCTION

In hydrographic offices located within EAHC member states (MS) have a large amount of collected data that demands organization. Among these different offices, there are discrepancies in database management-related knowledge. The role of each office determines the types and forms of data that is transmitted. The proposal was accepted at 9th Capacity Building Sub Committee Meeting in May 2011 to allow the Workshop on Database Design and Management to become a part of the 2012 EAHC Capacity Building Programme funded by IHO/ROK Programme of Technical Cooperation.

2. OBJECTIVES

The overall objective of the Workshop is to enhance knowledge and database design and management skills in the EAHC MS. The Workshop will also allow the MS to develop a foundation for hydrographic and relevant data, and it will encourage learning in the SDI (MSDI and NSDI) as well as

providing the tools to design and managing a systematic database for hydrographic and relevant data.

3. VENUE, DATES AND PARTICIPANTS

The workshop took place at the Diamond Meeting Room, Benekia Premier Songdo Bridge Hotel, Incheon, Korea during 5th – 9th November 2012. 18 participants attended the workshop, including 13 trainees from 7 EAHC member states, 1 coordinator from South Korea and 4 lecturers, namely Mr. John Pepper and Dr. Mike Osborne from Ocean Wise Ltd and Mr. William Siddall and Mr. Jeremy Nicholson from CARIS.

4. DESCRIPTION OF DAILY ACTIVITIES

Day 1: The Director General of the Korea Hydrographic and Oceanographic Administration, Sukhyun KIM officially opened the Workshop at the opening ceremony. The outline and goals of the workshop were presented, which led to the topic of IHO policy, MSDI and obstacles in the way of our progress. The SDI, which is also synonymous with data management, was introduced along with the various types of data and methods to manage this data. Participation was encouraged through activities involving group discussions.



Day 2: Technical standards, which involve standard bodies, standard series, IHO standards, were presented. Group work participation was encouraged in sessions aimed at data specifications and modeling.



Day 3: Only the morning session was available. This session reviewed organizational changes by allowing the students to put themselves in the person who has a significant impact on his or her organization, as well as the SDI vision. Also, the technological support for the SDI was discussed. There was a short city tour after lunch time; participants visited the Songdo Central Park for two hours.



Day 4: After the theory and group discussions, the 2-day practical session commenced. The tools used for SDI tasks which originated from the CARIS Company were taught by an expert from the company. The practical application part of the session had to be adjusted based on the available equipment.



Day 5: The fifth day began with the continuation of the practical session, and finished with the closing ceremony led by the Director General of the Korea Hydrographic and Oceanographic Administration, Sukhyun KIM.



5. CONCLUSIONS AND RECOMMENDATIONS

In terms of success, the workshop allowed the advancement of national and regional maritime spatial data infrastructures through emphasizing the importance of hydrographic database as a crucial part of the MSDI and the provision of theoretical and practical training in designing and managing database. The outcome of the workshop is greatly dependent on the quality and strengths of the instructors. It is suggested that workshops like these become a long-term program and consistently offered in the future. Above all, the workshop fosters the development and maintenance of cooperative relationships among member states.

ANNEX 2 – PROGRAMME

DAY 1 – Monday 5 th November 2012		
Time	Description	Outcome
0800 – 0830	Registration at Meeting Room Dress code: Suit	
0830 – 0900	Opening Session <ul style="list-style-type: none"> Opening address by Director General SukHyun Kim – KHOA Group photo Business and social arrangements 	
0900 – 0945	Session1: Introduction – John Pepper (JP) <ul style="list-style-type: none"> Welcome and introductions Programme Aims and objectives 	<i>Presentations</i> and round table speeches by students and lecturers to get to know each other and understand course requirements.
0945 – 1000	BREAK FOR COFFEE	
	PART 1: THEORETICAL SESSION FRAMEWORK Presented by OceanWise (assisted by Caris)	
1000 – 1100	Session 2: Spatial Data Infrastructure – Mike Osborne (MO)/John Pepper (JP) <ul style="list-style-type: none"> What it is and what it is not! Policy and Governance (People) Technical Standards (Standards) Information Systems / Services (ICT) Geographic Content (Data) 	<i>Presentations</i> from which students will gain an understanding of spatial data infrastructures (SDI) including the importance and role of data management and databases. <i>Further learning: To be announced (TBA)</i>
1100 – 1200	Session 3: Student Perspectives on SDI (MO) <i>SDI in countries represented by students</i> – 5 minute presentations by students to include: <ul style="list-style-type: none"> Status of national SDI? Which organisations are involved? Role of Hydrographic Office (HO)? Status of HO to support SDI? Plans to support SDI development? Perceived and tangible benefits? Challenges and obstacles identified? 	A student from each country comes to the course prepared to give a 5 minute summary of SDI development in their country. Students will understand how other countries are tackling SDI development and will confirm their understanding of the topic.
1200 – 1300	BREAK FOR LUNCH	
1300 – 1330	Session 4: Where Are We Now? (JP) <i>Lecturer leads group discussions</i> reviewing the outcomes of Session 3 and introducing students to the conceptual design of SDI, the challenges and obstacles faced to achieve its implementation, and their role and the role of their HO within it.	Students are able to <i>identify the benefits and opportunities of SDI</i> and the factors that hinder development, and how these can be overcome by careful design and sympathetic communication with stakeholders. <i>Further learning: To be announced (TBA)</i>
1330 –	Session 5: Effective Data Management	

1445	(MO) <ul style="list-style-type: none"> Data policies and principles Data management systems Database design Conceptual and logical design Physical implementation 	<i>Presentations</i> to give a theoretical and practical understanding and appreciation of data management, modelling, database design and implementation. <i>Further learning: To be announced (TBA)</i>
1445 - 1500	BREAK FOR TEA	
1500 - 1600	Session 6: Database Development (MO) <i>Lecturer lead group sessions (4-5 students in groups)</i> to design a simple data management solution including: <ul style="list-style-type: none"> Sources of data Structure and attribution Relationships between features Versioning and data outputs 	Each group to deliver a <i>simple design structure</i> for a database comprising Hydrographic and /or Oceanographic content.
1600- 1645	Session 7: Introduction to Metadata (JP) <ul style="list-style-type: none"> Data audit and inventory Purpose Metadata standards Creation and management Publication and use in data discovery 	<i>Presentations</i> on the value and benefit of good metadata. Students understand what metadata is and its importance.
1645 - 1715	Session 8: Metadata Creation (JP) <i>Lecturer lead exercise</i> to create international standard compliant metadata for a bathymetry dataset. Demonstration of <i>Mikado</i> metadata.	Students to complete <i>simple exercise</i> to create metadata for bathymetry.
1715 - 1730	Session 9: Review and Further learning (JP) Key messages and learning points from day. Explanation of student <i>group exercise</i> to investigate the differences between data, information and products	Students understand the main aspects of the day's lessons. <i>Each group is asked to prepare a 5 minute presentation</i> on the different types and states of data including their uses, advantages and disadvantages.
DAY 2 - Tuesday 6th November 2012		
Time	Description	Outcome
0800 - 0830	Registration at Meeting Room Dress code: Casual	
0830 - 0900	Session 1: Presentation of Homework (JP) Data types and stages - 5 minute presentations by student groups.	<i>Presentations</i> by student groups to all.
0900 - 0945	Session 2A: Technical Standards (MO) <ul style="list-style-type: none"> Categories Description Importance Selection 	<i>Presentations</i> on the importance and role of data standards. Students gain a basic understanding of data standards.
0945 - 1030	Session 2B: IHO S-100 : The Geospatial Standard for Hydrographic Data (JP)	<i>Presentation</i> on the implications of S-100 for the HO community

1030 – 1045	BREAK FOR COFFEE	
1045 – 1130	Session 3A: Data Specifications (MO) <ul style="list-style-type: none"> • What is a data specification? • The Importance of data specifications • Description of data specifications in MSDI 	<i>Presentations</i> on the importance and role of data specifications. Students gain a basic understanding of data specifications.
1130 – 1215	Session 3B: S-100 based specifications (MO)	<i>Presentation</i> on extensions to S-100 (e.g. S-101 for Electronic Navigational Charts)
1215 – 1315	BREAK FOR LUNCH	
1315 – 1500	Session 4: Data Modelling and Specifications development (MO) <i>Lecturer led exercise</i> to create a data model and specification for a non-navigational application of hydrographic data based on S-100. Topic area to be decided by students.	<i>Students work in groups to define different components of a new S-10X specification</i> which includes source data management and data modelling using OceanWise Marine Themes data as an example identifying the issues and challenges to be resolved.
1500 – 1515	BREAK FOR TEA	
1515 – 1545	Session 5: Review of Data Specifications Exercise (MO/JP)	<i>Lecturer led class discussion</i> to ascertain level of knowledge, understanding and importance
1545 – 1630	Session 6: Data Publishing [Part 1] (MO) <i>Presentations</i> on product specifications and the work of the Open Geospatial Consortia (OGC)	
1630 – 1715	Session 7: Data Publishing [Part 2] (MO) <i>Presentation</i> on Data Exchange and Sharing; Network Services (View and Download) – including experience in Europe	An overview of the effectiveness and efficiencies gained by a joined-up approach through SDI
1715 – 1730	Session 9: Review and Further learning (JP) Key messages and learning points from day. Explanation of <i>student homework</i> : To identify obstacles the issues affecting the implementation of SDI.	Confirm students understand the main aspects of the day's lessons. Student groups to prepare a <i>5 minute presentation</i> on obstacles to progress.
DAY 3 – Wednesday 7th November 2012		
Time	Description	Outcome
0800 – 0830	Registration at Meeting Room Dress code: Casual	
0830 – 0915	Session 1: What the obstacles to progress? (JP) <i>Introduction</i> to “change” issues	<i>Students present their findings from homework</i>
0915 –	Session 2: Cultural and Organisational	

1015	change (JP) <i>Presentation</i> on how to manage the process of change	Why are “people” issues so important in the development of MSDI? Ways to engage in the process of Change
1015 – 1030	BREAK FOR COFFEE	
1015 – 1045	Session 3: Ownership of the process (JP) <i>Presentation</i> to reinforce the message and how to take ownership of the process of change	Students have the confidence and knowledge to contribute to the Change process
1100 – 1130	Session 4: Sustainable Change in the Hydrographic Community (JP) <i>Presentation</i> to identify the key things to ensure change is sustainable	Students appreciate the value and benefit of change over time
1130 – 1200	Session 5; Review (JP & MO) <i>Course discussion</i> on what has been communicated so far, questions and answers	Ensure students have a good level of understanding of the theoretical elements of the course so far
1200 – 1315	BREAK FOR LUNCH	
	PART 2: PRACTICAL SESSION FRAMEWORK Presented by Caris (assisted by OceanWise)	
1315 – 1415	Session 6: Technology supporting SDI – Will Siddall (WS) <i>Introduction to CARIS and presentation</i> on: <ul style="list-style-type: none"> • Relational Database Management Systems (RDBMS) • Interoperability to form data themes in Marine Spatial Data Infrastructures 	Students <i>gain a basic overview</i> of CARIS Data Management and Database Design (based on the SHOM model)
1415 – 1545	Session 7: Data Model (Part 1) (WS) <i>Presentation and Practical Exercises</i> on: <ul style="list-style-type: none"> • Data Model for elevation data (bathymetry and terrestrial): <ul style="list-style-type: none"> - Grids and Point Clouds - PostgreSQL and Oracle • Data model for marine cartographic data: <ul style="list-style-type: none"> - Feature and Spatial Objects - Oracle RDBMS 	Students to <i>gain a basic understanding</i> of different data models used for high-resolution data and cartographic vector data through demonstrations and practical exercises
1545 – 1600	BREAK FOR TEA	
1600 – 1715	Session 8: Data Model (Part 2) (WS)	
1715 – 1730	Session 9: Review of Afternoon Session (All)	To ensure a level of understanding of the practical elements discussed
1800 – 2100 Course Meal [to be confirmed]		

DAY 4 – Thursday 8 th November 2012		
Time	Description	Outcome
0830 – 0900	Registration at Meeting Room Dress code: Casual	
0900 – 1030	Session 1: Data Organisation and Design: (WS) <i>Presentation and Practical Exercises on:</i> <ul style="list-style-type: none"> • Elevation Objects • Usages <ul style="list-style-type: none"> - Thematic and non-thematic - Scaled and un-scaled • Source and Products <ul style="list-style-type: none"> - Object catalogues - Mapping between catalogues • Data portrayal • User access control 	Students to have concepts of database design (e.g. scale independent data) reinforced through <i>exercises configuring marine spatial databases</i>
1030 – 1045	BREAK FOR COFFEE	
1045 – 1215	Session 2: Data Organisation and Design (continued): (WS)	Students to have concepts of database design (e.g. scale independent data) reinforced through <i>exercises configuring marine spatial databases</i>
1215 – 1315	BREAK FOR LUNCH	
1300 – 1430	Session 3: Transaction Management (WS) <i>Presentation and Practical Exercises on:</i> <ul style="list-style-type: none"> • Multi-user concurrent access • Data Integrity <ul style="list-style-type: none"> - Feature locking - Isolated projects 	Students to <i>gain practical experience</i> pertaining to database implementation and use of data.
1430 – 1445	BREAK FOR TEA	
1445 – 1615	Session 4: Metadata (WS) <i>Presentation and Practical Exercises on:</i> <ul style="list-style-type: none"> • Elevation, source and project information • Data certification / verification • History tracking 	Students to <i>have concepts reinforced</i> on the importance of metadata (both standards compliant and organisation specific).
1600 – 1715	Session 5: Interoperability Part 1: (All) <i>Presentation and Practical Exercises on:</i> <ul style="list-style-type: none"> • Data and metadata exchange • Application Programming Interfaces (APIs) 	Students to <i>have additional experience</i> with the use of data standards and practical application of data publishing and information exchange in MSDI
1715 – 1730	Session 6: Review of Sessions	Students Q&A Session

DAY 5 – Friday 9 th November 2012		
Time	Description	Outcome
0830 – 0900	Registration at Meeting Room Dress code: Casual	
0900 – 1030	Session 1: Interoperability Part 2: (All) <i>Presentation and Practical Exercises on:</i> <ul style="list-style-type: none"> • Open Geospatial Consortium (OGC) Services and Web Mapping 	Students to <i>have additional experience</i> with the use of data standards and practical application of data publishing and information exchange in MSDI
1030 – 1045	BREAK FOR COFFEE	
1045 – 1215	Session 2: Review of main content of the Training Course (All) <i>Written exercise to ascertain level of knowledge and understanding</i>	Students to individually complete a 1 hour multiple choice questionnaire
1215 – 1315	LUNCH	
1315 – 1430	Session 3: Course Wash-Up (All) <ul style="list-style-type: none"> • Review questionnaire results • Review of Aims and Objectives • Review Key Points and Messages • Group Discussion – has the course met your expectations? • Feedback Forms completed by students 	Students <i>to have a basis understanding</i> and knowledge of the fundamentals of SDI; database design, data management and data publishing
1430 – 1445	BREAK FOR TEA	
1445 – 1515	Closing Dress code: Suit <ul style="list-style-type: none"> • Certificate giving by Director General SukHyun Kim-KHOA • Closing address given by Director General SukHyun Kim-KHOA 	Session
End of the Workshop		