

**31th North Sea Hydrographic Commission meeting
25-27 June 2014**

From Products to Data Streams

A Paradigm Shift

Michael Bergmann, MBA AFRIN AFNI
Director Maritime Industry

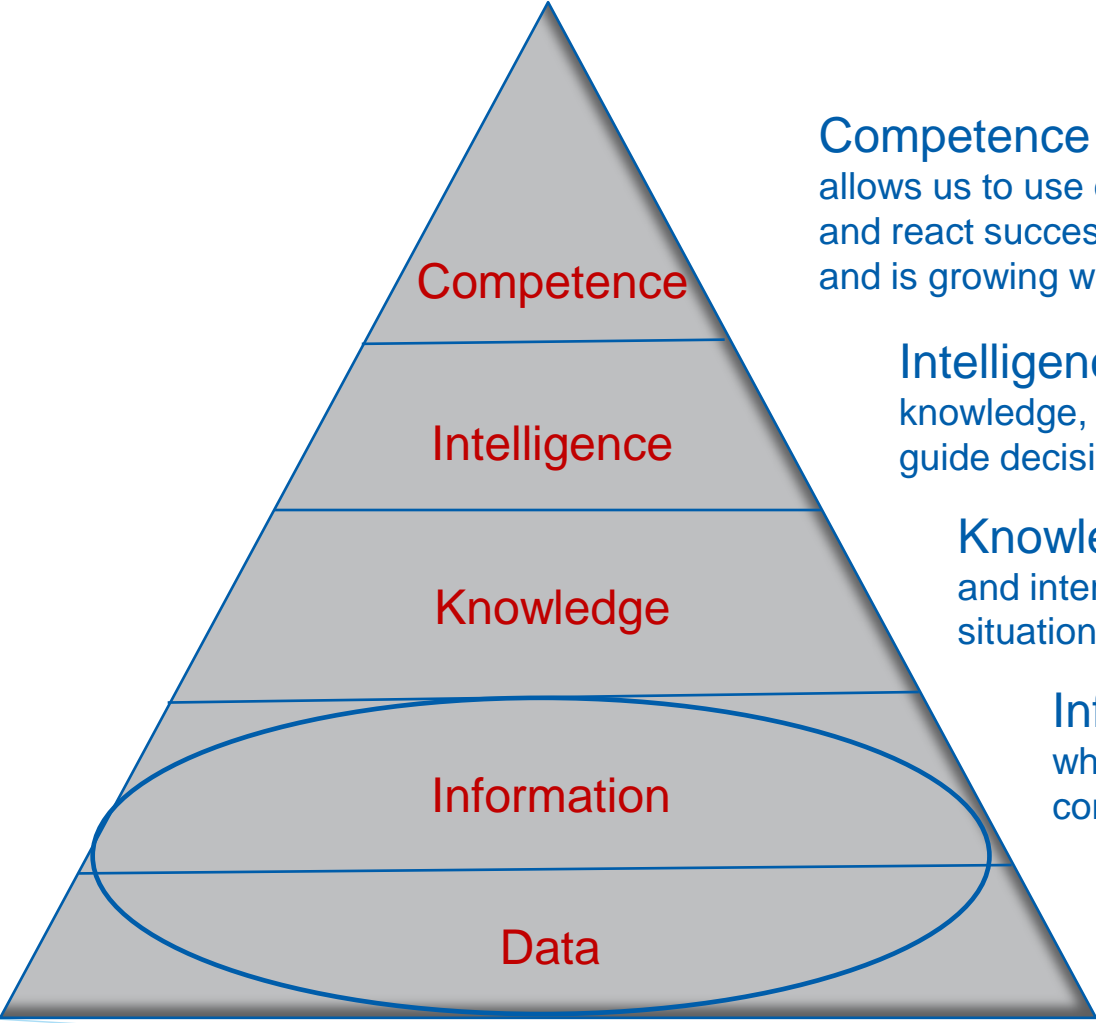


“We should try to be the parents of our future rather than the offspring of our past”

Miguel de Unamuno (1864-1936)
Spanish essayist, novelist, poet, playwright, and philosopher

What does this say for Hydrography?

Pyramid of Competency



The diagram is a pyramid divided into five horizontal layers. From top to bottom, the layers are labeled: Competence, Intelligence, Knowledge, Information, and Data. A blue oval is drawn around the bottom three layers: Information, Knowledge, and Intelligence.

Competence — the ability to do a job properly. It allows us to use our intelligence for doing wise decisions and react successfully based on situational awareness and is growing with experience on the job to be done.

Intelligence — The full collection of past and present knowledge, which allows us to assess new situations and guide decisions

Knowledge — all what has been detected, learned and internalized and has developed in insight and situational understanding

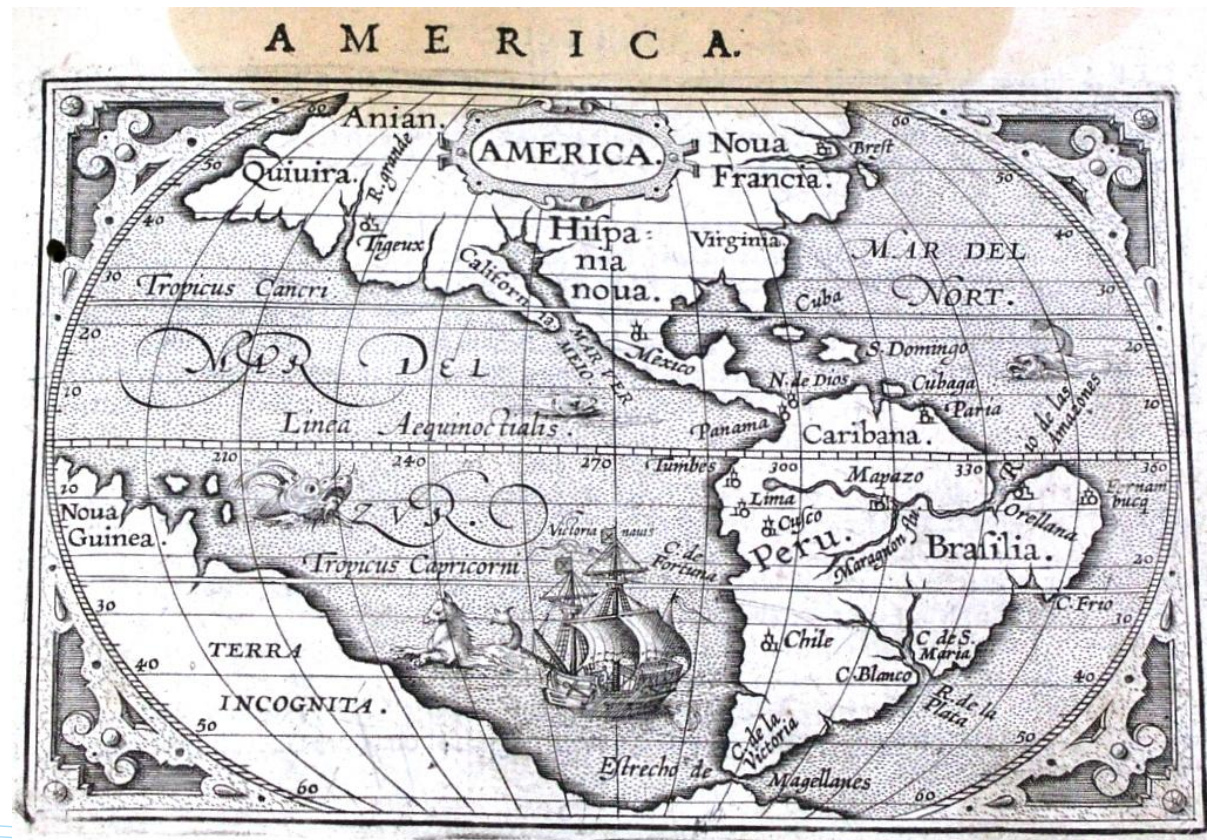
Information — integrated and processed data, which is useful and meaningful for the data consumer

Data — collection of facts, which may be compiled, but by themselves do not have a specific meaning or usability

Traditional view on Information in the Analog Paradigm

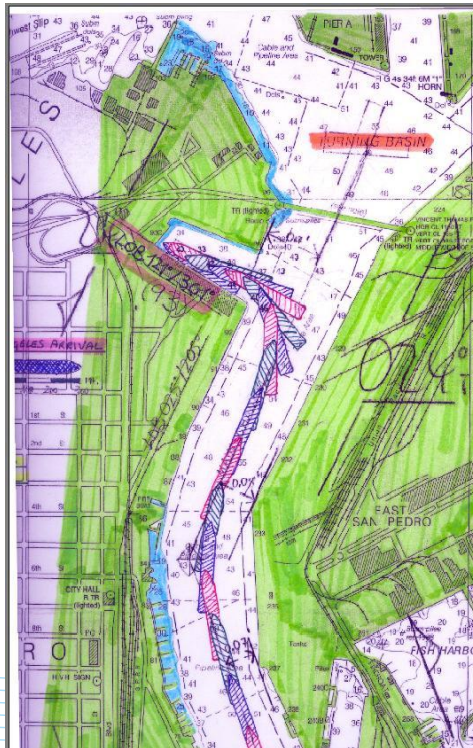
Information and Data are one and the same. Information and Data can not easily be transferred.

Only in form of a data carrying product, can information be disseminated.



The Product Paradigm in the Electronic Era

- ENC: Pre composed Charts as End-User Products
- ECDIS: The Electronic “Chart Table”
- Overlays: No “disturbing” the Product



Data streams versus End-User Products

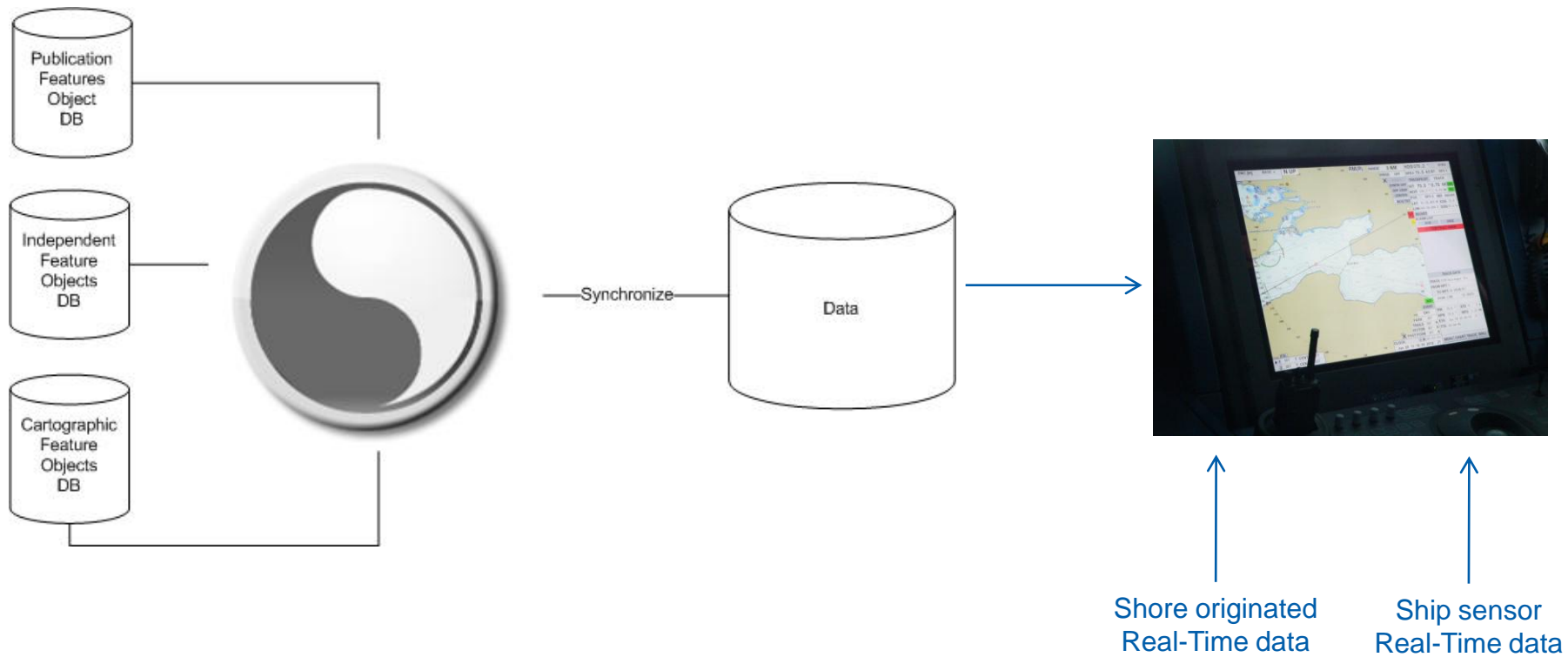
The concept of Data Integration

Data
Production

Data
Integration

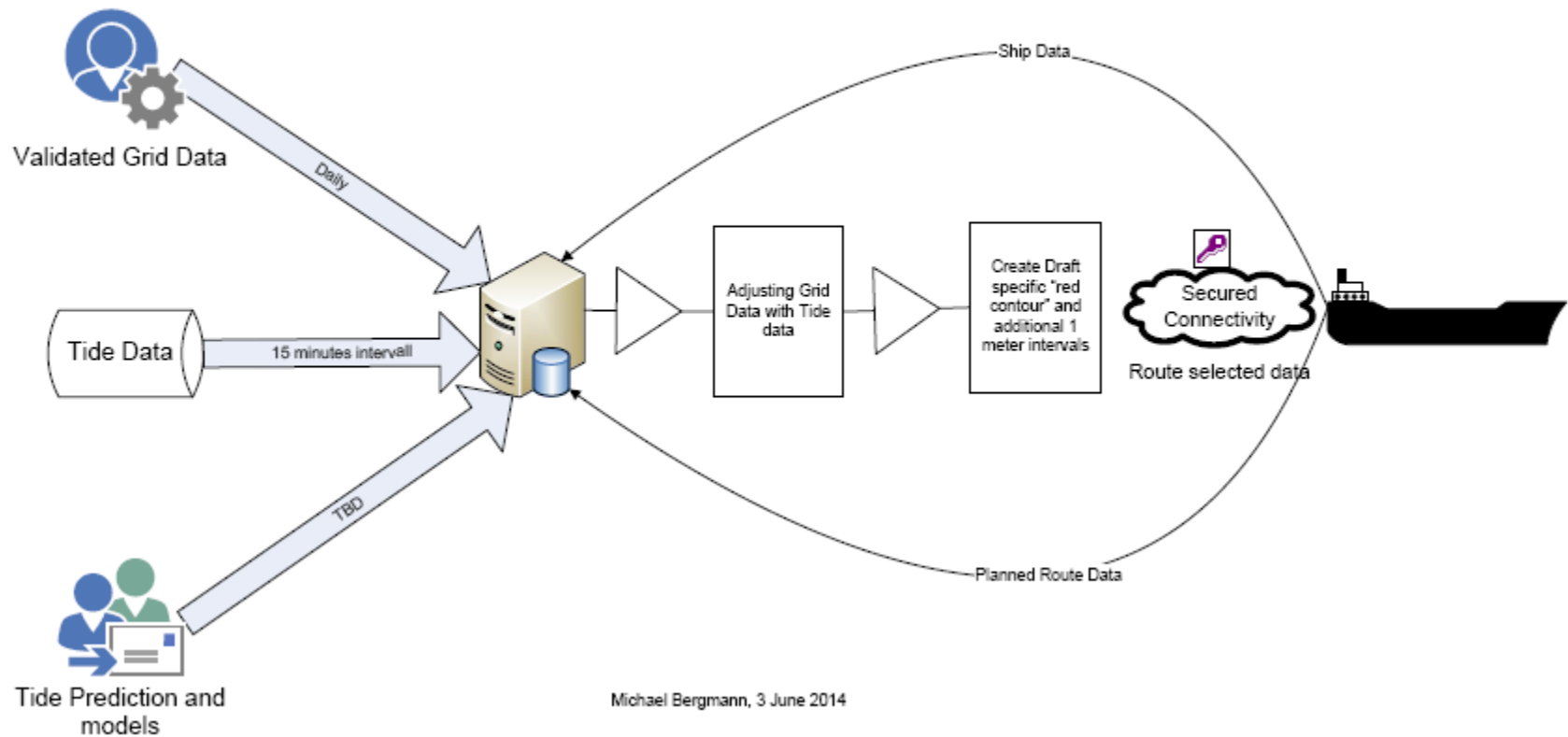
Data-Product
Implementation

Information
Visualization



Data Integration Test Beds: Tide data influence charts

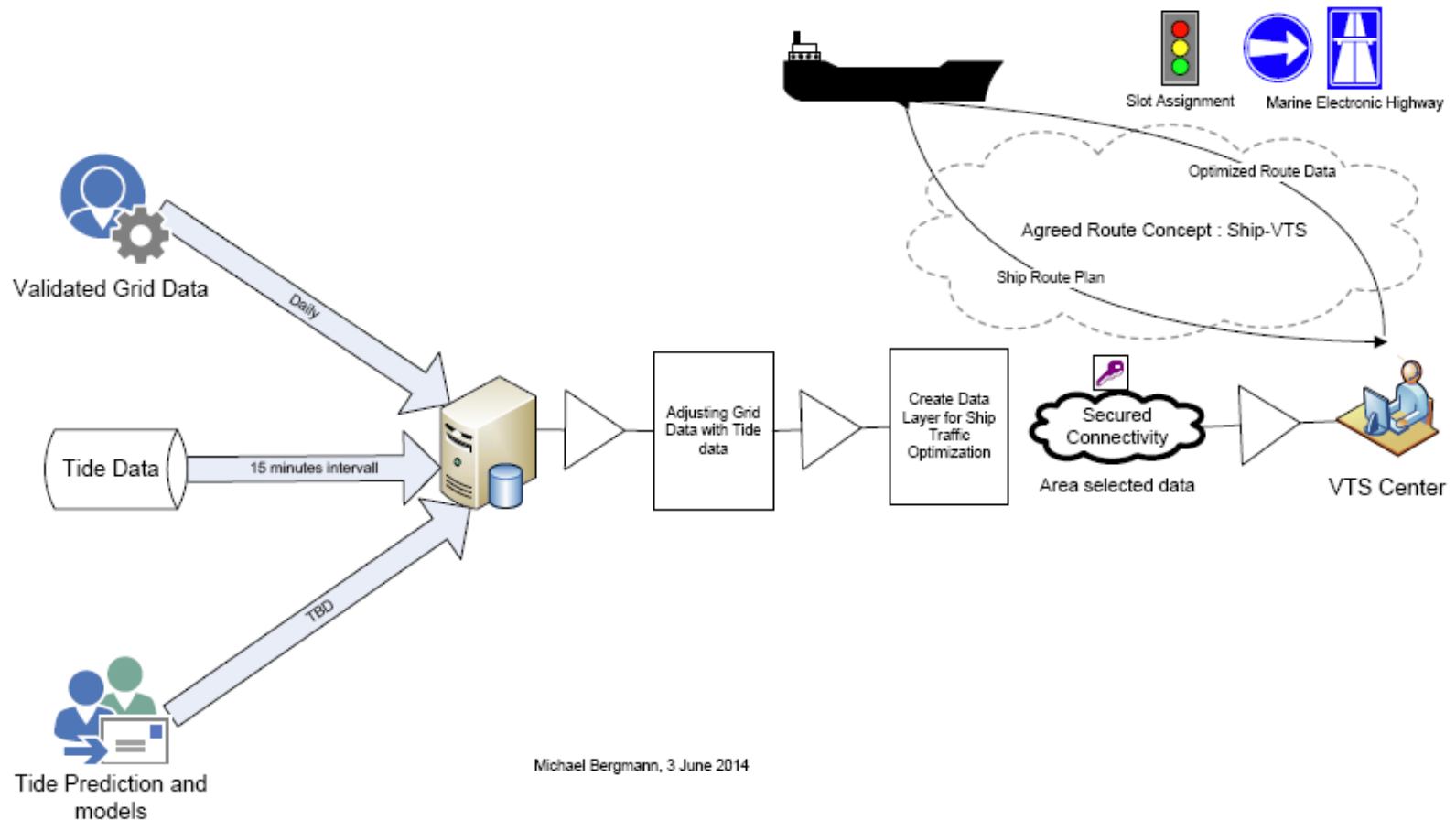
Ship Support Services



Michael Bergmann, 3 June 2014

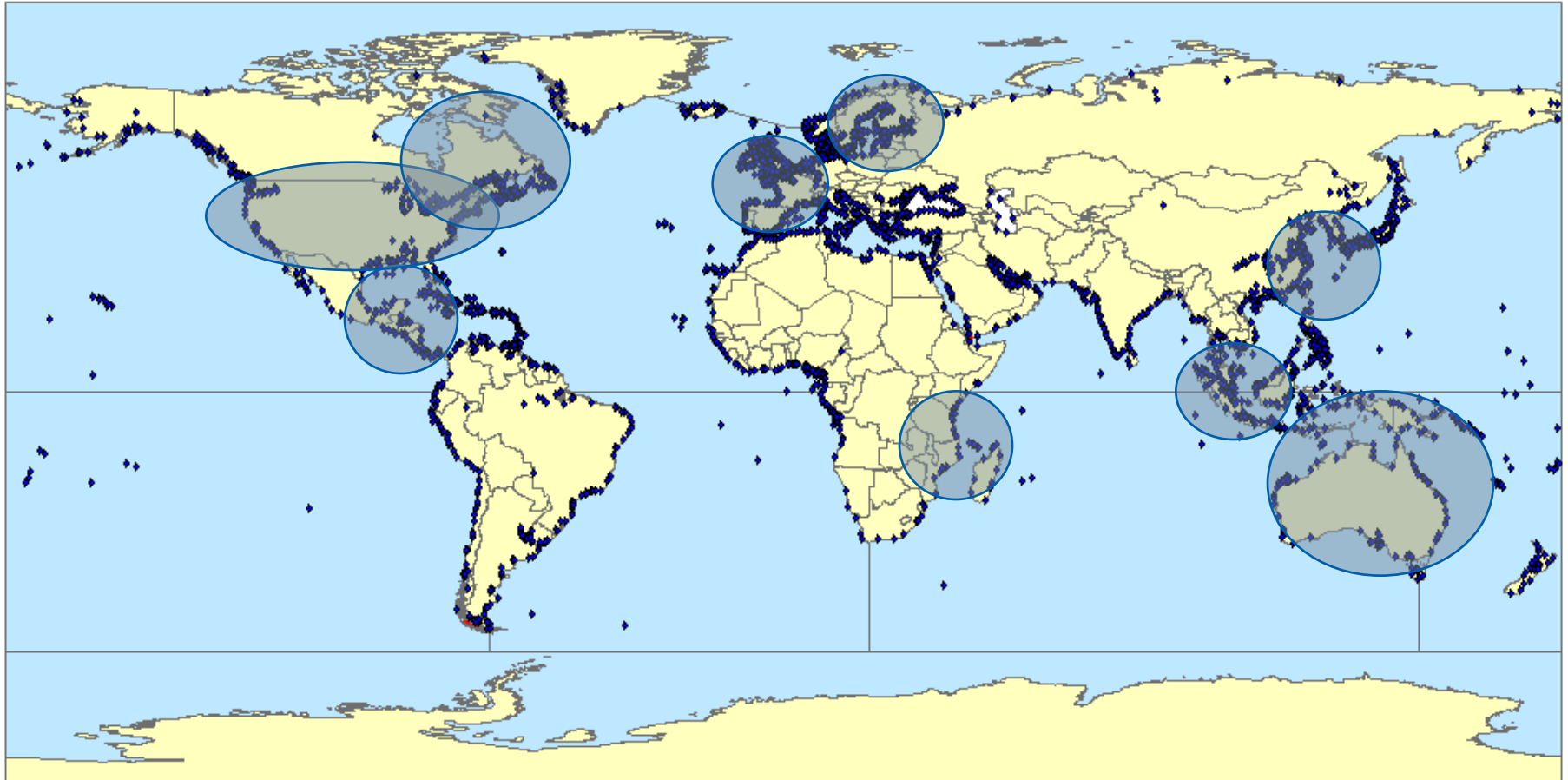
Additional HO Data Usage: Expanding Data User Base

Shore Support Services



Michael Bergmann, 3 June 2014

Regional “Clusters” in e-Navigation



Think Outside the Box



Ship



Data Service Provider



Owner/Operator

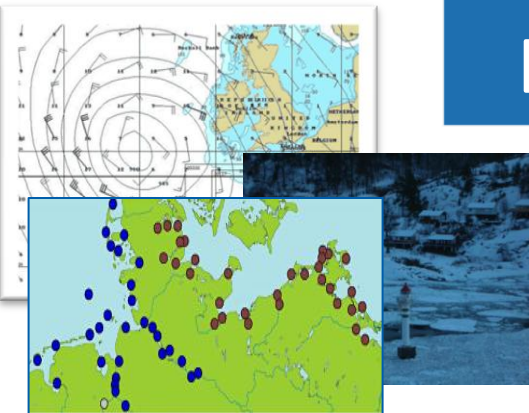


PSC

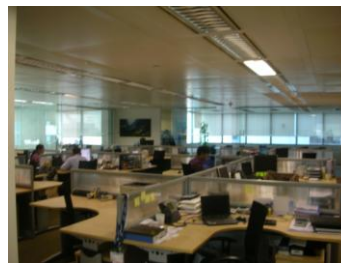
**Close collaboration
to optimize
maritime transport**



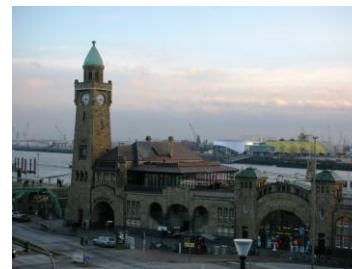
VTS – Coastal State



Tide Stations...



HOs



Customs...



Ports

The necessary next Steps

A vision for the future

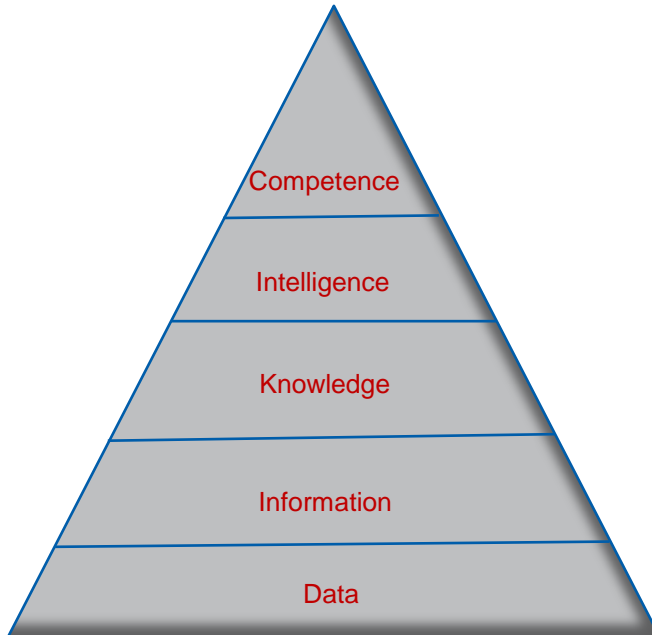
- **Development of IHO standardized Data Streams**
 - S-101 ENC Data Product Specification
 - S-102 Bathymetric Surface Product Specification
 - S-100 based Digital Publication Data Streams
 - ...

- **Collaboration with Non-IHO but related data sets**
 - Improve IHO GI Registry and procedures to ensure compadibility
 - Ensure unique definitions across different domains
 - Agree on areas of responsibilities

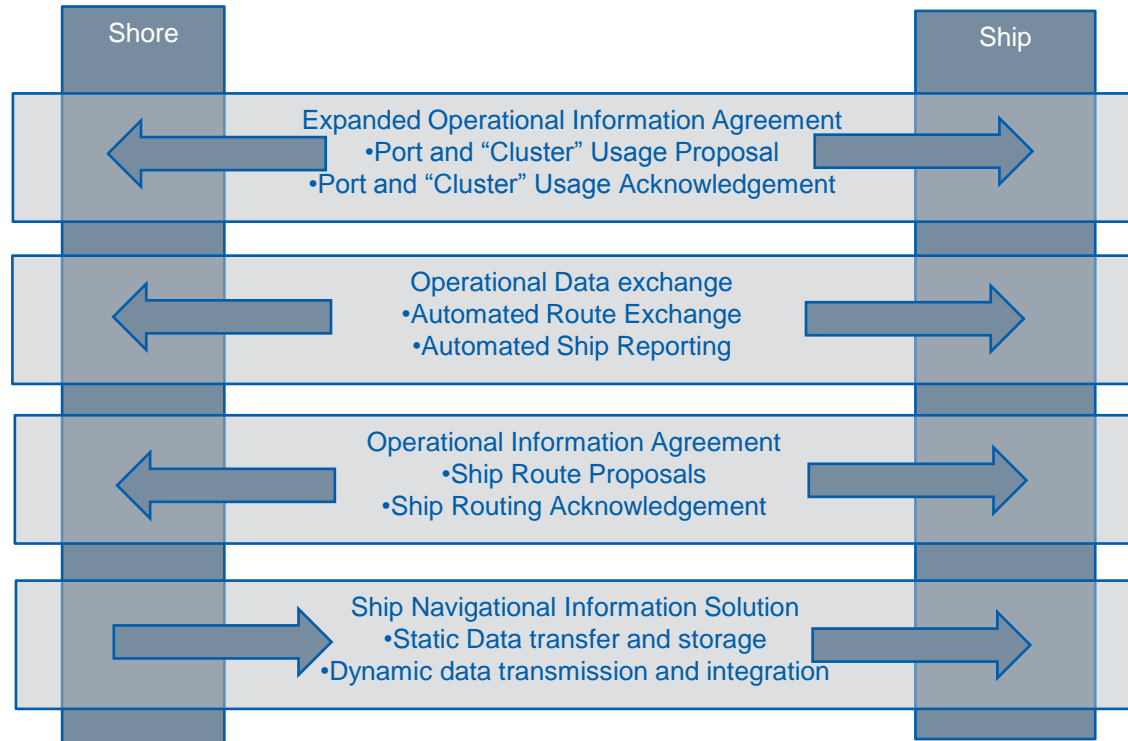
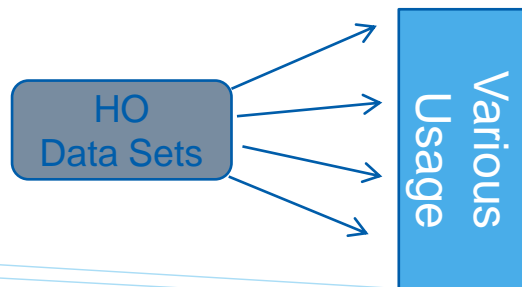
- **Develop and Enforce Frameworks**
 - Data Integration Rules
 - Infrastructural agreement between regional clusters
 - Interoperable „cluster oriented Implementations“ based on agreed framework

Conclusion

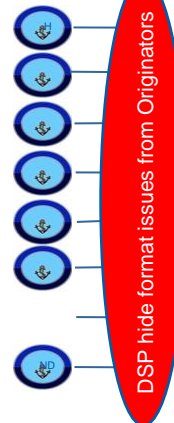
Pyramid of Competency



Michael Bergmann, e-Maritime Annual conference 2012, 22 - 23 November, Brussels



Data Provision Framework



Data Integration Framework



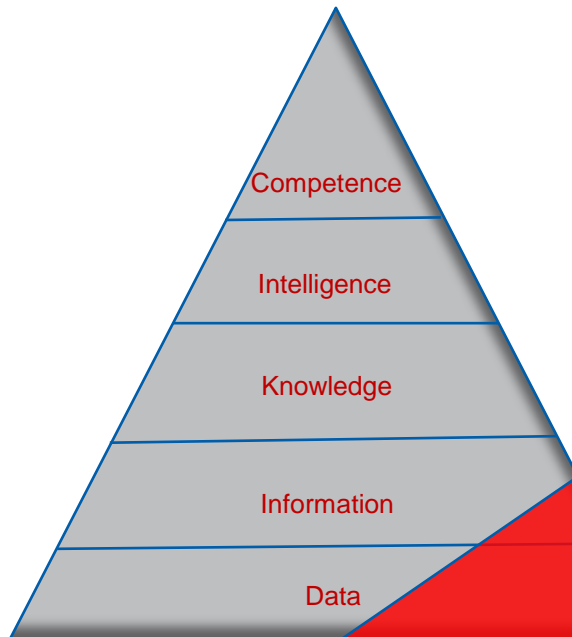
Delivery

Information System Framework

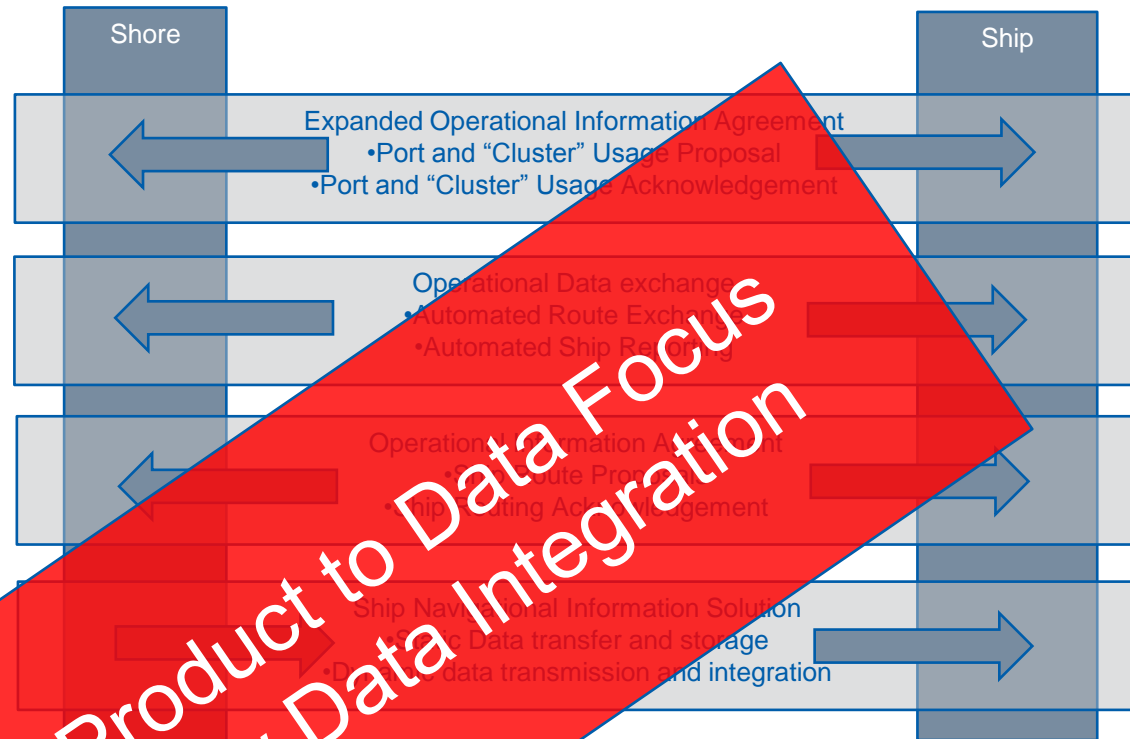


Conclusion

Pyramid of Competency



Michael Bergmann, e-Maritime Annual Conference 2012, 22 - 23 November, Brussels



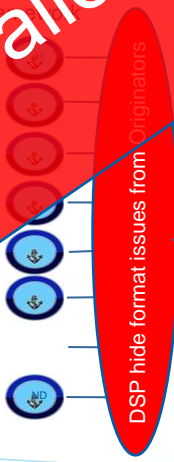
**Migrate from Product to Data Focus
Enable and allow Data Integration**

HO
Data Sets

Data Product Framework

Data Integration Framework

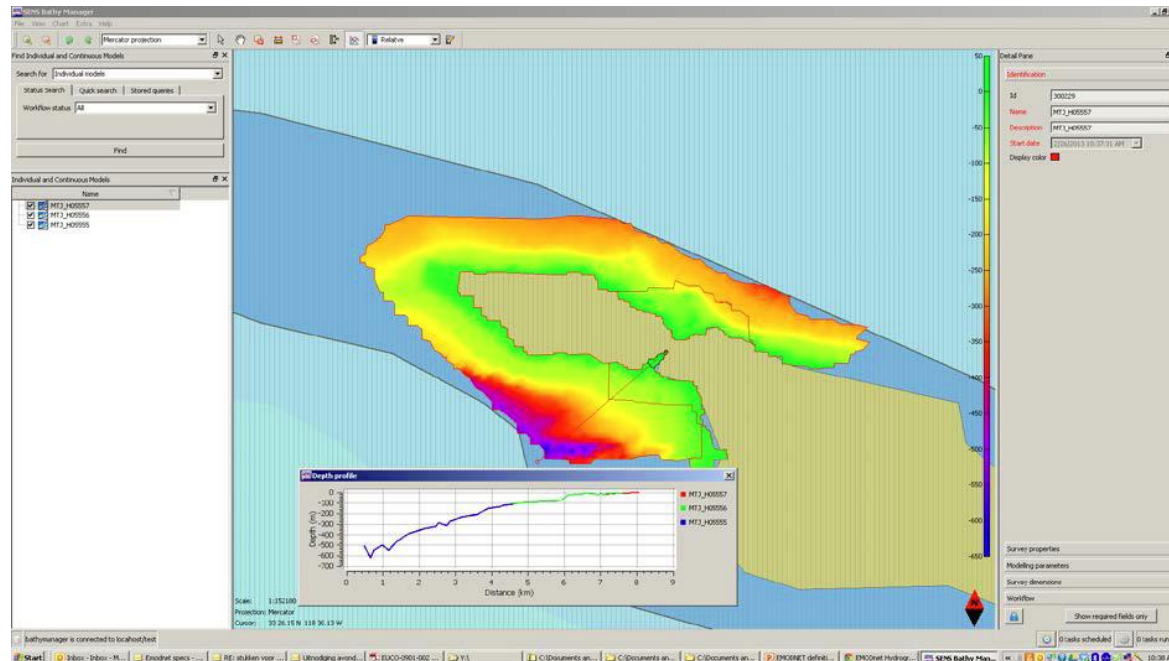
Information System Framework



Delivery

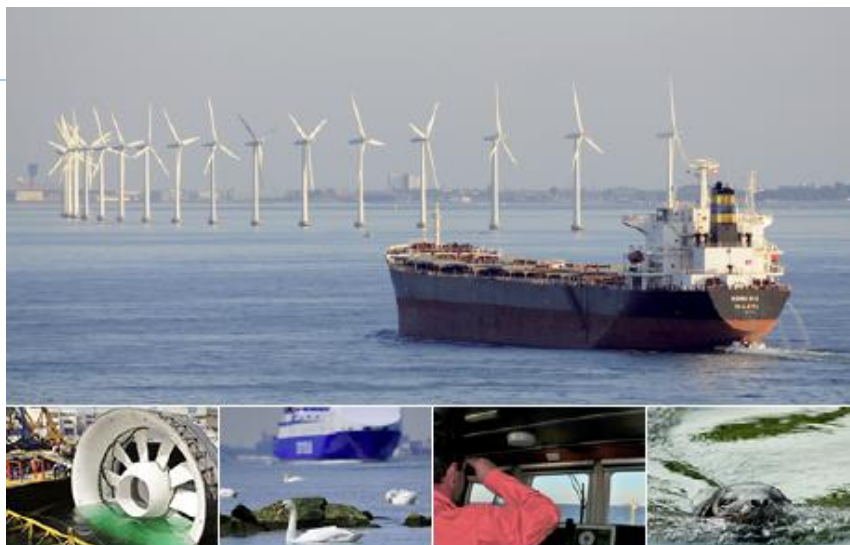


Jeppesen Product Note: dKart Bathymetry Manager



- Bathymetry Manager is a database-driven solution for the storage and management of bathymetric data
- Bathymetry Manager allows you to store and manage all your bathymetric data, add meta data, model the data by applying filters, use separation models to bring all survey data into the same vertical reference level, and apply geodetic algorithms to convert between one geodetic system and another.
- Bathymetry Manager will be a standard alone, yet fully integrated, part of the dKart Office suite
- Bathymetry Manager allow creation and management of a complete “Continuous Model/layer” based on individual models/surveys

Maritime Spatial Planning



THE SHIPPING INDUSTRY AND MARINE SPATIAL PLANNING

A professional approach – November 2013

Version 1

Contents

- 3 What Is Marine Spatial Planning?
- 6 Issues to consider
- 8 Resources
- 9 Case studies
- 10 Annex A: Regulations and safe distances
- 12 Annex B: Navigation practices and ORB



Marine Spatial Planning

CASE STUDY 1

Adjusting the Boston Shipping Lane to protect endangered whales and improve shipping safety

<http://stallwagen.noaa.gov/science/tss.html>

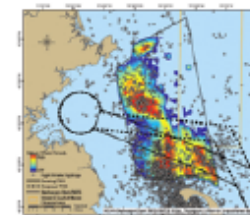
The adjustment of Boston shipping traffic lanes illustrates how MSP can be used to bring industry, government, the environmental community and science together to address specific needs. A small change to the Boston shipping lanes has helped mariners avoid dangerous collisions with whales, one species of which is critically endangered.

The shipping lanes in and out of Boston harbour take vessels through waters where high concentrations of humpback, right, and other whales are found, especially in the Stellwagen Bank National Marine Sanctuary, putting both the whales and ships at risk of collisions.

Using data on whale sightings collected over a 25-year period, researchers noticed

that the shipping lanes were right next to an area where relatively few whales had been spotted. Scientists confirmed these findings, studying whale feeding behaviour and developing maps of the seafloor to get a more complete picture of where the whales spend their time.

Based on this data, it was proposed to move the direction of the approach shipping lanes 12 degrees to the north, to an area with fewer whales. The IMO shifted the shipping lanes in 2007 based on the recommendations of a multi-stakeholder process. The resulting route increases travel time for ships by 10-22 minutes, but cuts down the risk of collisions with critically endangered right whales by an estimated 58% and with all other baleen whales by 81%.



Whale distribution and the proposed shipping lane shift in the Gulf of Maine. Source: NOAA

CASE STUDY 2

Shipping fairways off the north-west coast of Australia

Marine Notice 15/2012 Shipping fairways off the north-west coast of Australia

In 2012, AMSA established a network of shipping fairways off the north-west coast of Australia. The shipping fairways aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure. A collision in this area could potentially result in significant loss of life and environmental harm.

The shipping fairways were developed after widespread consultation with the maritime industry and government agencies.

The new shipping fairways are similar to the existing Dampier Shipping Fairway which was charted in 2007. It has proven to be successful in keeping shipping traffic away from off-shore infrastructure. Such separation is effective in other parts of the world, particularly in the Gulf of Mexico.



Shipping fairways off the north-west coast of Australia

Use of the new fairways is strongly recommended but not mandatory. The International Regulations for Preventing Collisions at Sea 1972 apply to all vessels navigating within or outside the Shipping Fairways. The use of these fairways does not give vessels any special right of way.

The Australian Hydrographic Service (AHS) has incorporated the new fairways in the relevant Electronic Navigational Charts (ENC) and new editions of paper charts. These have been made available progressively from August 2012 onwards. A small scale diagram of the fairways, indicating their extent, is shown, left.

Australian Maritime Safety Authority

The above text is largely from AMSA Marine Notice 15/2012 (Shipping fairways off the north-west coast of Australia) which can be found at <http://www.amsa.gov.au/vessels/standards-regulations/marine-notices/index.asp>

THANK YOU !

michael.bergmann@jeppesen.com