



# SDI –The Hydrographic Dimension

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# What is MSDI?

MSDI is the component of an SDI that encompasses marine geographic and business information in its widest sense and would typically include:

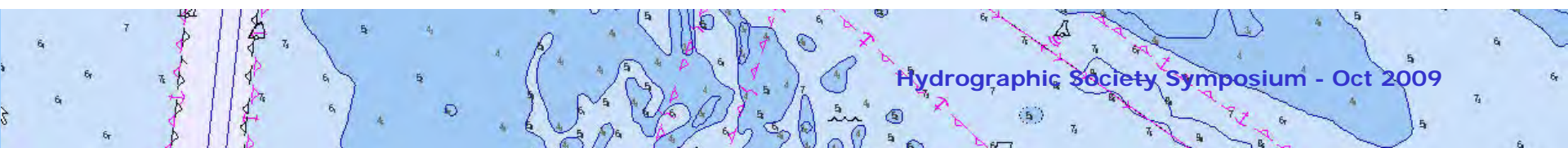
- seabed topography (bathymetry)
- geology and geomorphology
- marine infrastructure (e.g. wrecks, offshore installations, pipelines and cables)
- administrative and legal boundaries
- areas of conservation, marine habitats
- oceanography





# Hydrographic Policy (1)

IHO publication M2 outlines the benefits and options for the development of a national hydrographic policy that ensures a State has a knowledge of the physical features of the seabed and coast, as well as the currents, tides and certain physical properties of the sea water, such that the needs of safety of navigation and protection of the marine environment can be met



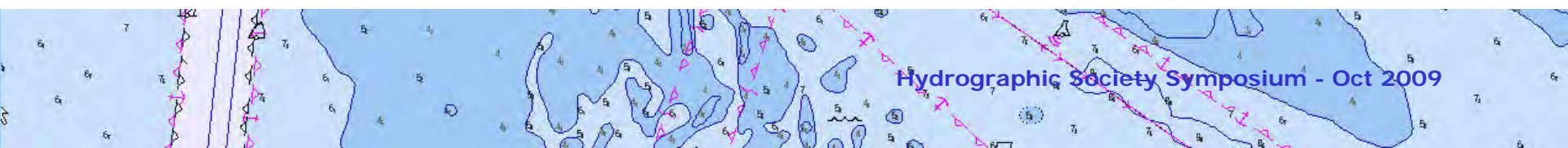


# Hydrographic Policy (2)

A successful national hydrographic policy will not only meet the requirements of the mariner but can provide additional and often greater benefits to the State. Such benefits include:

- Safe and efficient operation of maritime traffic;
- Exploration and Exploitation of Marine Resources;
- Coastal Zone Management;
- Environmental Protection; and
- Maritime Defence

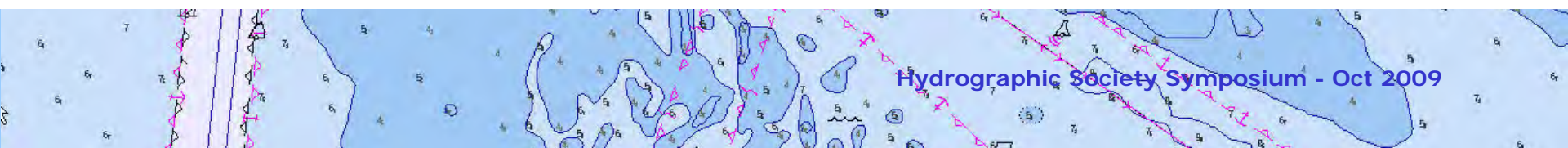
*With this in mind the IHO set up a working group to examine to what extent the hydrographic community understood and / or were engaged in SDI*





# IHOMSDIWG Objectives (2007-09)

1. To prepare, undertake and complete an audit of IHO Member States to establish their level of knowledge and understanding of the benefit of supporting National SDI initiatives and their capability in supporting the development of Marine SDI.
2. To analyse the results of 1 and establish the benchmark for future IHO support and / or capacity building required and to assist in the development of the SDI IHO Guide.
3. To provide the preliminary IHO SDI Guide for Member States incorporating necessary step by step approach to SDI.
4. Provide content on the IHO website aimed at facilitating knowledge transfer (FAQ's; awareness training material; case studies and e-links to SDI initiatives) aimed at stimulating active participation





# Approach - 'Maturity matrix' clusters

5 clusters:

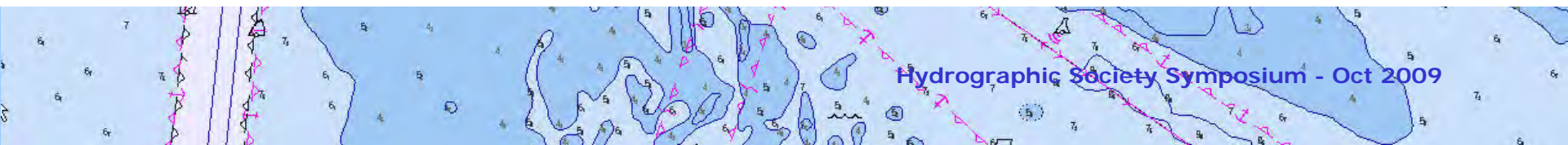
- Policy intent / Strategy on NSDI / MSDI
- People and communications
- Data management
- Data frameworks and standards
- Data dissemination





# Responses and analysis

- 43 countries responded
  - good cross- section around the world, allowing groupings for analysis purposes
- Matrix - a numbers-based analysis
- Non-matrix questions
  - open ended answers were grouped, and a set of generic phrases developed against which to code the responses
- A full set of responses and their generic codes are available from the IHO



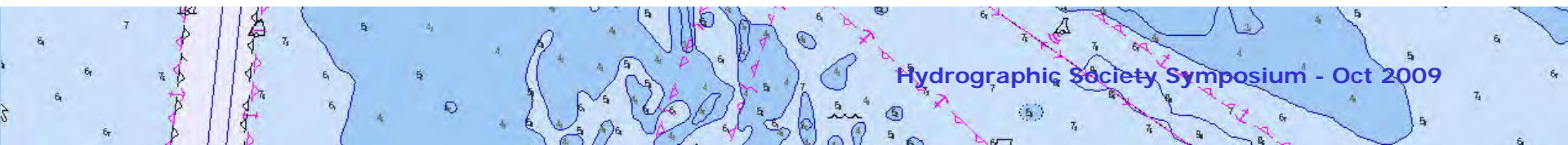


# What did we find?

- Most countries are either already working to or looking to work within international or national standards (e.g. S57/S100, ISO 19100 / 19115 / TC211)
- For Europe, the INSPIRE Directive is an important driver in the creation of a NSDI / MSDI. INSPIRE helps prioritise themes\* and work packages
- Data dissemination is planned to be primarily via the web, through new portal developments and use of WMS/WFS
- Significant barriers to SDI engagement identified

\* *Geographic Reference Systems; Hydrography; Transport Networks; Elevation*

IHO Hydrographic Registry [http://www.iho-wms.net:8080/iho\\_registry/home.php](http://www.iho-wms.net:8080/iho_registry/home.php)





# Barriers to MSDI progress (1)

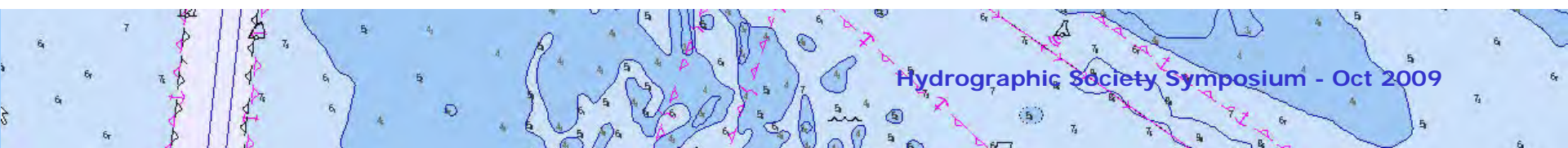
- Resources
- Funding
- "Policy/priorities/politics (PPP)"
- Training of personnel is key
- Effective communication
- Organisational structure
- Culture





## Barriers to progress (2)

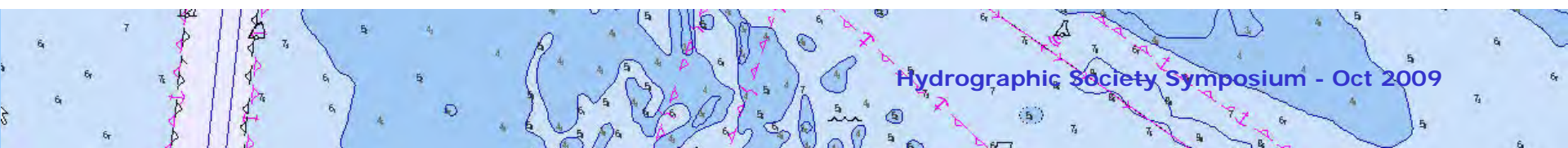
- No agreed policy or framework
- No common spatial data
- **Lack of visibility** - no responsibility / responsible MSDI expert / focal point
- **Barriers between agencies** – historical, political, bureaucratic, and national versus 'local' conflicts
- **Priorities different** across departments; co-operation and co-ordination between stakeholders poor





# Barriers to progress (3)

- **Data held by different organisations** and at different levels – need for harmonisation and interoperability
- **Copyright, IPR, licensing**
- **Cost of data** versus “free” data
- Basic geographic data with no legal obligations versus navigational geographic data with legal implications
- **Policy issues** re: distributing digital data via the internet





# Conclusions

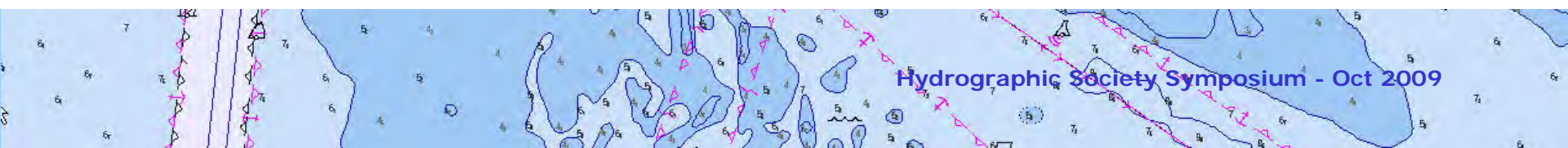
- There is a low level of understanding across the HO worldwide community
- Some HO's do not see themselves as being relevant to SDI
- There is a clear need for assistance
  - Developed MS's require specific MSDI assistance (organisational / technical)
  - Developing MS's require generic assistance (awareness and understanding)
  - Less emphasis on developing MSDI /NSDI in less developed MS's
- Resources are at a premium across most HO's and at MS level
- IHO role crucial to develop understanding of and confidence in MSDI/NSDI.
- IHO should define its role and the possible help it can give to Member States





# MSDIWG Deliverables

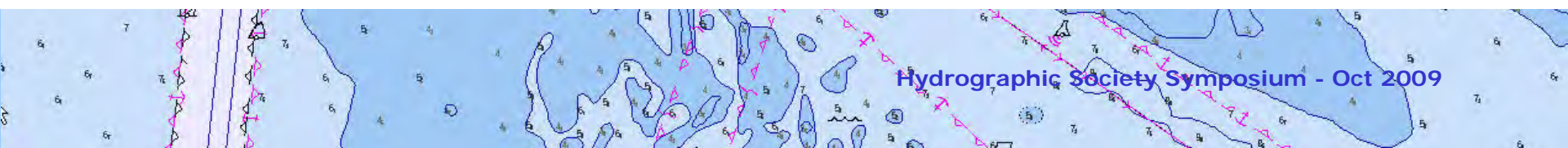
- IHO Special Publication “Guidance” document (SXX series)
- Training/ knowledge transfer programme:
  - framework for e-training (inc: content)
  - best practise examples (case studies)
  - Framework content for IHO portal for discussion groups
  - FAQ's
- Formalise role of Regional Hydrographic Commissions (standing agenda reporting)
- Provide longer term perspective/options to IHO (*MSDI is not short term issue*)
- Report completion of WG tasks to HSSC1 in October 2009





# Benefits from being involved in SDI

- Greater appreciation of the inherent value in Hydrographic information which will lead to the wider use of such data and information in the development of new products and services
- Improved decision making (e.g. spatial planning, integrated coastal zone management, flood mitigation, and climate change adaptation)
- Increased efficiencies in organisational processes (e.g. data collection and management) by reducing duplication and encouraging co-ordination
- Improved data management practises especially in the critical areas of land and marine convergence (coastal zone)
- Increased market exposure through hydrographic information provided for non-navigational use





# Benefits of being involved in SDI (cont)

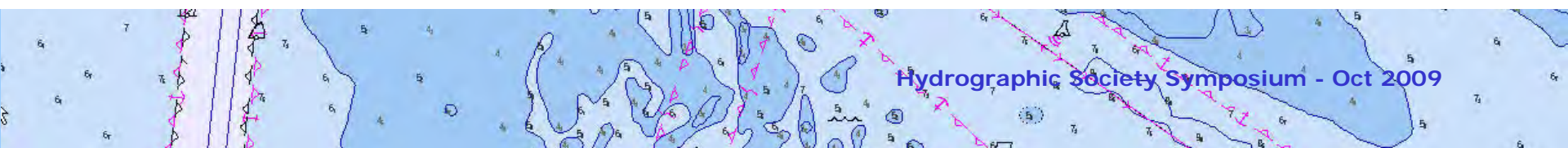
- Greater recognition and understanding of the role and functions of the HO through multiple use of data
- Hydrography will be in the mainstream of geospatial decision making
- Greater co-operation with other information providers
- Increased security in data use and reduction of risk
- Cost savings through efficiencies and more effective use of public funds
- Increased opportunities for resources and funding
- Potential revenue generation opportunities





# So what are the challenges for hydrographers?

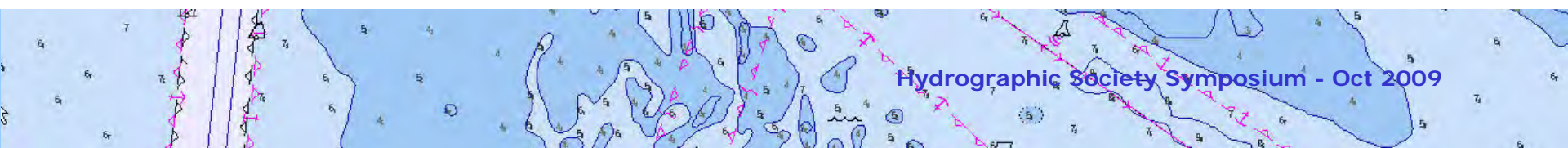
- Being able to work with other organisations and adopting a partnership approach (e.g. develop new joint policy approaches to SDI)
- Changing the organisational culture by winning over the sceptics at the people and/or organisational level
- Challenging the way things are currently done to ensure they are undertaken more efficiently in the future
- Accepting that hydrographic data is information rather than a chart product
- Investing in improved business processes and information management





# So what are the challenges for hydrographers(2)?

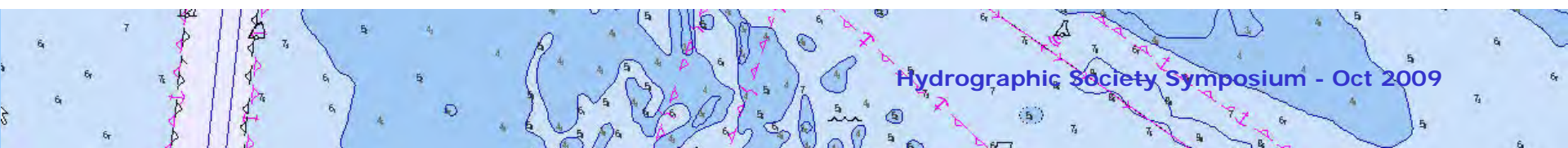
- Difficulty by the non-marine community to understand marine SDI components, unique challenges and relevance
- A lack of funding to progress their involvement in SDI
- Persuading decision makers and budget managers to support SDI activities
- Gaining the trust of other stakeholders
- Ensuring the Hydrographic community has the knowledge, training and skills for involvement in SDI





# Steps to engagement...

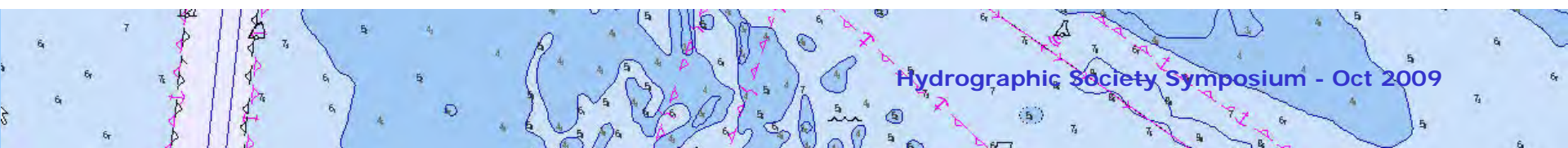
- Prepare and define the Hydrographic policy and its role in SDI
- Identify an SDI “champion” to influence, lead and gain support for MSDI at the highest levels of leadership (this may need to be at Ministerial and/or Senior Management level)
- Identify key stakeholders and their requirements
- Build support for engagement at Senior Management level
- Identify national or regional initiatives/legislation which might support SDI
- HO’s active participation in the appropriate IHO RHC(s)
- Identify other data providers to the SDI





# Steps to engagement...(cont)

- Plan engagement with stakeholders and all other data providers and work to get stakeholder support (e.g. users, influencers, enablers)...and get involved!
- If the SDI is new, consider developing a "White Paper" for discussion and comment at both Ministerial and Senior Management level across all stakeholders
- Gain necessary approvals for involvement and investment
- Promote the benefits and opportunities to all non-HO stakeholders
- Set up and/or participate in SDI stakeholder groups (e.g. Steering Groups)
- Identify internal HO benefits and promote them to colleagues
- Engage, respond and communicate with stakeholders to deliver SDI with hydrographic elements





# Steps to success...

- Ensure the necessary skills and knowledge is available to enable the development of SDI within the organisation
- Identify what data you hold, where it is held , how it is held and who "owns" it
- Create the metadata
- Capture data sets in digital form (raster as a starting point)
- Develop a technical architecture and environment embracing robust standards (e.g. S57/S100, ISO 191XX series; TC211),
- Make the metadata searchable
- Make your digital data available
- Monitor and report progress against the plan





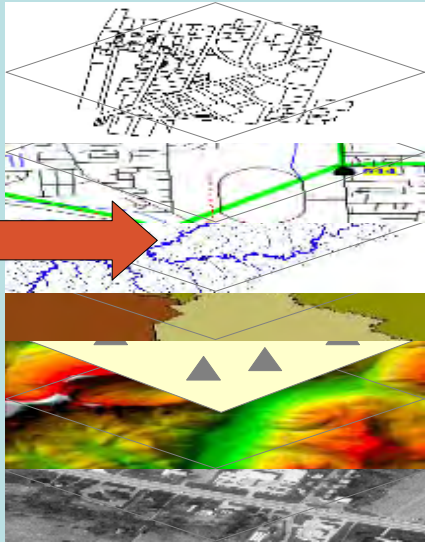
# Importance of Hydrography in NSDI

## The National SDI

Base geodata



Thematic geodata



Properties, buildings

Roads / railways

Hydrography

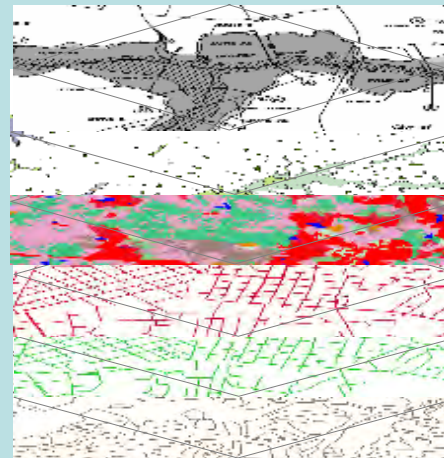
Admin boundaries

Geodetic points

Elevation

Orthophotos

Etc



Flood areas

Population

Land cover

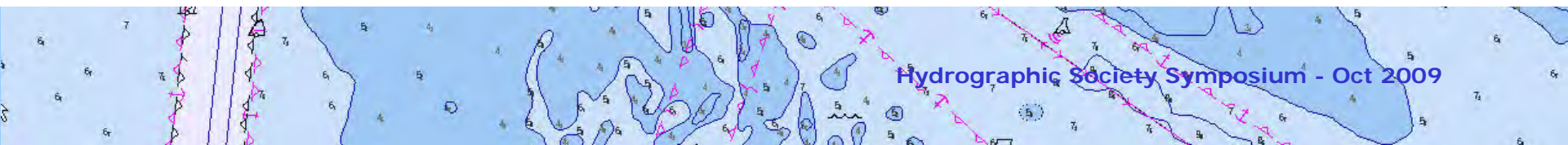
Biology

Economy

Health

Etc

*NSDI schema showing the importance of Hydrography [bathymetry] as reference information (Ref: Norway Digital)*



Hydrographic Society Symposium - Oct 2009



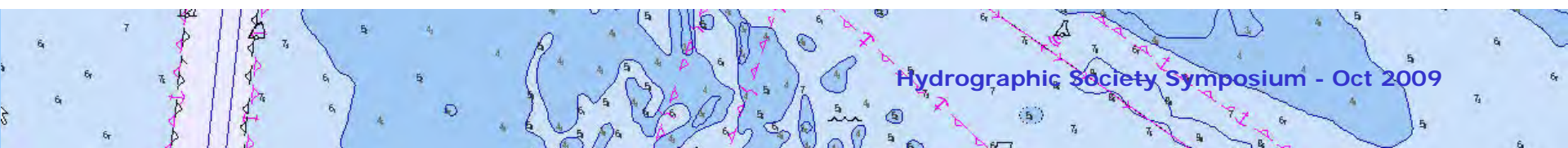
# Where does Hydrographic Information fit with INSPIRE?

## Annex 1 themes

- Geographic Reference Systems (WGS84)
- Administrative Boundaries (Maritime Jurisdictions)
- Hydrography / Hydrology (to 1 mile offshore)
- Transport Networks (Shipping/ Ferry routes)

## Annex 2 themes

- Geology (seabed texture/ morphology)
- Elevation ( bathymetry to inform seabed topography)





# INSPIRE Annex 1 Theme Transport Networks - Water

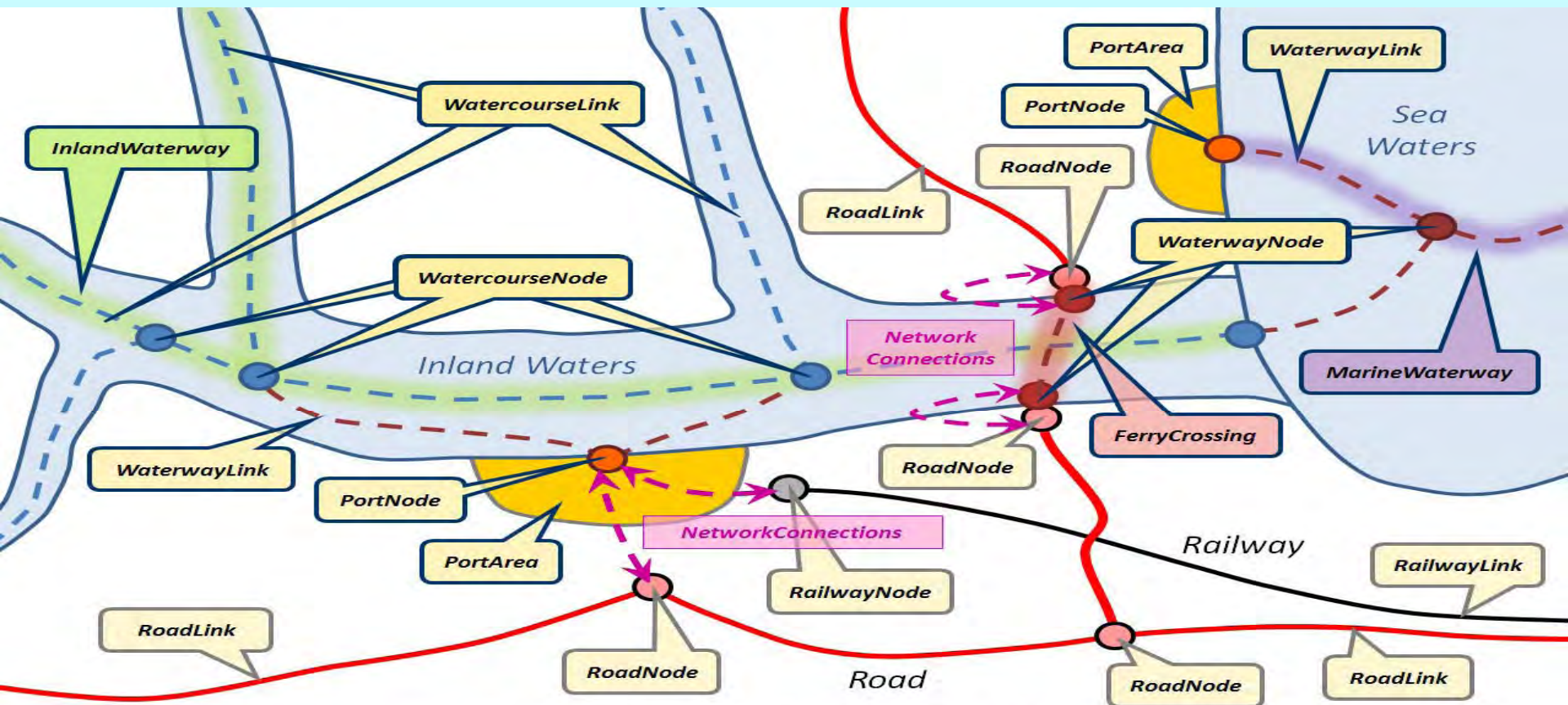
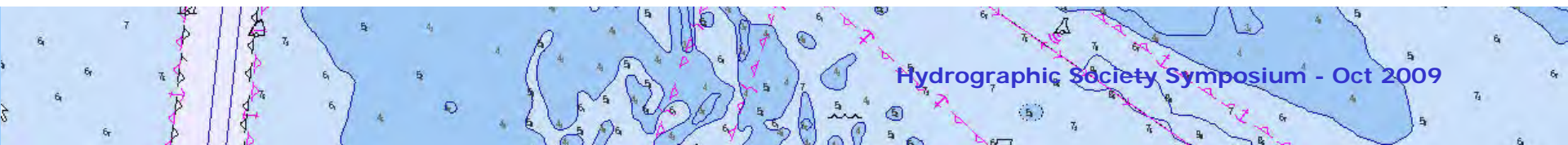
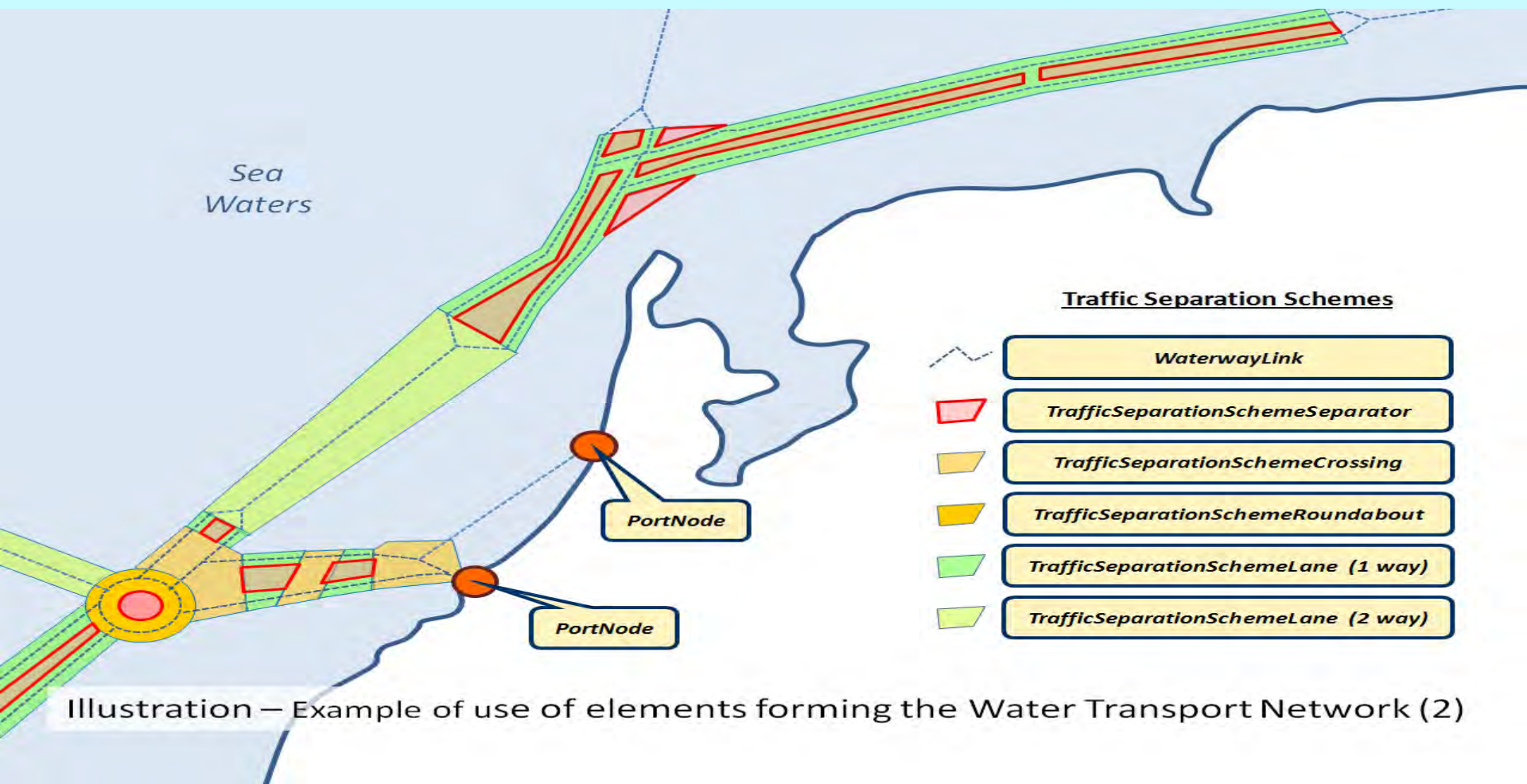


Illustration – Example of use of elements forming the Water Transport Network (1)





# INSPIRE Annex 1 Theme Transport Networks - Water





# Thank You

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