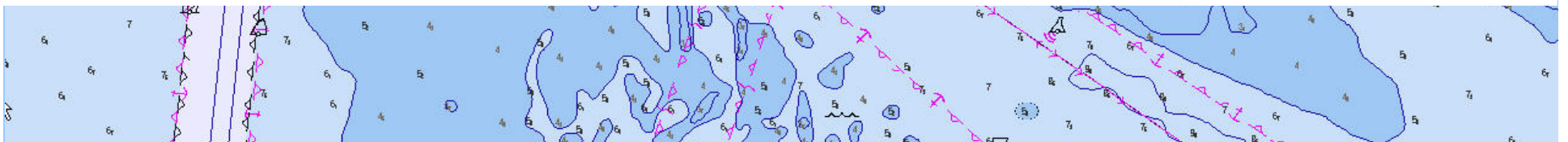




S-100 -
*IHO Geospatial Standard for
Hydrographic Data*



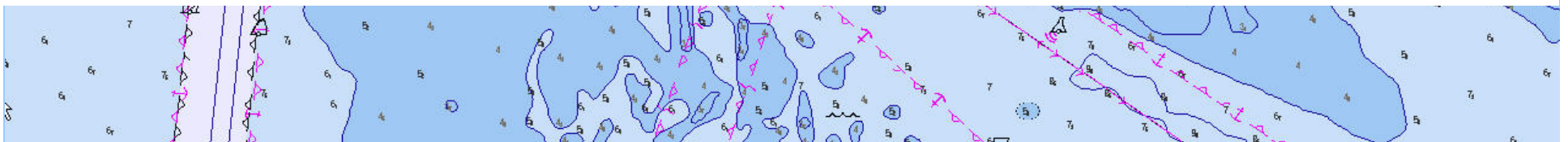


Reference

“Development of S-100 IHO Geospatial Standard for Hydrographic Data”

– L. Alexander, M. Brown, B. Greenslade and A. Pharaoh

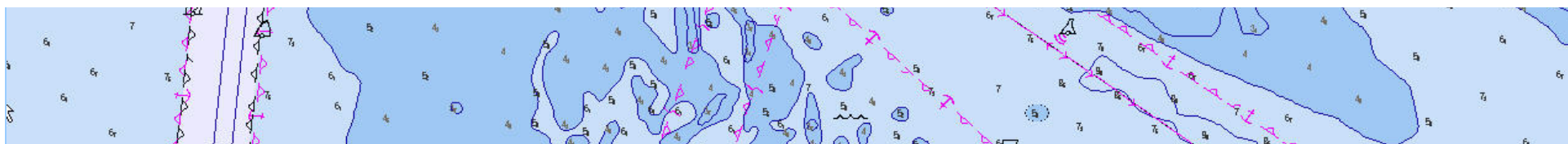
http://www.iho.int/COMMITTEES/CHRIS/TSMAD/S-100_Info_Paper.pdf





History

- IHO S-57 formally adopted May 1992
- Edition 3.0 released November 1996

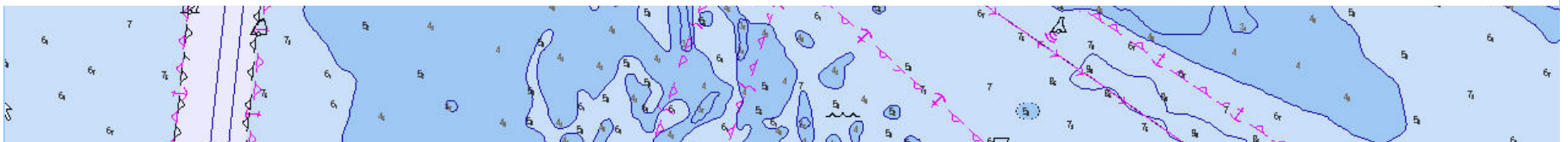




S-57 Standard

– Comprises:

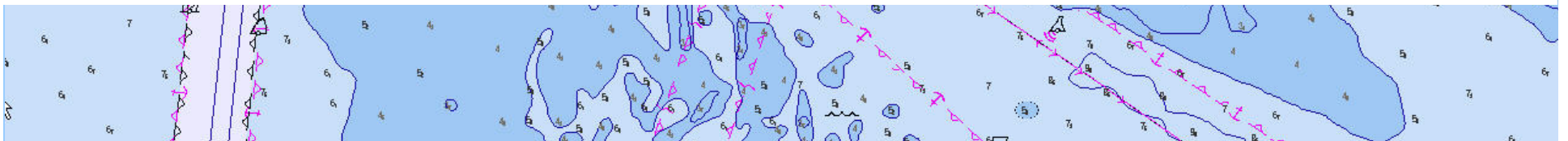
- Introduction
- Data Model
- Data Structure and Format
- Rules for ISO 8211 encapsulation
- Appendix A – Object Catalogue
- Appendix B1 IHO approved ENC Product Specification





Other Users

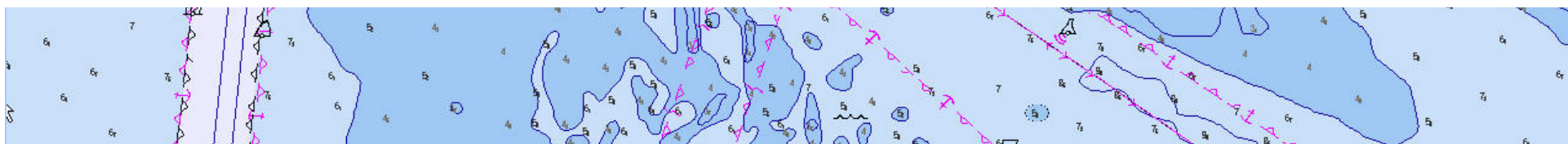
- other communities have S-57 based products
 - AML
 - Inland ENC
 - MIO





S-57 Limitations

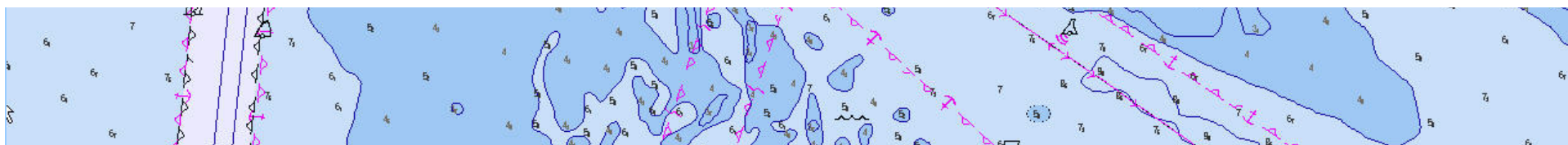
- Developed primarily to meet ENC requirement for an IMO compliant ECDIS
 - (the IMO specifications were in their infancy and not completely defined)
- Inflexible maintenance regime (“freezing” of editions)
- Cannot support contemporary requirements (gridded bathymetry, time-varying information, et cetera)
- Data transfer mechanisms are limited (data model embedded in encapsulation (ISO 8211))





S-100

- *The IHO Geospatial Standard for Hydrographic Data*
 - wider geospatial standard
 - not specific to ECDIS
 - based on ISO 191xx set of Geospatial Standards
 - S-100 is a series of profiles of ISO
 - for the use of Hydrographic Data

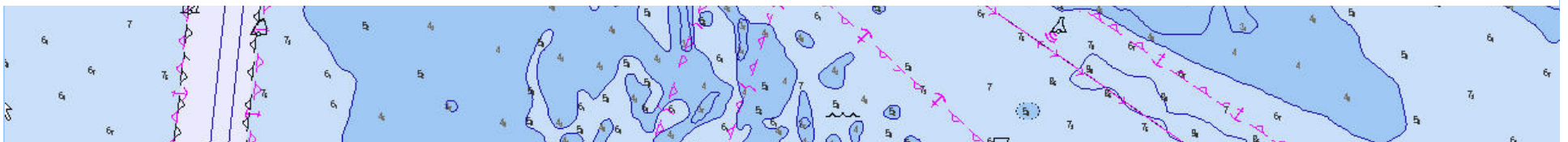




Naming: ~~S-57 e4.0~~ → S-100

- S-57 is NOT the ENC Product specification
- S-100 is NOT the ENC Product specification

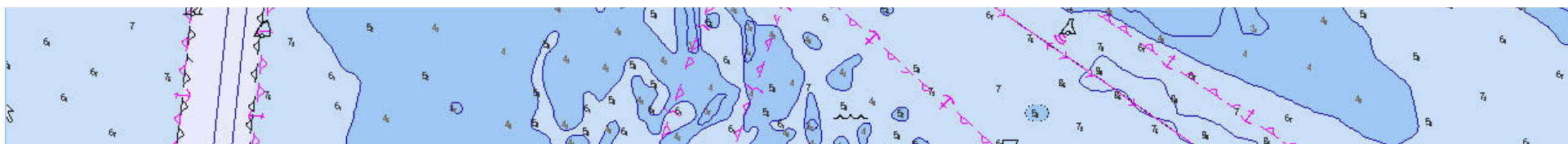
S-57 and S-100 are generic hydrographic data standards






Why We Need S-100

- S-100 stays in mainstream of GIS → greater use and lower cost of implementation
- Maximizes access to COTS software applications and development
- New components not developed in isolation
- Interoperability with other ISO 191xx based profiles (e.g. NATO, WMO (ice), ...)
- Encourages use of hydro data beyond HOs and ECDIS users (coastal zone mapping, security,...)
- “Plug and Play” updating of data, symbology and software enhancements
- Inclusion of 10 years worth of deferred S-57 corrections and extensions



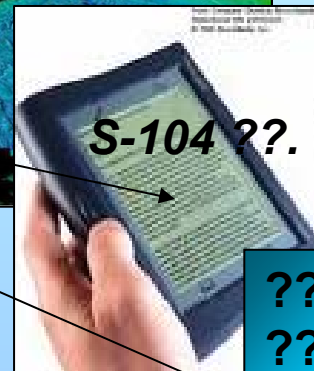
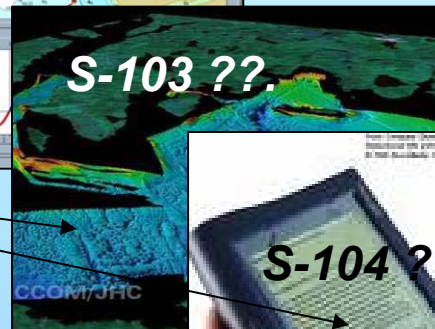
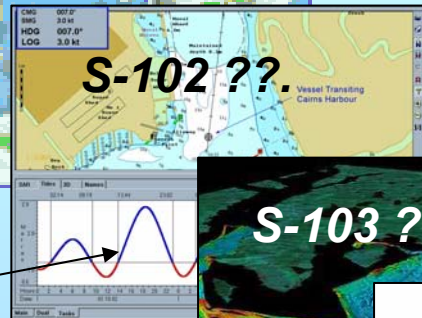
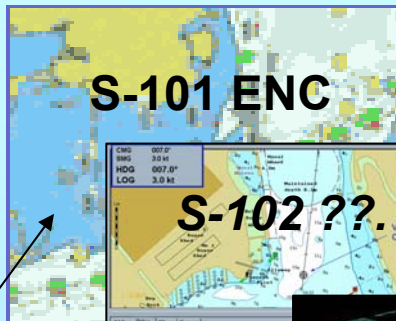


S-100 and Product Specifications

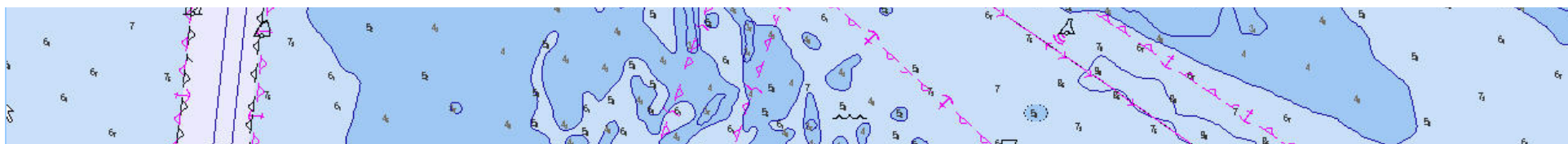


S-100

contains all the components to make different product specifications for all types of hydrographic data

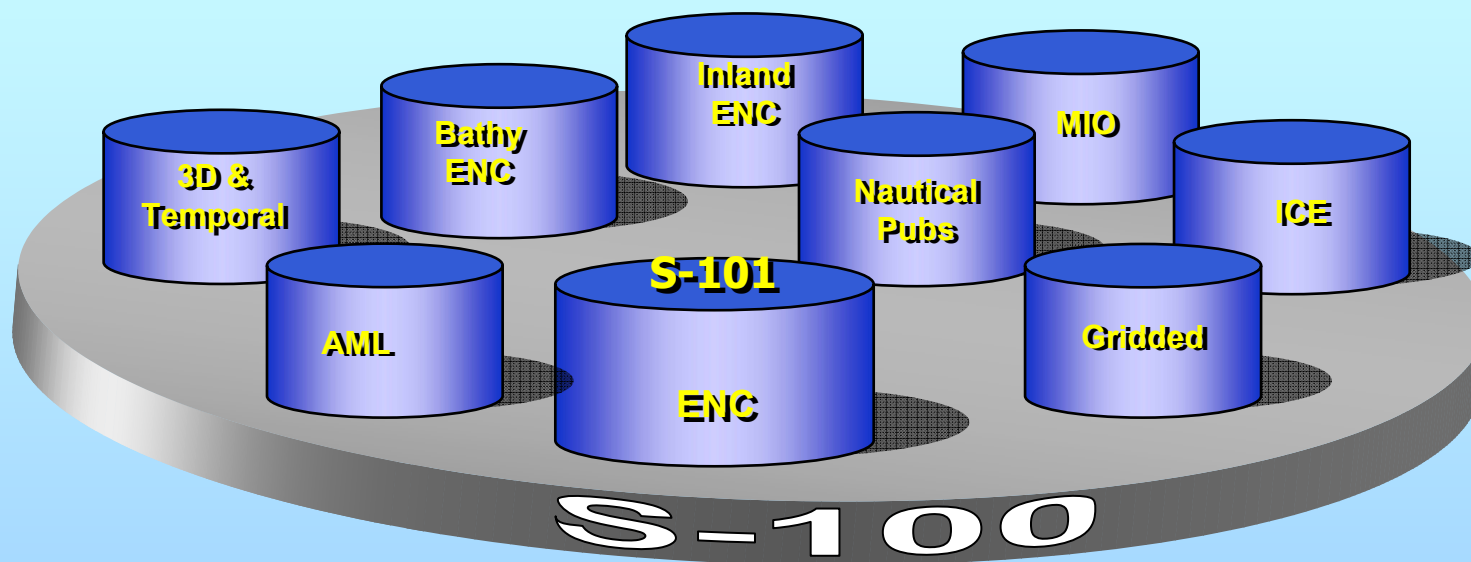


?????????
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... S-10?...

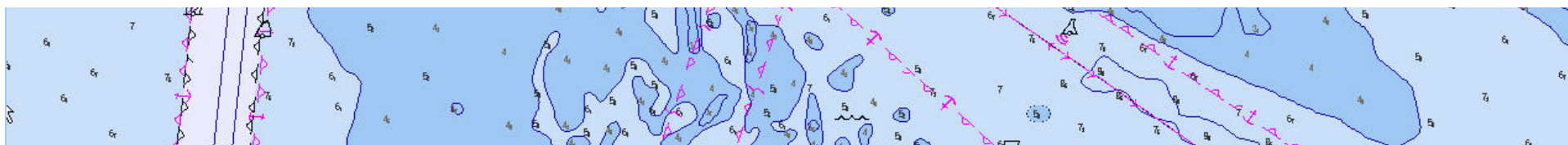




The S-100 “Family”



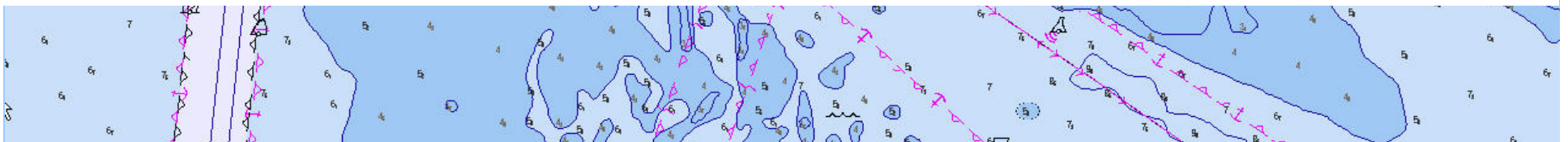
S-100 will support a greater variety of data sources, products and services





S-100 will support:

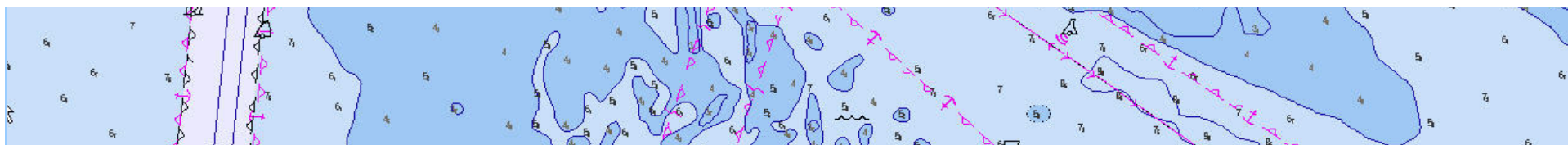
- Imagery and gridded data
- High-density bathymetry
- Seafloor classification
- 3-D and time-varying data (x,y,z and time)
- Dynamic ECDIS
- MIOs
- Marine GIS
- Web-based services
- Other applications





Additional Objectives

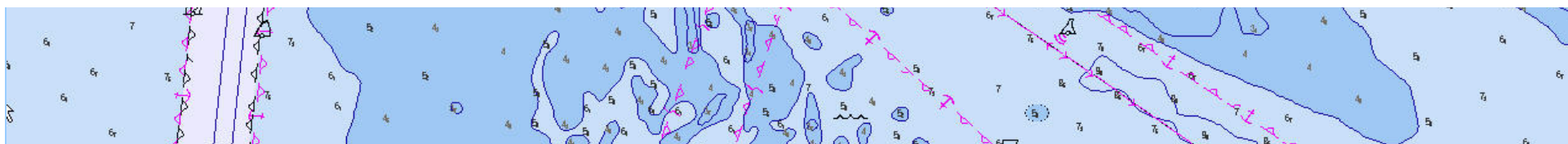
- Content and carrier are independent
- Core standard can evolve through extensions - no need for new versions of product specifications or system revisions
 - plug and play updating
- Product Feature Catalogs more flexible and capable of expansion
 - will accommodate future IMO regulations
- Will support emerging ECDIS / E-Navigation requirements (integrated Nautical Publications, Inland ENC Product Specs,





Strong Foundation

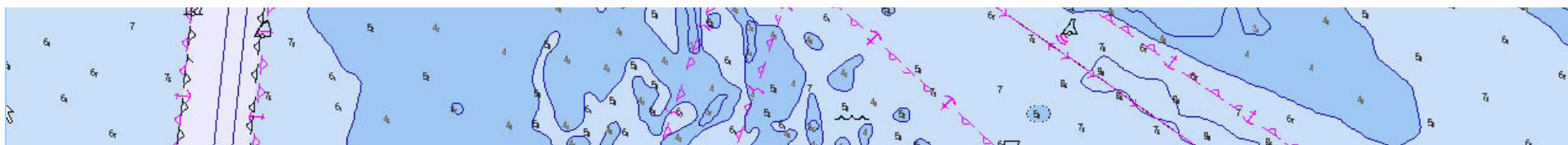
- Built on well established international standards:
 - ISO /TC211 (130 countries/members)
- Liaison
 - DGIWG (military)
 - OGC (strong industry/web involvement presence)
 - SDI (Spatial Data Infrastructure) communities
- IHO will host Registry
 - registers of hydrographic-related information (such as feature data dictionaries, data types, metadata)





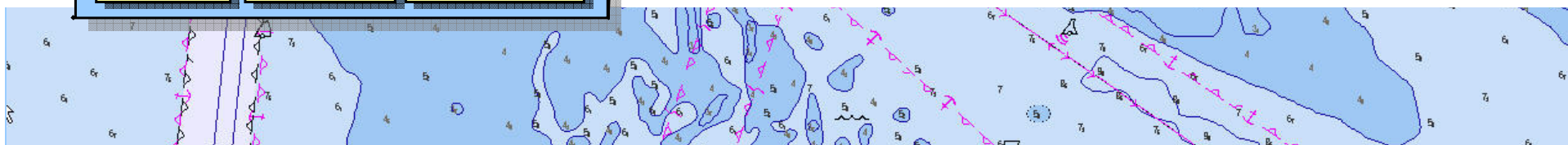
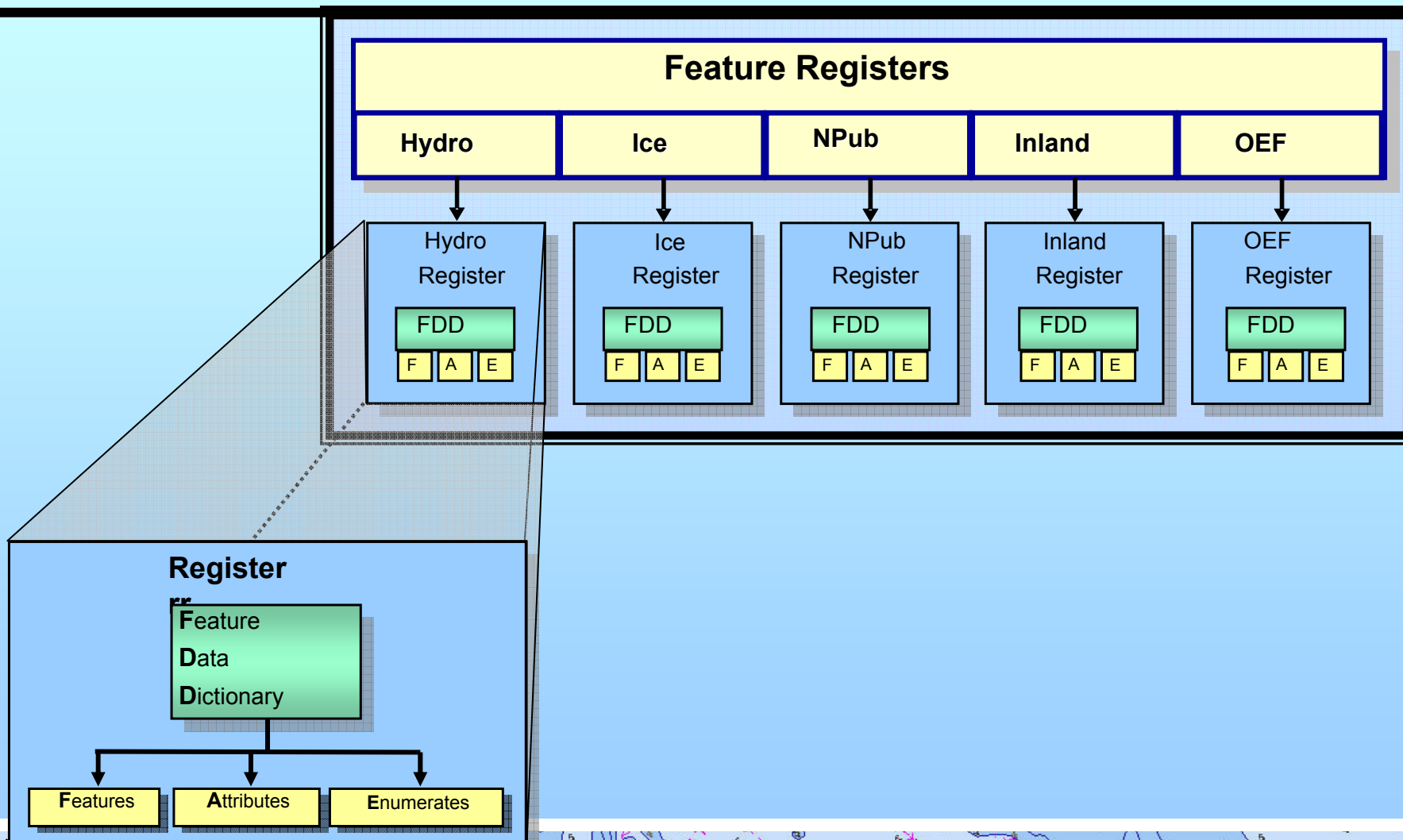
Registry and Registers

- Operational Registry available (<http://www.iho.int/>)
- Initially there will be registers for hydrographic information (existing features, dynamic ice coverage, nautical publications, Inland ENCs, OEF)
- Product Specifications can use features from other non-IHO registries



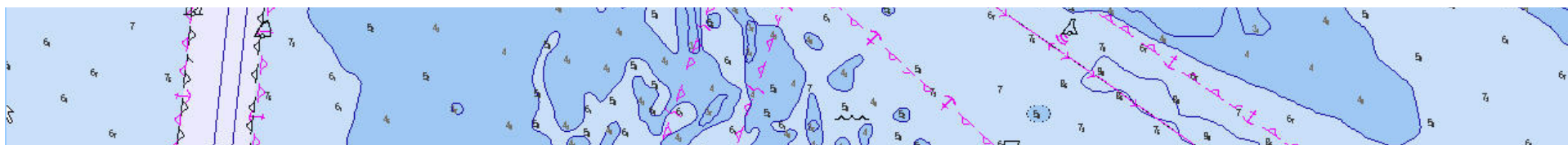
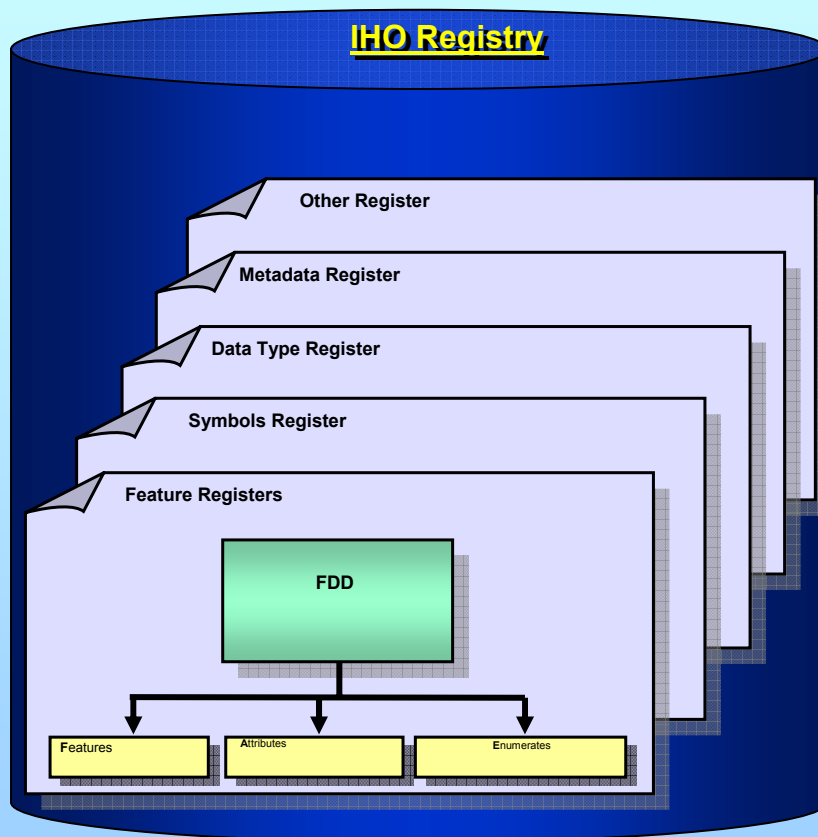


IHO Registry for S-100 will comprise a collection of registers:





IHO Registry

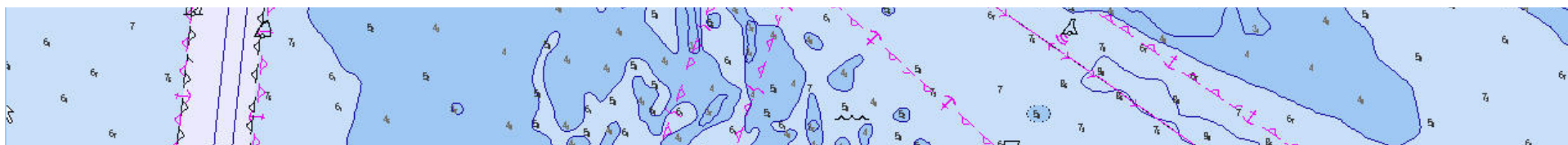




S-101

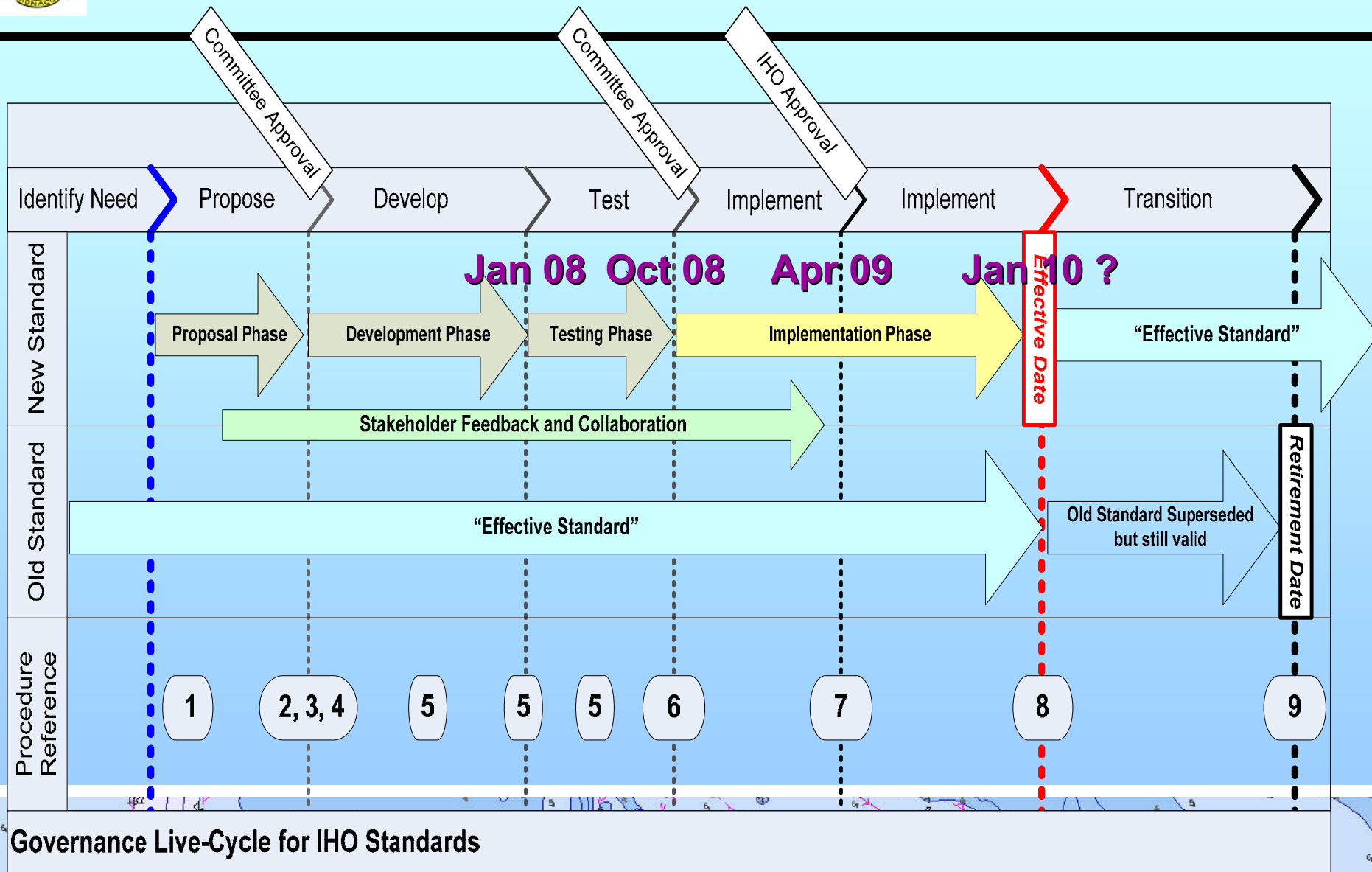
Standard for Electronic Navigational Charts

- Based on concepts in S-100
- S-57 3.1.1 data will be usable in S-101 compliant ECDIS systems
- Will incorporate all the data included in S-57
- Will allow for “plug and play” updating of data, symbology and software enhancements





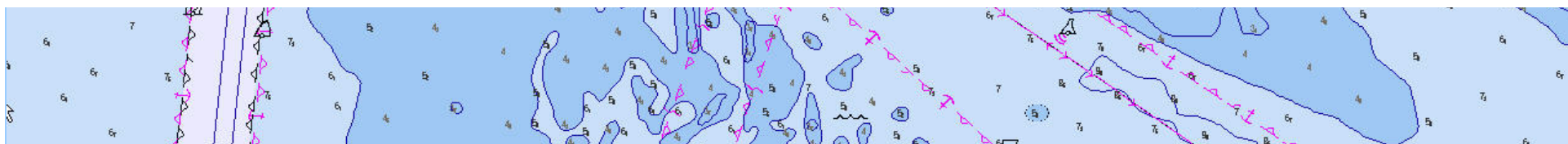
S-100 Implementation Timetable





Migration from S-57 to S-100

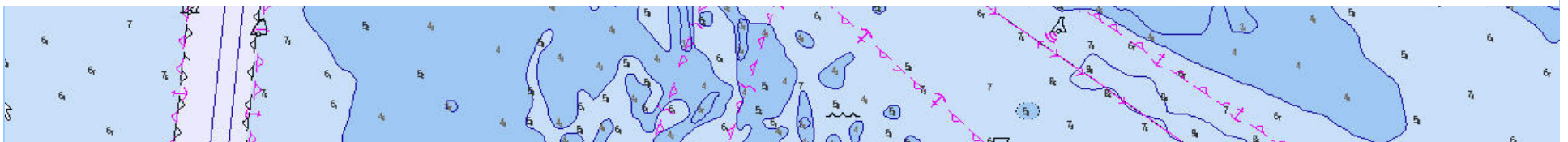
- Cooperation with all interested parties (workshops, IHO S-100 Discussion Forum,
- S57 3.1 will continue to be used for many years even with S-100 release
- Opportunity to use other Prod Specs (e.g. gridded bathy) with S-57 ENC Prod Spec via data overlays





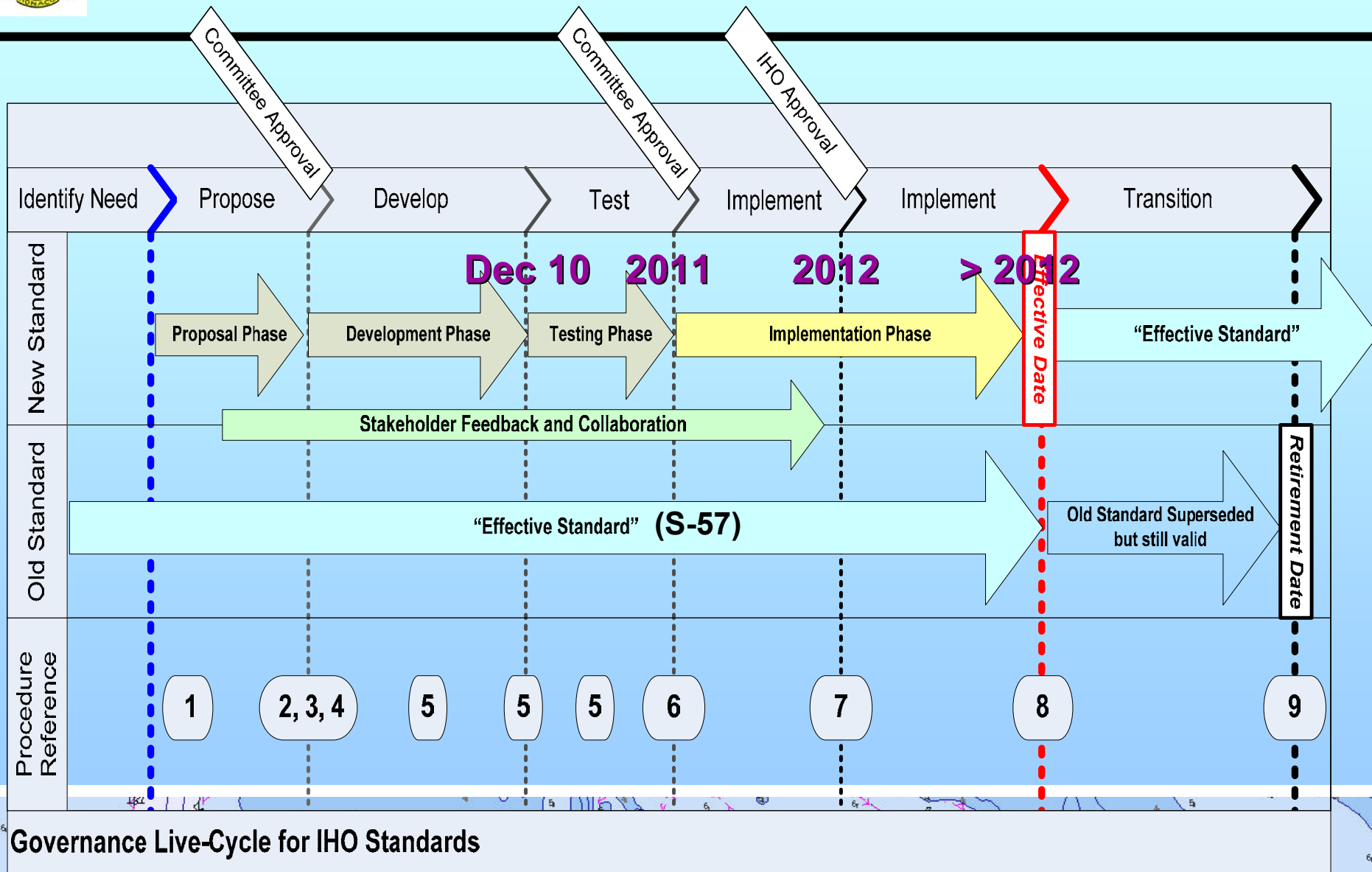
Effect on ENC ?

- Improved ENC Product Specification (S-101) will not come into force until at least 2012
- Standard will sit alongside the existing S-57 Edition 3.1 Product Specification for some time.
- ECDIS which are upgraded to use S-101 ENCs ***will continue to be able to use S-57 Edition 3.1 ENCs***





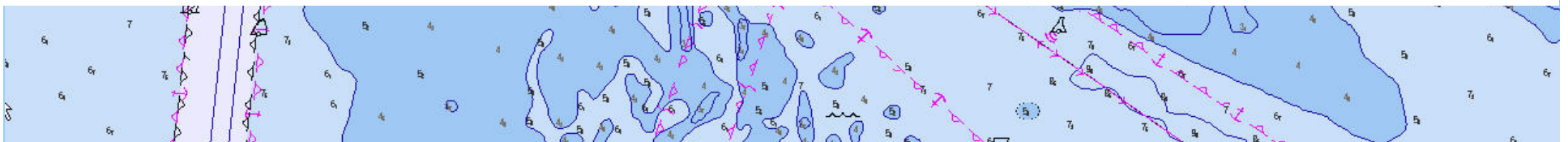
S-101 Implementation Timetable





IHO Standards Timeline

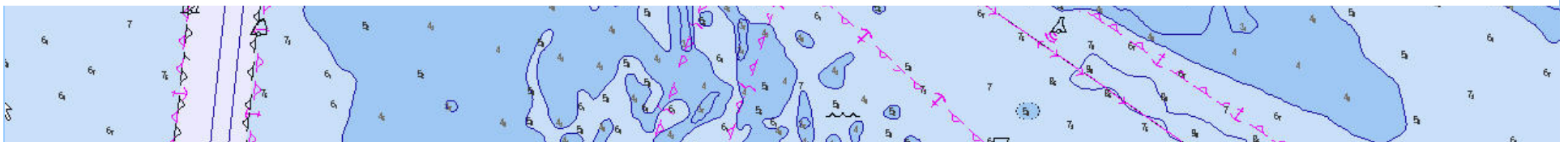
- 2006-2010
 - Establish Responsibility for coordination between IMO, IEC, IHO, CIRM, Type Approval Authorities
 - Begin user outreach with OEM's, Production software, Mariners
 - Coordination Group on ECDIS
 - Standards Alignment
 - IMO Performance Specification
 - IEC 61174
 - IEC 62288
 - IHO S-52 - CSMWG
 - IHO S-63 – DPSWG





2008-10

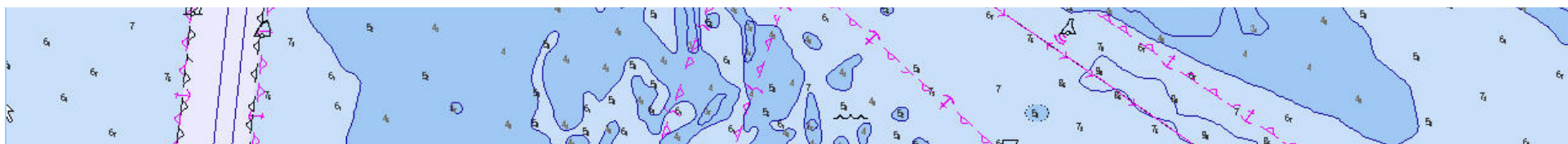
- Establish test datasets and test-beds
- Conduct impact analysis
 - Production Software (Hydrographic Offices, software companies)
 - OEM's
 - End Users – training establishments
 - Type Approval authorities





2011-2012

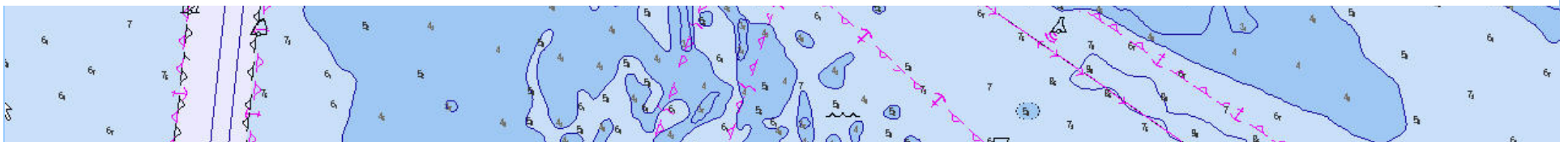
- 2011 – Approval of S-101 by IHO
- 2012? – S-101 available for implementation





Impact of S-100

- Will enable wider use and transfer of hydrographic data
- Will better support emerging requirements
- Is aligned with a contemporary standard (*ISO 191xx*)
- **Will NOT make S57 ENC's obsolete**
- Will not require HO's to change to S-100 in the near future





S-100 -
*IHO Geospatial Standard for
Hydrographic Data*

