ROK-US Joint Project Agreement - Interoperability use cases

Contents

- Interoperability Use Case definitions, definition and testing
- Definition of use cases to support testing of interoperability according to IMO ECDIS use.
- Product Specifications and Features examined
- Testing on the KHOA S-100 Viewer
- Status, Plans and questions





- In order to be realistic we should drive use cases for interoperability from the uses cases for ECDIS itself
- A lot of work has already been done experimenting with interoperability between data layers and use within ECDIS, e.g. KHOA Sea Trials and S-100 ECDIS initiatives
- We have tried to define use cases from ECDIS "use" instead of purely from display standards
- Primary driver is IMO regulations for use of ECDIS for primary navigation



Use of ECDIS for primary navigation



- Use Cases stem from IMO process for passage planning and bridge layout during monitoring during execution/monitoring
- The planning/re-planning process is continuous on the vessel bridge
- Plan updates are communicated through the INS: Conning/monitoring and planning ECDIS <u>will</u> have different settings



Define Use Cases based on how ECDIS is <u>used</u> for primary navigation Which product specifications are relevant to the detailed Use Case?

Which features require an entry in the interoperability catalogue?

What level of interoperability do we require?



S-100 Data products to use



- From Interoperability Specification and considering publication status
- S-101 Electronic Navigational Charts
- S-102 Dense Bathymetry
- S-104 Water Levels
- S-111 Currents
- S-122 MPA

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- S-123 Radio Signals data.
- S-124 RNW/MSI
- S-127 Traffic Management
- S-129 UKC
- S-421 Route planning

Others that could be considered

- S-128 Service catalogues.
- S-401 Inland ENC this would be useful to test interoperability if overlapping data exists but most of our use cases areas are either open water or port-based and therefore may not be covered by IENC areas.
- S-4XX meteorological information these are mostly concerned with weather effects and more of an "overlay" rather than data requiring true interoperability. It may be possible to bring these in as part of some of the use cases
- S-131 Marine Harbour infrastructure. This product specification is under construction currently within NIPWG and represents the "port's" view of the infrastructure including routing, services, critical depths and restrictions. This will be crucial for port entry/exit considerations



The Process to follow





• We have worked through all the candidate feature catalogues

- Candidates for IC Level 2 • identified, initially from identical features
- Inspection of feature catalogues and inspection of existing S-98
- Identified candidates • implemented in an IHO conformant interoperability catalogue
- Tested in viewer. •

Prod	Feature			Code		Level	Viewing Group	Viewing Group Layer		Drawing Priority ¹	Commer	ıt		
F	Restricted area n	avigational		RestrictedAreaNavigational		2	26010				S-101, S	-127		
F	Restricted area regulatory			RestrictedAreaRegulatory							No po group in	rtrayal (no S-101)		
F	Vessel Traffic Service Area			VesselTrafficServiceArea		1	28030				Also in 127. S- display	S-101 and S- 98 Standard		
F	Data coverage			DataCoxerage							Data Co See S-9	verage area. B		
F	Quality of NonBat	Bathymetric Data		QualityOfNonBathymetricData										
F	Text Placement			TextPlacement										
S-123												10		
F	Building	Deed	Frating		0-4-					W:		viewing	Drawing	0
F	Coastguard sta	Prod	Feature		Lode			LE	vel	viewing	j Group	Group	Priority ¹	Lomment
F	GMDSS area	C 12/ D	·		1					1		Layer		
F	Inmarsat ocea	5-120 PI			0	T: 1 10								
F	Indeterminate	<i>F</i>	Caution Tidal Stream		LautionTidalStream									
F	Landmark	+	Laution Sea Fog		LautionSeaFog									
F	NAVAREA/META	F	Caution Eddy		Cautio	neddy								
F	NAVTEX station	S-127	27											
F	Radio service a	F	Caution area		CautionArea			2		26150				S-101
F	Radio station	F	Concentration of shipping hazard area		ConcentrationOfShippingHazardArea			rea 1		26000			[5,6,7]	
F	Weather foreca	F	ISPS code security level		IspsCodeSecurityLevel			1		35100			[5,6,7]	
ŀ	Forecast area	F	Local Port Service Area		LocalPortServiceArea			1		35100			[5,6,7]	
F	Radio service a	F	Military practice area		MilitaryPracticeArea			2		26040				S-101
S-124	010/ 11 1 11	F	Pilot boarding place		PilotB	PilotBoardingPlace				28040	28010			S-101
F	SI24_Navigatio	F	Pilot service		PilotS	<u> PilotService</u>		1		28040			[5,6,7]	
ŀ	SIZ4_Text Plac	F	Pilotage dis	strict	Pilota	geDistric	t.	2		28040	28010			S-101
		F	Piracy risk	area	Piracy	RiskAre	8	1		35100			[5,6,7]	
		F	Place of ref	uge	Place	OfRefuge		1		35100			[5,6,7]	
		F	Radar rang	e	Radar	Range		1		35100			[5,6,7]	
			Radio calling-in point			RadioCallingInPoint				25060				S-101
		F	Restricted area navigational			RestrictedAreaNavigational				26010			[5.6.7]	S-101, S-122
		F	Restricted area regulatory			RestrictedAreaRegulatory								,
		F	Routeing measure			RouteingMeasure				35100			[5.6.7]	
		F	Ship Reporting Service Area			ShipReportingServiceArea SignalStationWarning				35100			[5 6 7]	
		F								28020			[eleli]	S-101
		F	Signal Stat	ion Traffic	Signal	IStation]	raffic	2		28020				S-101
		F	Underkeel o	clearance allowance area	Under	keelClea	ranceAllowanceAre	a 1		36200				Also in S-129
		F	Underkeel	clearance management area	Under	keelClea	ranceManagement/	Area 1		36200				Also in S-129



IC Details

The project interoperability catalogue includes

- IC Level 1 implementations in line with those specified in S-98 Annex C
- Some suggested IC Level 2 implementations
 - These are based on features likely to be suppressed due to more authoritative versions in other S-100 product specs.
 - Those considered.
 - S-101 + S-102, S-104, S-111, S-122, S-123, S-127, S-128 and S-129
 - Examples
 - S-101/S-102, Suppress DepthArea/DredgedArea
 - S-101/S-123, CoastguardStation, RadioStation
 - S-101/S-122, MarineProtectedArea, RestrictedAreaNavigational
- Some questions
 - Who defines, issues, signs and is responsible for IC creation, IHO, MS, IEC?
 - Does IC level 2 suppress everything on screen or just features coincident with the extent of the PDC coverage
 - What advice is necessary for data producers to implement against IC Level 2?
 - Is coincident coverage necessary for features?
 - IC Level 2 might require double encoding to ensure important information is preserved?



KHOA S-100 Viewer testing

S-102



S-101



S-101 + S-102 (IC2) – Should interoperability suppress all DepthAreas on screen or just those within the extent of both S-101 and S-102 (the defined PDC)? We presume the latter....



Current Status

We are drawing together:

- The use cases defined
- The component product specifications
- S-98 Annex C portrayal
- Suggesting some IC level 2 configurations
- Experimenting with test data

Experiences to date:

- Interoperability is complex to define and implement without an efficient and streamlined test cycle. Viewers and test data are indispensable
- KHOA S-100 Viewer being tested now



Plan

- Continue to test IC Level 1 using S-98 Annex C as starting point
- Look at candidates for IC Level 2,

