

**PART 2 PROJECT PROPOSAL - TO DEMONSTRATE AVAILABILITY OF ENC'S (S-101 and S-57) in S-100 ECDIS for DUAL FUEL ALONG MAJOR SHIPPING ROUTES**

**Project Objectives:**

1. The main objectives of the proposed project are to:
  - a. coordinate and provide S-57 and S-101 covering the planned routes;
  - b. demonstrate to the shipping community and other users that the IHO and our stakeholders stand ready to make available ENC's in S-100 for Dual Fuel covering major shipping routes ahead of the 1 January 2026 commitment to the IMO.
  - c. carry out testing of wireless updating of the S-101 ENC's and applying the latest IHO standards at sea.

**Project Deliverables**

**Phase 1 (April 2024 – October 2024)**

1. In this Phase, the 3 Littoral States of Indonesia, Malaysia and Singapore agreed to produce ENC's (S-57 and S-101) covering the Malacca and Singapore Straits (MSS) from One Fathom Bank to the Eastern approaches of the Singapore Straits. Details of proposed implementation will be worked out.
2. The ENC's produced for S-100 ECDIS will use the latest joint hydrographic survey results that were recently acquired covering waters shallower than 30 metres along the entire traffic separation scheme in the Malacca and Singapore Straits. In addition, the 3 Littoral States will provide S-101 and S-102 (Bathymetric Surface) datasets that could be used in the demonstration of possible interoperability. A sea trial will be conducted to test the dual fuel mode in S-100 ECDIS using the S-101 and S-57 ENC's.
3. The MSS ENC's was designated with its own ID code and differs from the ENC's produced by the 3 littoral States. In addition, MSS ENC's are produced in different scale band in order to eliminate any potential conflict arising from Producer ID, scale or coverage overlaps.

**Phase 2 (June 2024 – January 2025) – Details of planned route and ports of call of Italian Naval vessel "Amerigo Vespucci"**

4. In Phase 2, the Italian naval vessel i.e. Amerigo Vespucci will circumnavigate the world to demonstrate the availability of S-101 and S-57 ENC's along the planned major shipping routes.
5. The IHO-Singapore Lab together with the Italian Navy will work with the RENC's i.e. IC-ENC and PRIMAR to provide S-57 and S-101 ENC's covering the planned route of the Amerigo Vespucci. The ENC's will also incorporate the ENC's of the Malacca and Singapore Straits provided under Phase 1. Amerigo Vespucci will call on ports around the world.
6. For both Phases, dual fuel S-100 ECDIS provided by Korea Hydrographic and Oceanographic Agency (KHOA) will be deployed for the field testing at sea, including the testing of real-time wireless updating datasets and standards (catalogues). The S-100 ECDIS will be provided by the OEM and/or research institutes.

**Practical relevance to Hydrographic Community/Industry:**

1. The main impact of the proposed demonstration would be to highlight IHO's commitment to IMO and IEC in providing ENC's for S-100 ECDIS along major shipping routes before 1 January 2026.
2. The proposal will clearly show the high-level cooperation among the stakeholders eg. IHO Member States, RENC's and OEM working together towards a common goal of providing official ENC's covering major shipping routes.
3. Besides providing both S-100 and S-57 ENC's, the project will also carry out wireless updating of the ENC's and IHO standards at sea. The updating will be done using the S-100 ECDIS provided by the OEM and Research Institute.

4. Main beneficiaries would be the shipping community for safer navigation and other users of the ENC's.
5. Publicity to the project is necessary to showcase the commitment and readiness of hydrographic offices to deliver the ENC's for S-100 ECDIS covering major shipping routes would be timely. Project results will be shared and discussed with the Lab GB and participating organizations before making them public.

**Members of Project team** (Phase 1) (See Appendix 1a for details)

**Joint Project Lead:** Hydrographers from Indonesia, Malaysia and Singapore

**Advisor to Project:** Parry Oei

**Hydrographic Offices:** Hydrographic Offices from Indonesia, Malaysia and Singapore

**Dual fuel S-100 ECDIS partner:** KHOA

**Members of Project team** (Phase 2) (See Appendix 1b for details)

**Advisor to Project:** Parry Oei

**Hydrographic Offices:** Italian Navy

**RENCs:** PRIMAR, IC-ENC

**Dual fuel S-100 ECDIS partner:** KHOA

**Collaborator scope of work:**

(Phase 1)

To jointly produce S-57 and S-101 ENC's based on the latest joint hydrographic survey results that were recently acquired covering waters shallower than 30 metres along the entire traffic separation scheme in the Malacca and Singapore.

(Phase 2)

To provide S-57 and S-101 ENC's covering the planned routes and ports of call by the Italian naval vessel Amerigo Vespucci, including scoping simple testing of wireless updating at sea.

(Phase 1 and Phase 2)

To demonstrate ENC's in S-100 ECDIS for dual fuel mode along major shipping routes and updates of ENC's and IHO standards (FC/PC).

**Project schedule** (See Appendix 2 for details)

Estimated project duration: Twelve (12) months.

**Summary of project cost** (See Appendix 3 for details)

IHO-Singapore Lab funding the logistics for the hosting of the joint production and validation of the S-101 ENC's against to S-57 ENC's.

Sea trials will be conducted, one for Phase 1 and one for Phase 2

**Other source of funding**

(Have you attempted, applied for or obtained any other form of incentives/funding for this project or any similar project)

Self-funded participating applicants will provide their respective in-kind support/contribution.

**Do you require a workspace at IHO Lab?** (If so, please elaborate):

Work area needed at the Lab (physical or virtual)

- Workspace for the production and carrying out of quality assurance.

**Declaration by applicants:**

We the Applicants hereby declare that the information provided in this Application form, including the supporting documents attached hereto, are true and correct. We have read and understood the terms set out herein, including the Terms of Funding and we agree to be bound thereby.

**Name of Applicant:**

**Date:**

## Appendix 1a

### PROJECT TEAM LEADER AND MEMBERS (Phase 1)

#### Pushidrosal – Indonesian Navy Hydrographic and Oceanographic Center

A)	Name	Commander Mohammad Qisthi Amarona
B)	Designation	ENC Manager
C)	Education / Professional Qualifications	Geodesy and Marine Cartographer
D)	Department	Charting Division
E)	Organisation	Pushidrosal
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G)	Tel No.	+62 81281212075
H)	Email Address	qisthi.amarona@gmail.com

#### National Hydrographic Centre, Malaysia

A)	Name	Lt Cdr Muhammad Aizat bin Azmi RMN
B)	Designation	In-charge of ENC Production
C)	Education / Professional Qualifications	
D)	Department	Electronic Navigational Chart
E)	Organisation	National Hydrographic Centre
F)	Postal Address	Pulau Indah, 42009 Port Klang, Selangor
G)	Tel No.	
H)	Email Address	aizat.azmi@navy.mil.my

#### Maritime and Port Authority of Singapore

A)	Name	Mr. Lee Weng Choy
B)	Designation	Deputy Chief Hydrographer
C)	Education / Professional Qualifications	Degree
D)	Department	Hydrographic Division
E)	Organisation	Maritime and Port Authority of Singapore
F)	Postal Address	7B Keppel Road #20-00 (S 089055)
G)	Tel No.	65-63252031
H)	Email Address	Lee_Weng_Choi@mpa.gov.sg

#### Korea Hydrographic and Oceanographic Agency (KHOA)

A)	Name	Dr Sewoong Oh
B)	Designation	Principal Research Engineer
C)	Education / Professional Qualifications	Industrial System Engineering, PhD
D)	Department	Maritime Digital Transformation Research Centre
E)	Organisation	Korea Research Institute of Ships and Ocean Engineering
F)	Postal Address	(34103) 32, Yuseong-daero 1312 beon-gil, Yuseong-gu, Daejeon, Republic of Korea
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H)	Email Address	osw@kriso.re.kr

## Appendix 1b

### PROJECT TEAM LEADER AND MEMBERS (Phase 2)

#### Istituto Idrografico della Marina – Italian Navy Hydrographic Institute

A)	Name	Cdr Erik BISCOTTI
B)	Designation	Head of Survey Production Department
C)	Education / Professional Qualifications	
D)	Department	Survey Production Department
E)	Organisation	IIM - Istituto Idrografico della Marina - Italia
F)	Postal Address	Passo dell'Osservatorio 4, 16134 Genova
G)	Tel No.	+39 010 244 3277
H)	Email Address	erikd.biscotti@marina.difesa.it

#### Istituto Idrografico della Marina – Italian Navy Hydrographic Institute

A)	Name	Lt Cdr Cosmo PELUSO
B)	Designation	Head of Production Department
C)	Education / Professional Qualifications	
D)	Department	Production Department
E)	Organisation	IIM - Istituto Idrografico della Marina - Italia
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H)	Email Address	cosmo.peluso@marina.difesa.it

#### International Centre for ENC (IC-ENC)

A)	Name	James Harper
B)	Designation	General Manager
C)	Education / Professional Qualifications	
D)	Department	-
E)	Organisation	IC-ENC
F)	Postal Address	Taunton TA1 2DL, United Kingdom
G)	Tel No.	+47 51 85 88 78
H)	Email Address	james.harper@ic-enc.org

#### PRIMAR

A)	Name	Hans Christoffer Lauritzen
B)	Designation	Director
C)	Education / Professional Qualifications	
D)	Department	-
E)	Organisation	PRIMAR
F)	Postal Address	
G)	Tel No.	+47 51 85 88 78
H)	Email Address	hans.christoffer.lauritzen@kartverket.no

#### Korea Hydrographic and Oceanographic Agency (KHOA)

A)	Name	Dr Sewoong Oh
B)	Designation	Principal Research Engineer
C)	Education / Professional Qualifications	Industrial System Engineering, PhD
D)	Department	Maritime Digital Transformation Research Centre
E)	Organisation	Korea Research Institute of Ships and Ocean Engineering
F)	Postal Address	(34103) 32, Yuseong-daero 1312 beon-gil, Yuseong-gu, Daejeon, Republic of Korea
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## Appendix 2

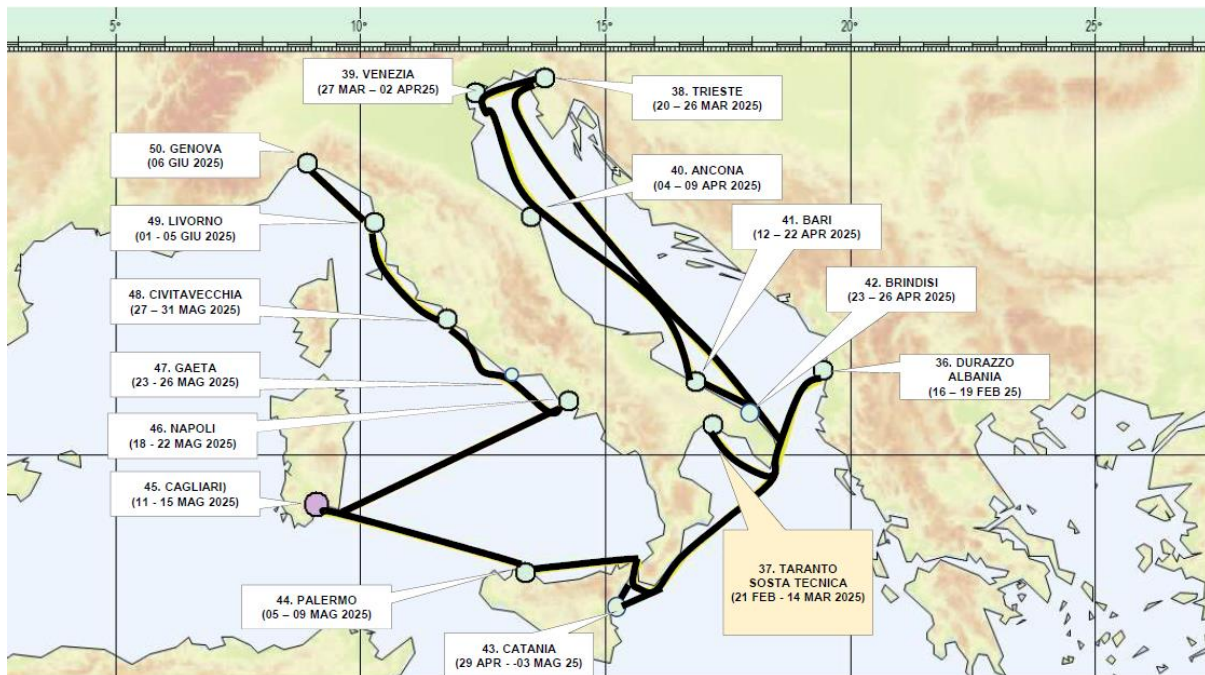
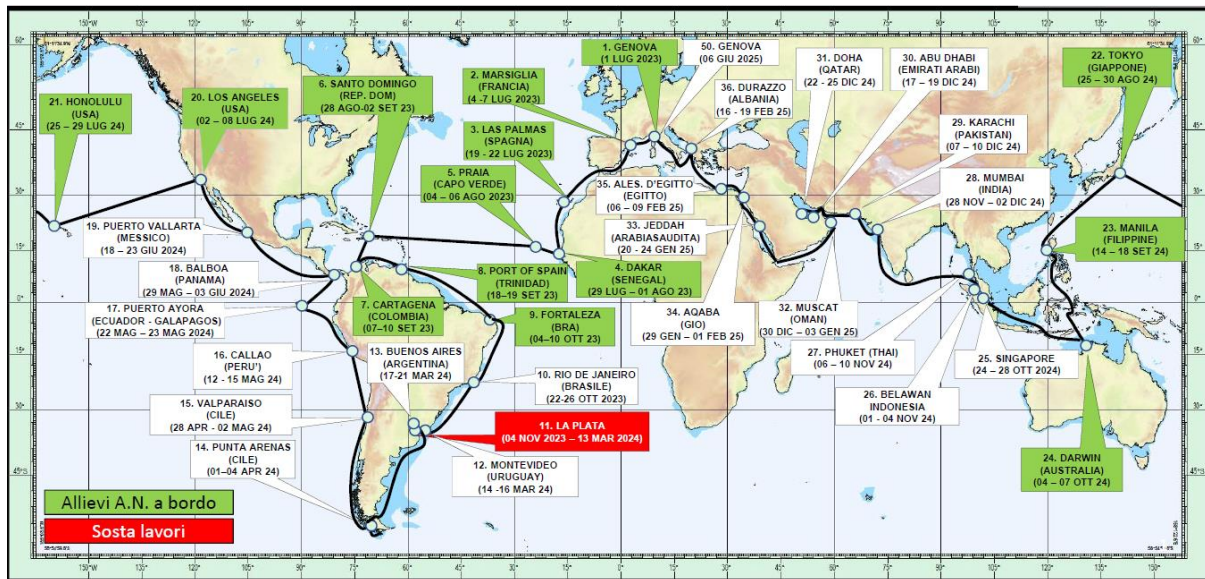
### PROPOSED PROJECT SCHEDULE – PHASE 1 & 2

Phase 1								
Task	Year 1 Q1	Year 1 Q2	Year 1 Q3	Year 1 Q4				Parties Involved
Host Coordinating meeting								<ul style="list-style-type: none"> <li>• HOs from 3 Littoral States</li> </ul>
Production of S-101 ENC's covering the traffic separation scheme in Malacca and Singapore Straits.								<ul style="list-style-type: none"> <li>• HOs from 3 Littoral States</li> </ul>
Validation of ENC's								<ul style="list-style-type: none"> <li>• HOs from 3 Littoral States</li> </ul>
Conduct sea demonstration								<ul style="list-style-type: none"> <li>• HOs from 3 Littoral States,</li> <li>• KHOA</li> </ul>
Project documentation								<ul style="list-style-type: none"> <li>• HOs from 3 Littoral States, KHOA</li> </ul>

Phase 2:								
Task	Year 1 Q1	Year 1 Q2	Year 1 Q3	Year 1 Q4				Parties Involved
Host Coordinating meeting								<ul style="list-style-type: none"> <li>• IHO-SG Lab, Italian Navy</li> </ul>
Provision of S-101 ENC's and incremental updates covering the planned route of the ITS Amerigo Vespucci								<ul style="list-style-type: none"> <li>• IHO-SG Lab, Italian Navy, IC-ENC, PRIMAR</li> </ul>
Conduct sea demonstration								<ul style="list-style-type: none"> <li>• IHO-SG Lab, Italian Navy, IC-ENC, PRIMAR, KHOA</li> </ul>
Project documentation								<ul style="list-style-type: none"> <li>• IHO-SG Lab, Italian Navy, IC-ENC, KHOA</li> </ul>

## Planned route and ports of call of Amerigo Vespucci



	PORTO	ARRIVO	PARTENZA	SOSTA	NAV	MIGLIA	SOA	NOTE
1	Genova		sabato 1 luglio 2023		3	230	3,0	Imbarco Allievi
2	Marsiglia	martedì 4 luglio 2023	venerdì 7 luglio 2023	3	12	1420	5,0	
3	Las Palmas	mercoledì 19 luglio 2023	sabato 22 luglio 2023	3	7	860	5,0	
4	Dakar (Senegal)	sabato 29 luglio 2023	martedì 1 agosto 2023	3	3	364	5,0	
5	Praia (Capo Verde)	venerdì 4 agosto 2023	domenica 6 agosto 2023	2	22	2734	5,0	
6	Santo Domingo (Rep. Dominicana)	lunedì 28 agosto 2023	sabato 2 settembre 2023	5	5	631	5,5	
7	Cartagena (Colombia)	giovedì 7 settembre 2023	domenica 10 settembre 2023	3	8	928	5,0	invito per bicentenario Marina Colombiana (Ricorrenza a luglio)
8	Port of Spain (Trinidad)	lunedì 18 settembre 2023	martedì 19 settembre 2023	1	15	1681	4,5	Sbarco Allievi Riprovati
9	Fortaleza (Brasile)	mercoledì 4 ottobre 2023	martedì 10 ottobre 2023	6	12	1492	5,0	Sbarco Allievi
10	Rio de Janeiro	domenica 22 ottobre 2023	giovedì 26 ottobre 2023	4	9	1125	5,0	
				<b>30</b>	<b>96</b>	<b>11465</b>	<b>5,0</b>	
				<b>24%</b>	<b>76%</b>	<b>MIGLIA</b>	<b>SOA</b>	
				<b>SOSTA</b>	<b>NAV</b>			

	PORTO	ARRIVO	PARTENZA	SOSTA	NAV	MIGLIA	SOA	NOTE
11	La Plata	sabato 4 novembre 2023	mercoledì 13 marzo 2024	131	1	95	4,0	Cantiere navale Astillero Rio Santiago Sosta lavori Estera ( 4 mesi ca)
12	Montevideo (Uruguay)	giovedì 14 marzo 2024	sabato 16 marzo 2024	2	1	110	4,5	
13	Buenos Aires (Argentina)	domenica 17 marzo 2024	giovedì 21 marzo 2024	4	11	1463	5,5	
14	Punta Arenas (Cile)	lunedì 1 aprile 2024	giovedì 4 aprile 2024	3	24	1463	2,5	Tratta che prevede ca 10 gg di margine al fine di valutare al meglio il passaggio dello Stretto di Magellano/Capo Horn (2 soste a Punta Arenas: 1 3 e 9-11 aprile)
15	Valparaiso (Cile)	domenica 28 aprile 2024	giovedì 2 maggio 2024	4	10	1300	5,5	
16	Callao (Perù)	domenica 12 maggio 2024	mercoledì 15 maggio 2024	3	7	1070	6,5	
17	Puerto Ayora (Ecuador-Galapagos)	mercoledì 22 maggio 2024	giovedì 23 maggio 2024	1	6,5	980	6,5	
18	Balboa (Panama)	mercoledì 29 maggio 2024	lunedì 3 giugno 2024	5	15	1910	5,5	
19	Puerto Vallarta (Messico)	martedì 18 giugno 2024	domenica 23 giugno 2024	5	9	1130	5,0	
20	Los Angeles (U.S.A.)	martedì 2 luglio 2024	lunedì 8 luglio 2024	6	17	2261	5,5	Imbarco Allievi
				<b>164</b>	<b>101,5</b>	<b>11782</b>	<b>4,8</b>	
				<b>62%</b>	<b>38%</b>	<b>MIGLIA</b>	<b>SOA</b>	

	PORTO	ARRIVO	PARTENZA	SOSTA	NAV	MIGLIA	SOA	NOTE
21	Honolulu	giovedì 25 luglio 2024	lunedì 29 luglio 2024	4	27	3411	5,5	
22	Tokyo	domenica 25 agosto 2024	venerdì 30 agosto 2024	5	15	1770	5,0	
23	Manila (Filippine)	sabato 14 settembre 2024	mercoledì 18 settembre 2024	4	16	1916	5,0	Sbarco Allievi riprovati (TBC)
24	Darwin (Australia)	venerdì 4 ottobre 2024	lunedì 7 ottobre 2024	3	17	1900	4,5	Sbarco Allievi
25	Singapore	giovedì 24 ottobre 2024	lunedì 28 ottobre 2024	4	4	367	4,0	
26	Belawan (Indonesia)	venerdì 1 novembre 2024	lunedì 4 novembre 2024	3	2	248	5,0	
27	Phuket (Thailandia)	mercoledì 6 novembre 2024	domenica 10 novembre 2024	4	18	2080	5,0	
28	Mumbai (India)	giovedì 28 novembre 2024	lunedì 2 dicembre 2024	4	5	542	4,5	
29	Karachi (Pakistan)	sabato 7 dicembre 2024	martedì 10 dicembre 2024	3	7	805	5,0	
30	Abu Dhabi (E.A.U.)	martedì 17 dicembre 2024	giovedì 19 dicembre 2024	2	3	185	2,5	
				<b>36</b>	<b>114</b>	<b>13224</b>	<b>4,8</b>	
				<b>24%</b>	<b>76%</b>	<b>MIGLIA</b>	<b>SOA</b>	
				<b>SOSTA</b>	<b>NAV</b>			



Appendix 3a

**SUMMARY OF PROJECT COSTS FOR PHASE 1 (To Indicate Cash or In-Kind)**

Qualifying Project Costs		Cost of Item €K	Collaborator Contribution (If Any) €K
Category*	Details of Items		
<b>Manpower</b> (Please provide itemised details and budget breakdown)	Cartographic Officers from 3 Littoral States. To cover travel, accommodation, and Subsistence allowance.	€20k	In-kind
<b>Equipment</b> (Please provide itemised details and budget breakdown)	Software tools	€15k	In-kind
	2 x Testbed S-100 ECDIS	€10k	
<b>Other Operating Expenditure</b> (Please provide itemised details and budget breakdown)	Logistics and IT support	€5k	In-kind
<b>Total €K</b>		<b>€50K</b>	

\*The Cost of Item indicated shall include any Collaborator Contribution(s) obtained for the same item.

**Appendix 3b**

**SUMMARY OF PROJECT COSTS FOR PHASE 2 (To Indicate Cash or In-Kind)**

<b>Qualifying Project Costs</b>		<b>Cost of Item €K</b>	<b>Collaborator Contribution (If Any) €K</b>
<b>Category*</b>	<b>Details of Items</b>		
<b>Manpower</b> (Please provide itemised details and budget breakdown)	Hydrographic Officers of the Member States from which the ENC's are provided, or  RENC's personnel	€XX	In-kind
<b>Other Operating Expenditure</b> (Please provide itemised details and budget breakdown)	Logistics and IT support	€XX	In-kind
<b>Total €K</b>		<b>€XXK</b>	

\*The Cost of Item indicated shall include any Collaborator Contribution(s) obtained for the same item.