1. Identification

Call	Date of submission
C1	25/04/2022

1.1. Full name of the project

Maritime Data Methods for Smart Fairways

40 / 250 characters

1.2. Short name of the project

MaDaMe

6 / 20 characters

1.3. Programme priority

2. Water-smart societies

1.4. Programme objective

2.2 Blue economy

1.6. Project duration

Contracting start	22/09/2022	**Contracting end**	31/12/2022
Implementation start	01/01/2023	**Implementation end**	31/12/2025
		Duration of implementation phase (months)	36
Closure start	01/01/2026	**Closure end**	31/03/2026

1.7. Project summary

The statistics by HELCOM show that the density of maritime traffic and transportation of dangerous cargoes by ships in congested waters of the Baltic Sea has grown. This demands new solutions for safe navigation and clean shipping at the Baltic Sea. The target groups are the national authorities that are responsible for the maritime traffic management, large shipping companies as end-users, and SME companies implementing services. The challenge for target groups has been addressed in EUSBSR PA Safe, and according to Action 3, focus should be on developing reliable systems for maritime traffic management including digitalization. New digitalized services need to be provided by project target groups to fulfill the goal of this EUSBSR Action. All services and systems must be cybersecure-by-design. The project addresses the challenge by offering a set of Smart Fairway services as a solution for safety and clean shipping. By producing digital solutions and making the information needed for safe shipping better available, the project's outcomes will improve navigation safety and security and contribute to the achievement of sustainable shipping in the BSR region. The development of clean shipping is supported as the offered services enable the optimization of ship operations. For whole BSR region the project supports innovative business development within shipping industry and project mitigates potential conflicts among users of the sea space and facilitates its joint use.

1,492 / 1,500 characters

1.8. Summary of the partnership

The composition of project partnership (partners and associated organizations) is national authorities and public service providers offering fairway services (FTIA, Fintraffic, Traficom, DMA, SMA, MOG), shipping companies and other end-users (DFDS, Finnlines, Szczecin Pilot) maritime technology companies, mostly SMEs, (DMC, Sternula, NavSim Technology, Kongsberg Maritime), and technological research institutions supporting all those target groups involved (TUAS, Novia, NIT) in the project partnership. Thus, the partnership is well-balanced from the organization types point-of-view.

Geographically project partners are from Finland (FTIA, Fintraffic, Traficom, TUAS, Novia, Finnlines, Kongsberg Maritime), Denmark (Sternula, DMC, DFDS, DMA), and Poland (NIT, NavSim Technology, MOG, Szczecin Pilot). Thus, the consortium is also well-balanced to participating countries while the countries themselves give a wide view on BSR.

Target group of public national authorities from several different countries are involved in the project as partners and associate organizations with high interest. Also target groups, maritime technology industry SMEs and shipping companies as end-users are represented as partners as well as associate partners. For national authorities the project provides solutions to offer new services to ships and seafarers. For SMEs the project provides opportunity to develop equipment or products for the authorities and ships. End-users such as shipping companies can operate more safely and efficiently by utilizing Smart Fairway services.

Partnership includes in-depth fairway infrastructure and services expertise and technological expertise for developing services and connectivity solutions for delivering those services. Altogether, all the necessary participant types for the development of smart fairway services are involved in the project.

Specifically, partner competences are the following: Authorities and public service providers are responsible for planning and deploying services. In some countries the public authority is also providing all fairway services but in some countries the responsibility has been divided also to other to organizations. E.g. in Finland, Fintraffic is reponsible for VTS on the behalf of FTIA. SME companies provide components required by services: digital and virtual Aid-to-Navigation (Aton) devices, Maritime Connectivity Platform (MCP), new connectivity methods to reach ships such as VDES utilizing dedicated satellite connections, and cybersecurity. Shipping companies are the experts what services are required. The associated partners bring added value to the project partnership. These include shipping company and pilotage company that are end-points for fairways. Also large enterprise to reflect Smart Fairway services to remote operations.

2,829 / 3,000 characters

1.11. Project Budget Summary

Financial resources [in EUR]		Preparation costs	Planned project budget
ERDF	ERDF co-financing	0.00	2,858,800.00
	Own contribution ERDF	0.00	714,700.00
	ERDF budget	0.00	3,573,500.00
NO	NO co-financing	0.00	0.00
	Own contribution NO	0.00	0.00
	NO budget	0.00	0.00
NDICI	NDICI co-financing	0.00	0.00
	Own contribution NDICI	0.00	0.00
	NDICI budget	0.00	0.00
RU	RU co-financing	0.00	0.00
	Own contribution RU	0.00	0.00
	RU budget	0.00	0.00
TOTAL	**Total Programme co-financing**	0.00	2,858,800.00
	Total own contribution	0.00	714,700.00
	Total budget	0.00	3,573,500.00

2. Partnership

2.1. Overview: Project Partnership

2.1.1 Project Partners

No.	LP/PP	Organisation (English)	Organisation (Original)	Country	Type of partner	Legal status	Partner budget in the project	Active/inactive	
								Status	from
1	LP	Turku University of Applied Sciences	Turun ammattikorkeakoulu	FI	Higher education and research institution	a)	503,800.00 €	Active	22/09/2022
2	PP	Novia University of Applied Sciences	Yrkeshögskolan Novia	FI	Higher education and research institution	a)	412,700.00 €	Active	22/09/2022
3	PP	Digital Maritime Consultancy	Digital Maritime Consultancy ApS	DK	Small and medium enterprise	b)	458,600.00 €	Active	22/09/2022
4	PP	National Institute of Telecommunications	Instytut Łączności - Państwowy Instytut Badawczy	PL	Higher education and research institution	a)	500,000.00 €	Active	22/09/2022
5	PP	Fintraffic VTS ltd	Fintraffic Meriliikenteenohjaus Oy	FI	Infrastructure and public service provider	a)	451,100.00 €	Active	22/09/2022
6	PP	Sternula	Sternula ApS	DK	Small and medium enterprise	b)	429,800.00 €	Active	22/09/2022
7	PP	NavSim Poland Ltd.	NavSim Polska Sp. z o.o.	PL	Small and medium enterprise	b)	358,700.00 €	Active	22/09/2022
8	PP	Finnish Transport Infrastructure Agency	Väylävirasto	FI	National public authority	a)	409,400.00 €	Active	22/09/2022
9	PP	DFDS A/S	DFDS A/S	DK	Large enterprise	b)	49,400.00 €	Active	22/09/2022

2.1.2 Associated Organisations

No.	Organisation (English)	Organisation (Original)	Country	Type of Partner
AO 1	Finnish Transport and Communications Agency Traficom	Liikenne- ja viestintävirasto Traficom	FI	National public authority
AO 2	Swedish Maritime Authority	Sjöfartsverket	SE	National public authority
AO 3	Maritime Office in Gdynia	Urząd Morski w Gdyni	PL	National public authority
AO 4	Kongsberg Maritime Finland Oy	Kongsberg Maritime Finland Oy	FI	Large enterprise
AO 5	Danish Maritime Authority	Søfartsstyrelsen	DK	National public authority
AO 6	Finnlines Plc.	Finnlines Oyj	FI	Large enterprise
AO 7	Szczecin Pilot Ltd	Szczecin-Pilot Sp. z o.o.	PL	Small and medium enterprise

2.2 Project Partner Details - Partner 1

LP/PP Lead Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Turun ammattikorkeakoulu

24 / 250 characters

Organisation in English Turku University of Applied Sciences

36 / 250 characters

Department in original language ICT-yksikkö

11 / 250 characters

Department in English	ICT unit (8 / 250 characters)

Partner location and website:

Address	Joukahaisenkatu 3 (17 / 250 characters)	**Country**	Finland
Postal Code	20520 (5 / 250 characters)	**NUTS1 code**	Manner-Suomi
Town	Turku (5 / 250 characters)	**NUTS2 code**	Etelä-Suomi
Website	www.turkuamk.fi (15 / 100 characters)	**NUTS3 code**	Varsinais-Suomi

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	2528160-3
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI25281603 (10 / 50 characters)
PIC	948193431 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	No

Role of the partner organisation in this project:

Lead partner, joint WP3 leader with DMC. Group of Activities:
1.1 TUAS is collecting and analysing end-user requirements for developing Smart Fairway services
1.3 TUAS is conducting analysis on the utilization mobile networks in delivering webservices to ships
1.4 TUAS is developing cybersecurity test methodology for Smart Fairway services and provides maritime related cybersecurity threat intelligence
2.1, 2,2, 2,3: TUAS is providing mobile network related actions to lab and field tests. Comparison to AIS/VDES will be provided. Also, cybersecurity testing and utilization of cyber threat intelligence will be implemented.
3.2 TUAS is GoA leader for dissemination and organizes events to disseminate results.
3.3 TUAS participates on analysis for remote operations and autonomous shipping.

797 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

Justification why the partner's activities are not State aid relevant

The Lead partner is not an undertaking but a educational institution.

69 / 3,000 characters

2.2 Project Partner Details - Partner 2

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Yrkeshögskolan Novia

20 / 250 characters

Organisation in English Novia University of Applied Sciences

36 / 250 characters

Department in original language Forskning, utveckling och innovation

36 / 250 characters

Department in English Research, development and innovation

36 / 250 characters

Partner location and website:

Address Juhana Herttuan puistokatu 21

29 / 250 characters

Postal Code 20100

5 / 250 characters

Town Turku

5 / 250 characters

Website www.novia.fi

12 / 100 characters

Country Finland

NUTS1 code Manner-Suomi

NUTS2 code Etelä-Suomi

NUTS3 code Varsinais-Suomi

Partner ID:

Organisation ID type Business Identity Code (Y-tunnus)

Organisation ID 2059910-2

VAT Number Format FI + 8 digits

VAT Number N/A ☐ FI20599102

10 / 50 characters

PIC 947312962

9 / 9 characters

Partner type:

Legal status a) Public

Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

Novia will be project partner and WP1 leader. Novia provides seafaring and fairway expertise, for example regarding to fairway utilization from seafarers' perspective. Novia will also provide ship simulation bridge equipment to simulate and test project solutions.

Group of activities:
1.1 Novia participates in all stages of group of activity by defining, studying and analysing the Smart Fairway services.
1.2 Novia is GoA leader. Novia participates to development of virtual AtoN service, improved positioning assistance service, fairway data model and virtual model for ECDIS.
2.1 Novia conducts end user analysis and defines test cases.
2.2 Novia provides simulation environment and expertise for testing the solutions.
2.3 Novia participates to usability and user experience study through piloting.
3.2 Novia participates to dissemination and creates training and information material for target groups.
3.3 Novia leads the development of the roadmap of smart fairway services concept.

992 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

Justification why the partner's activities are not State aid relevant

Novia University of Applied Sciences is not an undertaking but a educational and research institution.

102 / 3,000 characters

2.2 Project Partner Details - Partner 3

LP/PP	Project Partner			
Partner Status	Active			
	Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Digital Maritime Consultancy ApS
	32 / 250 characters
Organisation in English	Digital Maritime Consultancy
	28 / 250 characters
Department in original language	NA
	2 / 250 characters
Department in English	NA
	2 / 250 characters

Partner location and website:

Address	H. C. Ørsteds Vel 13, 1. TV (27 / 250 characters)	**Country**	Denmark
Postal Code	1879 (4 / 250 characters)	**NUTS1 code**	Danmark
Town	Frederiksberg (13 / 250 characters)	**NUTS2 code**	Hovedstaden
Website	www.dmc.international (21 / 100 characters)	**NUTS3 code**	Byen København

Partner ID:

Organisation ID type	Civil registration number (CPR)
Organisation ID	41625198
VAT Number Format	DK + 8 digits
VAT Number	**N/A** ☐ DK41 62 51 98 (13 / 50 characters)
PIC	911835018 (9 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	62.02 - Computer consultancy activities	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Financial data	**Reference period**	01/01/2020 –	31/12/2020
	Staff headcount [in annual work units (AWU)]		3.0
	Employees [in AWU]		2.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
	Owner-managers [in AWU]		1.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		280,000.00
	Annual balance sheet total [in EUR]		48,000.00
	Operating profit [in EUR]		20,000.00

Role of the partner organisation in this project:

Work related to the Maritime Connectivity Platform (MCP) in GoA 1.3 and GoA 1.4, MCP utilization in pilots (GoA 2.1-2.3), and coordination with international organisations as WP3 and GoA 3.1 lead. With regard to MCP, DMC will assist in the identification of new features (GoA 1.1) of the MCP intended to support the needs of the MaDaMe project. DMC will then work on implementing such features either as integral parts of the MCP (which will require agreement by the MCP consortium) or as extensions to the MCP. In addition DMC can assist other project partners as well as external stakeholders in utilizing the different components of MCP. Finally DMC can assist in the promotion of project results (GoA 3.1-3.3) in relevant international organisations (mainly IALA).

768 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 4

LP/PP	Project Partner		
Partner Status	Active		
Active from	22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Instytut Łączności - Państwowy Instytut Badawczy (49 / 250 characters)
Organisation in English	National Institute of Telecommunications (41 / 250 characters)
Department in original language	Zakład Systemów i Sieci Bezprzewodowych (39 / 250 characters)
Department in English	Wireless Systems and Networks Department (40 / 250 characters)

Partner location and website:

Address	1 Szachowa Str. (16 / 250 characters)	**Country**	Poland
Postal Code	04-894 (6 / 250 characters)	**NUTS1 code**	Makroregion województwo mazowieckie
Town	Warsaw (6 / 250 characters)	**NUTS2 code**	Warszawski stołeczny
Website	www.il-pib.pl (13 / 100 characters)	**NUTS3 code**	Miasto Warszawa

Partner ID:

Organisation ID type	Tax identification number (NIP)
Organisation ID	5250009312
VAT Number Format	PL + 10 digits
VAT Number	N/A ☐ PL5250009312 (12 / 50 characters)
PIC	972529955 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Higher education and research instituti	University faculty, college, research institution, RTD facility, research cluster, etc.
Sector (NACE)	85.42 - Tertiary education	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Role of the partner organisation in this project:

The National Institute of Telecommunications (NIT) will be involved in the service development for the Smart Fairways (GoA1.1), which will directly translate into the concept of the associated communication system.
The most likely scenario includes a smart hybrid solution integrating different links such as VDES, AIS, mobile and satellite (GoA1.3). In that area the NIT will work on the link selection algorithms for such system, which will be based on user needs, service requirements, link availability and radio channel quality. Once first implementation of such a system is ready, pilot measurements in the target environment, i.e. at sea will be conducted (WP 2, 2.1-2.3). The NIT is WP2 lead and has a huge experience in that area; in the recent years we conducted several campaigns on the Baltic Sea, as part of several EU projects. The results of the MaDaMe will also be used by the NIT in standardization activities (GoA 3.1-GoA3.3) of the VDES system within IALA and other organizations.

999 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

State aid relevance

For the partner type selected, the Programme sees a medium to high risk for implementing State aid relevant activities. If the partner is of the opinion that its activities are not State aid relevant, it can ask the MA/JS for a plausibility check on the State aid relevance. Does the partner want to do this?

○ Yes ○ No

2.2 Project Partner Details - Partner 5

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language Fintraffic Meriliikenteenohjaus Oy

34 / 250 characters

Organisation in English Fintraffic VTS ltd

18 / 250 characters

Department in original language N/A

3 / 250 characters

Department in English N/A

3 / 250 characters

Partner location and website:

Address Palkkatilanportti 1

19 / 250 characters

Postal Code 00240

7 / 250 characters

Town Helsinki

8 / 250 characters

Website https://www.fintraffic.fi/en/vts

32 / 100 characters

Country Finland

NUTS1 code Manner-Suomi

NUTS2 code Helsinki-Uusimaa

NUTS3 code Helsinki-Uusimaa

Partner ID:

Organisation ID type	Business Identity Code (Y-tunnus)
Organisation ID	2945246-5
VAT Number Format	FI + 8 digits
VAT Number	N/A ☐ FI29452465 (10 / 50 characters)
PIC	888789952 (9 / 9 characters)

Partner type:

Legal status	a) Public	
Type of partner	Infrastructure and public service provi	Public transport, utility company (water supply, electricity supply, sewage, gas, waste collection, airport, port, railway, etc.)
Sector (NACE)	84.24 - Public order and safety activities	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Role of the partner organisation in this project:

"The Fintraffic VTS has responsibility of providing user requirement and Vessel Traffic service expertise to the project. Fintraffic VTS will take actively part to the WP1 activities (GoA 1.1, 1.2, 1.3) in defining the smart fairway services and implementing the selected services for piloting. FIntraffic VTS is taking part to the piloting and leading the WP2 GoA 2.3. Fintraffic VTS has also a strong role in contributing to international organizations as a member of IALA and MCC in GoA 3.1. One of the most important task of the Fintraffic VTS is to ensure the transformation of the services from piloting to the operations (GoA 3.2 & GoA 3.3). Fintraffic VTS is running a nation wide VTS system in Finland that is the one of the core implementation targets for operationalizing the services implemented in the project."

833 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 6

LP/PP	Project Partner		
Partner Status	Active		
	Active from 22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Sternula ApS (12 / 250 characters)
Organisation in English	Sternula (9 / 250 characters)
Department in original language	N/A (3 / 250 characters)
Department in English	N/A (3 / 250 characters)

Partner location and website:

Address	Niels Jernes Vej 10 (28 / 250 characters)	**Country**	Denmark
Postal Code	9220 (13 / 250 characters)	**NUTS1 code**	Danmark
Town	Aalborg (16 / 250 characters)	**NUTS2 code**	Nordjylland
Website	www.sternula.com (25 / 100 characters)	**NUTS3 code**	Nordjylland

Partner ID:

Organisation ID type	Civil registration number (CPR)
Organisation ID	40650709
VAT Number Format	DK + 8 digits
VAT Number	**N/A** ☐ DK40 65 07 09 (13 / 50 characters)
PIC	897561759 (9 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	61.30 - Satellite telecommunications activities	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Financial data	**Reference period**	01/01/2022 –	31/12/2022
	Staff headcount [in annual work units (AWU)]		5.0
	Employees [in AWU]		3.0
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
	Owner-managers [in AWU]		2.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		1,210.00
	Annual balance sheet total [in EUR]		1,664,698.00
	Operating profit [in EUR]		150,872.00

Role of the partner organisation in this project:

"Sternula is a satellite operator offering AIS 2.0 (VDES) connectivity for the realization of maritime digital services. Sternula's role in the project is to analyze communication needs and options in the Smart Fairway in WP1 (1.1 & 1.3). Sternula shall also contribute to issues of cyber-security related to such communication (1.4). In WP2, Sternula will be responsible for setting up necessary satellite-based communication, where the chosen technology is AIS/VDES and/or MCP (2.1-2.3). Sternula is an active contributor to standardization in IALA, IMO, ITU, and MCC, and the company will exploit this position in WP3 (3.1-3.3) to transfer results into standards where this is seen as the right approach."

717 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 7

LP/PP Project Partner

Partner Status Active

Active from 22/09/2022 **Inactive from**

Partner name:

Organisation in original language NavSim Polska Sp. z o.o.

24 / 250 characters

Organisation in English NavSim Poland Ltd.

18 / 250 characters

Department in original language Dział Badań I Rozwoju

21 / 250 characters

Department in English Research & Development Department

33 / 250 characters

Partner location and website:

Address Rozana 95

9 / 250 characters

Postal Code 59700

5 / 250 characters

Town Boleslawiec

11 / 250 characters

Website www.navsim.eu

13 / 100 characters

Country Poland

NUTS1 code Makroregion południowo-zachodni

NUTS2 code Dolnośląskie

NUTS3 code Jeleniogórski

Partner ID:

Organisation ID type Tax identification number (NIP)

Organisation ID 6121812852

VAT Number Format PL + 10 digits

VAT Number N/A ☐ PL6121812852

12 / 50 characters

PIC 938822455

9 / 9 characters

Partner type:

Legal status b) Private

Type of partner	Small and medium enterprise	Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total
Sector (NACE)	62.01 - Computer programming activities	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? Yes

Financial data	**Reference period**	01/01/2020 –	31/12/2020
	Staff headcount [in annual work units (AWU)]		10.2
	Employees [in AWU]		9.2
	Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]		0.0
	Owner-managers [in AWU]		1.0
	Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]		0.0
	Annual turnover [in EUR]		217,570.00
	Annual balance sheet total [in EUR]		333,276.00
	Operating profit [in EUR]		28,000.00

Role of the partner organisation in this project:

"NavSim is WP2 co-leader.
Group of activities:
1.1 NavSim participates in analysing of the end-user requirements for developing Smart Fairway data offerings
1.2 NavSim participates in developing of the virtual AtoN service, data communication protocol for AIS/VDES, satcom and GSM; technical feasibility of the virtual AtoN via hybrid communication system.
1.4 NavSim participates in development of the cybersecurity architecture for the smart fairway data exchange
2.1 NavSim participates in development of the digital navigational information pilot service
2.2 NavSim is the GA leader, develops hardware and software for testing the solutions
2.3 NavSim participates pilot VTS digital inforamiton providing expertise and developing testing architecture
3.1 NavSim participates in standarisation
3.2 NavSim participates in dissemination"

848 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 8

LP/PP	Project Partner		
Partner Status	Active		
	Active from 22/09/2022	**Inactive from**	

Partner name:

Organisation in original language	Väylävirasto
	12 / 250 characters
Organisation in English	Finnish Transport Infrastructure Agency
	39 / 250 characters
Department in original language	Tieto-osasto
	21 / 250 characters

Department in English Data Department

24 / 250 characters

Partner location and website:

Address Opastinsilta 12 A, P.O Box 33

38 / 250 characters

Country Finland

Postal Code FI-00630

17 / 250 characters

NUTS1 code Manner-Suomi

Town Helsinki

8 / 250 characters

NUTS2 code Helsinki-Uusimaa

Website www.vayla.fi

21 / 100 characters

NUTS3 code Helsinki-Uusimaa

Partner ID:

Organisation ID type Business Identity Code (Y-tunnus)

Organisation ID 1010547-1

VAT Number Format FI + 8 digits

VAT Number N/A ☐ FI10105471

10 / 50 characters

PIC 986344494

9 / 9 characters

Partner type:

Legal status a) Public

Type of partner National public authority — Ministry, etc.

Sector (NACE) 84.13 - Regulation of and contribution to more efficient operation of businesses

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities? No

Role of the partner organisation in this project:

"Finnish Transport Infrastructure Agency is responsible for developing and maintaining the state-owned waterways and arranging VTS and winter navigation services. In this project FTIA will lead the GoA 1.1. 'Fairway Services' that will gather user needs for the services provided in the future fairways and will form the detailed requirements for the service development in WP2 (Goa 2.1 & 2.2). FTIA will also contribute to other WP1 GoA's. In WP2 FTIA will develop pilot services in that will be tested during the project. These will include Aids to Navigation (AtoN) information service and the development of current AtoN's based on the user needs. FTIA will also develop the IT systems required to deliver information from current physical AtoN's to the end users. In WP3 GoA (3.1) FTIA actively contribute to promotion of project results to relevant stakeholders (GoA 3.2 & 3,3) and international standardisation bodies, such as IALA and IHO."

959 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

○ Yes ○ No

2.2 Project Partner Details - Partner 9

LP/PP	Project Partner
Partner Status	Active
Active from	22/09/2022
Inactive from	

Partner name:

Organisation in original language	DFDS A/S (8 / 250 characters)
Organisation in English	DFDS A/S (8 / 250 characters)
Department in original language	Innovation and Partnerships (27 / 250 characters)
Department in English	Innovation and Partnerships (27 / 250 characters)

Partner location and website:

Address	Marmorvej 18 (12 / 250 characters)	**Country**	Denmark
Postal Code	2100 (12 / 250 characters)	**NUTS1 code**	Danmark
Town	Copenhagen (18 / 250 characters)	**NUTS2 code**	Hovedstaden
Website	www.dfds.com (12 / 100 characters)	**NUTS3 code**	Byen København

Partner ID:

Organisation ID type	Civil registration number (CPR)
Organisation ID	14194711
VAT Number Format	DK + 8 digits
VAT Number	N/A ☐ DK14 19 47 11 (13 / 50 characters)
PIC	937659231 (9 / 9 characters)

Partner type:

Legal status	b) Private	
Type of partner	Large enterprise	≥ 250 employees
Sector (NACE)	50.20 - Sea and coastal freight water transport	

Partner financial data:

Is your organisation entitled to recover VAT related to the EU funded project activities?	Yes

Financial data

Reference period	01/01/2021	–	31/12/2021
Staff headcount [in annual work units (AWU)]			11,000.0
Employees [in AWU]			11,000.0
Persons working for the organisation being subordinated to it and considered to be employees under national law [in AWU]			0.0
Owner-managers [in AWU]			0.0
Partners engaged in a regular activity in the organisation and benefiting from financial advantages from the organisation [in AWU]			0.0
Annual turnover [in EUR]			2,403,000,000.00
Annual balance sheet total [in EUR]			4,131,000,000.00
Operating profit [in EUR]			181,000,000.00

Role of the partner organisation in this project:

End-user and supporting project development with industry insights and operational data in GoA1.1 and in piloting activities Goa 2.1, GoA 2.2, and GoA 2.3. Participation in dissemination in GoA 3.2.

198 / 1,000 characters

Has this organisation ever been a partner in the project(s) implemented in the Interreg Baltic Sea Region Programme?

(•) Yes ( ) No

2.3 Associated Organisation Details - AO 1

Associated organisation name and type:

Organisation in original language
Liikenne- ja viestintävirasto Traficom
47 / 250 characters

Organisation in English
Finnish Transport and Communications Agency Traficom
61 / 250 characters

Department in original language
Digitaaliset yhteydet
Liikennejärjestelmäpalvelut
57 / 250 characters

Department in English
Digital connections
Transport System Services
53 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
PL 320
6 / 250 characters

Country
Finland

Postal Code
00059
14 / 250 characters

Town
TRAFICOM HELSINKI
17 / 250 characters

Website
www.traficom.fi
24 / 100 characters

Role of the associated organisation in this project:

"Traficom aims for increasing intelligence for fairways and logistics chains. Nationally, the goal is to create physical and digital infrastructure, information services and governance model required by the smart sea fairway to support piloting and increased automation. Traficom is participating in
WP1 Preparing Solutions GoA 1.3 - advisory role, especially related to Smart Fairway Connectivity Solution
WP3 Transfering Solutions to Target groups GoA 3.1- GoA3.3- support to Finnish Transport Infrastructure Agency, especially ralated to digital infrastructure, telecommunications and digital positioning solutions."
628 / 1,000 characters

2.3 Associated Organisation Details - AO 2

Associated organisation name and type:

Organisation in original language
Sjöfartsverket
23 / 250 characters

Organisation in English
Swedish Maritime Authority
26 / 250 characters

Department in original language
Forsknings- och Innovationsenheten
43 / 250 characters

Department in English
Unit for Research and Innovation
41 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
Östra Promenaden 7
27 / 250 characters

Country
Sweden

Postal Code
610 78
15 / 250 characters

Town
Norrköping
19 / 250 characters

Website
www.sjofartsverket.se/en
33 / 100 characters

Role of the associated organisation in this project:

The Swedish Maritime Administration (SMA) is coordinating work in Sweden on smart fairways / fairways of the future. Sweden will do this work in parallel with MaDaMe. The goal of the work in Sweden is to provide guidelines for future fairway design. Sweden will use simulations as a primary tool to test future fairway alternatives.
SMA will share the Swedish experiences with the MaDaMe partnership and expect to learn from the MaDaMe work as well. Thus, results from both can be used to enhance the work of both initiatives.
SMA expects to contribute to MaDaMe project meetings and be consulted in areas were the Swedish developments are relevant to the project. SMA will have input to all three work packages of MaDaMe.
SMA has been one of the main drivers of standardization when it comes to secure information sharing, both for developing the IEC standard for Secure Communication, SECOM, and for the establishment of an operational MCP, Navelink, which are part of Work Package 2.

996 / 1,000 characters

2.3 Associated Organisation Details - AO 3

Associated organisation name and type:

Organisation in original language
Urząd Morski w Gdyni
29 / 250 characters

Organisation in English
Maritime Office in Gdynia
25 / 250 characters

Department in original language
Pion Oznakowania Nawigacyjnego (Wydział Informatyki i Łączności)
73 / 250 characters

Department in English
Section of Aids to Navigation (Department of Informatics and Communications)
85 / 250 characters

Legal status
a) Public

Type of associated organisation
National public authority
Ministry, etc.

Associated organisation location and website:

Address
Chrzanowskiego 10
26 / 250 characters

Country
Poland

Postal Code
81-338
15 / 250 characters

Town
Gdynia
15 / 250 characters

Website
www.umgdy.gov.pl
25 / 100 characters

Role of the associated organisation in this project:

The Maritime Office in Gdynia (MOG) is one of the two regional entities of the Polish maritime administration (the other being located in Szczecin). By law – the MOG is responsible for harbours, landings and coastal line of the eastern Polish coast. In the MaDaMe project, MOG will act as an associated partner that will support the activities and provide guidance - especially in the context of the requirements/needs definition (GoA 1.1). It may also participate in the tests of the project's results (WP2) and (in some cases) share its infrastructure for that purpose (that may include communication resources, premises, vessels). The Office may also provide opinions regarding the possibility of the formal implementation of the project's results and other legal/formal issues relevant to the activites in the MaDaMe (GoA 3.1). Please note that all the actions carried out by the MOG in the project will have to be consistent with the regular operations of the Office.

981 / 1,000 characters

2.3 Associated Organisation Details - AO 4

Associated organisation name and type:

Organisation in original language
Kongsberg Maritime Finland Oy
38 / 250 characters

Organisation in English
Kongsberg Maritime Finland Oy
38 / 250 characters

Department in original language
Remote Operation Solutions
35 / 250 characters

Department in English
Remote Operation Solutions
35 / 250 characters

Legal status
b) Private

Type of associated organisation
Large enterprise
≥ 250 employees

Associated organisation location and website:

Address
Suojantie 5
20 / 250 characters

Country
Finland

Postal Code
21600
14 / 250 characters

Town
Rauma
5 / 250 characters

Website
www.kongsberg.com
26 / 100 characters

Role of the associated organisation in this project:

Kongsberg Maritime is a world leader in marine technology. With an extensive portfolio of innovative and integrated products and solutions, Kongsberg Maritime delivers efficiency, reliability, flexibility, and environmental sustainability to enhance the business of its customers. Kongsberg Maritime Finland is providing solutions for remote operations.

Kongsberg is supporting WP 1 - preparing solutions with maritime domain expertise on navigation, communication, remote operation and autonomous systems. Especially GoA 1.1. input from ship technology is given and GoA 3.3. how smart fairway data should support remote operations and autonomous ships. WP 2 - piloting solutions will be supported by feedback on the created solutions that are piloted.

760 / 1,000 characters

2.3 Associated Organisation Details - AO 5

Associated organisation name and type:

Organisation in original language: Søfartsstyrelsen (16 / 250 characters)

Organisation in English: Danish Maritime Authority (25 / 250 characters)

Department in original language: IT-drift og Udvikling (21 / 250 characters)

Department in English: Business Intelligence and Development (38 / 250 characters)

Legal status: a) Public

Type of associated organisation: National public authority — Ministry, etc.

Associated organisation location and website:

Address: Caspar Brands Plads 9 (21 / 250 characters)

Country: Denmark

Postal Code: 4220 (4 / 250 characters)

Town: Korsør (6 / 250 characters)

Website: http://www.dma.dk (17 / 100 characters)

Role of the associated organisation in this project:

"The Danish Maritime Authority (DMA) is responsible for promulgation of Navigational Warnings and Notices to Mariners (NW & NtM) in Danish waters. DMA envisages to make use of VDES technologies to provide standardized S-124 andS-125 NW & NtM information to ships in the future, which will be an activity that will run in parallel with the MaDaMe project.
DMA will share the experiences with the MaDaMe partnership in GoA 1.2 and GoA 2.1, and expect to learn from the MaDaMe work as well. Thus, results from both can be used to enhance the work of both initiatives.
DMA expects to contribute to MaDaMe project meetings and be consulted in areas were the Danish developments are relevant to the project. DMA will primarily be interested in the work of the WP1 and the WP2 pilots, in particular the one concerning cybersecure promulgation of S-124/S-125 NW & NtM."

863 / 1,000 characters

2.3 Associated Organisation Details - AO 6

Associated organisation name and type:

Organisation in original language: Finnlines Oyj (13 / 250 characters)

Organisation in English: Finnlines Plc. (14 / 250 characters)

Department in original language: Ship Management (15 / 250 characters)

Department in English: Ship Management (15 / 250 characters)

Legal status: b) Private

Type of associated organisation: Large enterprise — ≥ 250 employees

Associated organisation location and website:

Address: Komentosilta 1 (14 / 250 characters)

Country: Finland

Postal Code: 00980 (5 / 250 characters)

Town: Helsinki (8 / 250 characters)

Website: www.finnlines.com (17 / 100 characters)

Role of the associated organisation in this project:

Finnlines will support the MaDaMe project in developing (GoA 1.1.) and piloting solutions (GoA 2.1-2.3) for a smart fairway concept to support navigational assistance, and automation on maritime traffic, by helping to define specifications for the service content and provide experience as an end-user. Finnlines will contribute by acting as a test user in the project and provide feedback for fine tuning the final product. Finnlines will take part in project meetings including meetings with developers and the project partners.

533 / 1,000 characters

2.3 Associated Organisation Details - AO 7

Associated organisation name and type:

Organisation in original language
Szczecin-Pilot Sp. z o.o.
25 / 250 characters

Organisation in English
Szczecin Pilot Ltd
18 / 250 characters

Department in original language
N/A
3 / 250 characters

Department in English
N/A
3 / 250 characters

Legal status
b) Private

Type of associated organisation
Small and medium enterprise

Micro, small, medium enterprises < 250 employees, ≤ EUR 50 million turnover or ≤ EUR 43 million balance sheet total

Associated organisation location and website:

Address
Swiatowida 24
13 / 250 characters

Country
Poland

Postal Code
71-727
6 / 250 characters

Town
Szczecin
8 / 250 characters

Website
https://www.szczecinpilot.pl/index_en.html
42 / 100 characters

Role of the associated organisation in this project:

Szczecin Pilot Ltd. (Szczecin Pilot) is a local marine pilot group rendering piloting services in ports of the Szczecin-Swinoujscie fairway as well as Deep Sea Pilotage on the Baltic Sea. As associated partner in the MaDaMe project, Szczecin Pilot will support the project partners by testing piloting services (WP2) as end-users. In particular, Szczecin Pilot will participate in testing scenarios for the maritime navigational warnings and notices to mariners distributed through the hybrid communication system. Recently, the local fairway has been dredged to 12.5m allowing for larger vessels to call at the Port of Szczecin. Navigating larger vessels in constrained waters will put additional pressure on pilots. Therefore, there is a growing need to further enhance the safety and efficiency of the piloting operations. Szczecin Pilot is ready to participate in the MaDaMe's project efforts as an associated partner to test new solutions and services, which can fulfill those needs.

989 / 1,000 characters

3. Relevance

3.1 Context and challenge

In 2005 IMO, being aware of the ecological, social, economic, cultural, scientific, and educational value of the Baltic Sea Area, as well as its vulnerability to damage by international shipping, designated the Baltic Sea a Particularly Sensitive Sea Area. In 2013, IMO further stated that navigational safety plays an important part in reducing the risk of incidents at sea likely to cause loss of life, personal injury, marine pollution, or damage to property. The statistics by HELCOM show the dense maritime traffic and transportation of dangerous cargoes by ships in congested waters of the Baltic Sea. This highlights the importance of safe navigation and clean shipping at the Baltic Sea. Currently, there is need to digitalize fairway services for increased safety by utilizing information systems for fairway specific information regarding dynamic and latent characteristics of fairways. Currently, captains are relying on personal experiences, communication and expertise of pilot services when navigating in difficult parts of fairways. This predisposes human errors and risks of hazardous collisions. In short, the need for safe and clean shipping based on modern technology for the Baltic Sea region is becoming more and more essential. Specific challenge addressed is safety and clean shipping for the Baltic sea region, which requires the utilization of digitalization to increase safety for ships. MaDaME project focuses on the digitalization of sea fairway services. The concept of Smart Fairway includes digital, physical and data infrastructure. It covers open sea to fairway and to port.

1,608 / 2,000 characters

3.2 Transnational value of the project

The current project proposal focuses on increasingly pressing joint challenges in the Baltic Sea Region. The project improves the management of sea traffic in the Baltic Sea Region by introducing a set of smart fairway services to support safety and clean shipping. The sea traffic is international, and the standards for services are set globally.

Therefore, uniform digital solutions that are applied in the whole BSR region are needed, and the Smart Fairway services need to be standardized in global transnational level. These objectives can only be successfully pursued through constructive and coordinated cooperation with countries from the Baltic Sea Region. Cooperation is necessary in all stages of the process, from planning to implementation to avoid parallel conflicting systems by different countries.

Transnational collaboration promotes more coherent and synergic implementation of project solution, the set of Smart Fairway services, and adds value by connecting all relevant stakeholders, creating networks, and improving coordination. The MaDaMe project also promotes the maintaining of existing longer-term networks among the established stakeholders; national authorities, research organizations and enterprises.

Also, the implementation of EUSBSR requires governmental policy making and governmental transnational cooperation. The partnership has the competence and dissemination capabilities to build, pilot and implement the set of Smart Fairway services to support EUSBSR PA Safe Actions.

1,518 / 2,000 characters

3.3 Target groups

Target group	Sector and geographical coverage	Its role and needs
National public authority	Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe. 293 / 500 characters	Authorities are responsible for planning and deploying services. By providing digital Smart Fairway services the authorities can improve marine traffic management, and therefore can provide better safety and enable clean shipping with possibilities for optimized maritime operations. Authorities, in cooperation with other stakeholders, must develop services that are internationally standardized. Standardization enables the development of interoperable systems and devices and guarantees that they work globally. This is highly important in maritime sector as the vessels will operate in different seas around the globe. 623 / 1,000 characters
Small and medium enterprise	SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland. 310 / 500 characters	SME contribution is mandatory in producing elements for the set of Smart Fairway services that are solution for safety and clean shipping challenges. Also their role will important in the piloting of solutions. SMEs need to develop products required to implement and utilize provided services by authorities. They need to also participate in the standardization activities to provide technology point-of-view. 409 / 1,000 characters
Large enterprise	Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland. 202 / 500 characters	Shipping companies are looking for improvements in safety and opportunities to optimize operations by utilizing digitalization and new services. In the partnership they will provide end-user needs and requirements for the development of Smart Fairway services. They will also participate in piloting to verify and validate the developed services. 346 / 1,000 characters

3.4 Project objective

Your project objective should contribute to:

Blue economy

MaDaMe project offers a set smart fairway services as a solution for safety and support for clean shipping. Services for safe and environmentally sustainable utilization of fairways are defined with stakeholders such as shipping companies and piloting companies. Proposal actions prepare and develop elements of the solution: dynamic data offering, connectivity, and cybersecurity.

MaDaMe project focuses on water-smart societies and especially on blue economy in the field of shipping. The project improves the management of sea traffic by introducing set of Smart Fairway services to support digitalization and automation of shipping. In the longer term, the solution supports also remote navigational operations and future autonomous ships.

From the maritime traffic management point-of-view the Smart Fairway services facilitate the joint use of water without conflicts when several ships are utilizing congested fairway resources. For sustainable use of sea waters Smart Fairway services enable optimized maritime operations, which include for example just-in-time arrivals for ships. It is expected that these will lead to more efficient usage of energy resources and fuel. Improved communication between ships and ports will lead also to more efficient cargo handling.

Emergence of Smart Fairway concept supports innovative business development in the whole BSR region due to the need of new systems, devices and platforms in the shipping business. These include the information systems and equipment utilized by authorities to provide services, and by ships to utilize those services. There is also a need to develop connectivity solutions, as current technologies do not support new digital services. All services and utilized technologies will be cybersecure-by-design.

1,782 / 2,000 characters

3.5 Project's contribution to the EU Strategy for the Baltic Sea Region

Please indicate whether your project contributes to the implementation of the Action Plan of the EU Strategy for the Baltic Sea Region (EUSBSR).

(•) Yes ( ) No

Please select which Policy Area of the EUSBSR your project contributes to most.

PA Safe

Please list the action of this Policy Area that your project contributes to and explain how.

The project implements the Interreg Baltic Sea Region 2012-2027 Priority 2, Water-smart societies by producing the digital solutions and making the information for the safe shipping better available. The project is in line with objective 2.2, Blue economy, with the aim to support and promote blue economy sectors, strengthen the resilience, while ensuring sustainable use of sea waters.

Digital services developed in MaDaMe are offered by public authorities and used by ships. By improving the management of sea traffic, Smart Fairway concept will improve the safety and reduce the risk of accidents. The project therefore contributes to the EU Strategy for the Baltic Sea Region "Save the Sea" sub-objective "Clean and safe shipping" with the aim to reduce the risk of maritime accidents. More specific, it implements the vision of Policy Area (PA) Safe of making Baltic Sea as leading region in maritime safety and security.

By developing reliable and sound services for maritime traffic management, MaDaMe implements highly innovative mode of operation making it forerunner in development of maritime safety, digitalization, and automation. The use of new digital services allows more efficient and sustainable shipping and increases competitiveness in the whole Baltic Sea region. These are in line with Water-smart Societies Policy Area (PA) Safe, Action 1: "Providing reliable navigational conditions to the Baltic Sea", and Action 3: "To be a forerunner in digitalization and automation".

1,498 / 1,500 characters

If applicable, please describe which other Policy Areas of the EUSBSR your project contributes to and how.

The project contributes to the sustainable shipping and sustainable use of marine environment. Improved fairway information allows better shipping operations optimization. Digital solutions developed by MaDaMe project helps to cut down pollution by reducing fuel costs and waiting times that cause unnecessary idling of ships. Also, the project enables the optimization of the shipping operations by providing information from fairway. This is inline with the Policy Area (PA) Ship, Action 1: "Support measures reducing emissions from shipping including digitalization", where the vision is that the Baltic Sea Region should become a model region for sustainable shipping. This Action also contributes to the achievement of the European Green Deal's climate-neutral objectives.

778 / 1,500 characters

3.6 Other political and strategic background of the project

Strategic documents	
IMO E-Navigation Strategy Implementation Plan: As shipping moves into the digital world, e-navigation is expected to provide digital information and infrastructure for the benefit of maritime safety, security and protection of the marine environment, reducing the administrative burden and increasing the efficiency of maritime trade and transport. MaDaMe contributes to this goal by offering Smart Fairway services. (416 / 500 characters)	
HELCOM Baltic Sea Action Plan: "Environmentally sustainable sea-based activities" benefit from MaDaMe results for improved and more safe maritime traffic management which will reduce the risk of accidental pollution and ensure sustainable use of the marine resources by enabling optimized shipping operations. (310 / 500 characters)	
HELCOM Recommendation 34E/2 recommends the Governments of the Baltic Sea countries to bring forward/develop concrete solutions suitable for testing and validating e-navigation services in the Baltic Sea region and to take necessary actions to support the technical developments, including defining the relevant performance and technical standards, and potentially define the regulatory framework. The work in MaDaMe contributes directly to this goal. (450 / 500 characters)	

3.7 Seed money support

Please indicate whether your project is based on a seed money project implemented in the Interreg Baltic Sea Region Programme 2014-2020.

( ) Yes (•) No

3.8 Other projects: use of results and planned cooperation

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation	

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
STM Validation 14 / 200 characters	EU (Connecting Europe Facility/Motorways of the Sea) 52 / 200 characters	STM validation project developed infrastructure and standards which are required to deliver interoperable digital services to mariners. During the project several different services was tested, these included navigational warnings-service that will be further matured and operationalised during MaDaMe project. Many members of the MaDaMe partnership participated in this EUSBSR PA Safe Action 3 flag ship project. 413 / 1,000 characters
EfficienSea 2 13 / 200 characters	EU (H2020) 10 / 200 characters	Among the major outputs of the EfficienSea 2 project which are also relevant to the MaDaMe are: -- the concept of Maritime Connectivity Platform (previously: Maritime Cloud) - MCP is a communication framework that enables efficient, secure and reliable information exchange in and around the maritime sector. It also enables interoperability and transition between existing and future communication and information systems. The MCP will be a basis for the communication network that integrates various aspects of the MaDaMe project. -- VDES (VHF Data Exchange System) – the EfficienSea 2 project significantly stimulated the development of a new VHF communications system dedicated for maritime applications (standardized by ITU-R and developed by IALA). The VDES will also be an important element in the MaDaMe, being the crucial component of its hybrid communication solution. Many members of the MaDaMe partnership participated in this EUSBSR PA Safe Action 3 flag ship project. 983 / 1,000 characters
STM BALT SAFE 13 / 200 characters	EU (European Union Interreg Baltic Sea Programme) 49 / 200 characters	The STM BALT SAFE project was built on the foundations laid down in previous projects such as EfficienSea II, MONALISA 2.0 and Sea Traffic Management Validation project and encompassed the exchange of voyage plans and integration of STM functionalities in VTS shore centres. Services for enhanced monitoring of maritime traffic, different automatic reporting services to Ship Reporting Systems e.g., GOFREP and SOUNDREP was developed and tested in the project. In MaDaMe project, the development of digital services of vessel traffic services (VTS) continues. Many members of the MaDaMe partnership participated in this EUSBSR PA Safe Action 3 flag ship project. 665 / 1,000 characters

Full name of the project	Funding Source	Use of the project outcomes and/or planned cooperation
MARIOT - Maritime IoT using small satellites 44 / 200 characters	Innovation Fund Denmark 23 / 200 characters	The MARIOT project develops and launches a first Danish VDES satellite to be operated by Sternula from October 2022. This provides a great opportunity for MaDaMe to pilot maritime digital services outside the reach of coastal networks. Moreover, the MARIOT project develops digital weather and ice services to be deployed over MCP and VDES using standard S-100 IHO Universal Hydrographic Data Model formats. This provides concrete examples and recommendations for MaDaMe in the studied services. Coordination on standardization activities with the MARIOT project will ensure a stronger message to targeted organizations. MARIOT supports directly pilot activities in WP2. Danish partners of MaDaMe are participating this project. 728 / 1,000 characters

3.10 Horizontal principles

Horizontal principles	Projects's direct impact
Sustainable development	positive
Non-discrimination including accessibility	neutral
Equality between men and women	neutral

The GMDRT (Global Maritime Digital Route Testbed) 49 / 200 characters	Korean ministry of ocean and fisheries 38 / 200 characters	initiative started by the Korean ministry of ocean and fisheries. It aims to be a global testbed of digital / e-navigation solutions with participation of many local and regional stakeholders. The aim being to test these solution globally using vessels traveling between Asia and Europe and possibly beyond. MaDaMe project can connect testbeds used in WP2 Pilots to the global testbed structure. From MaDaMe consortium DMC has participated in activities regarding Maritime Connectivity Platform (MCP) 556 / 1,000 characters

4. Management

Allocated budget 5%

4.1 Project management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the project management as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the project management, e.g. external entity supporting the lead partner in the management of the project, advisory board, steering committee, any other relevant working groups, etc.

Management of project will be performed by the lead partner. LP uses the PM2 model, which will be implemented as applicable to the project. Project advisory group will be set-up to receive widely information and requirements for Smart Fairways in BSR. The advisory group complements project partnership and associate partner contributions. Joint working groups with external organisations are set-up in WP3 where joint input papers are produced to standardization organisations.

479 / 500 characters

4.2 Project financial management

☑ **Please confirm that the lead partner and all project partners will comply with the rules for the financial management and control as described in the Programme Manual.**

If relevant, please indicate any other important aspects of the financial management, e.g. external entity supporting the lead partner, positions planned for financial management, involvement of special financial experts (e.g. for public procurement), etc.

An Administrative Project Manager (APM) will be appointed to the project. She/he is and expert in project administration and finances. APM will create an quality plan and maintain the level of quality in the project implementation and reporting as well as coordinates the consortium administration (including e.g. finances and reporting). Also, partnership management will be appointed to the project implementation. Each organization uses internal expertise for public procurement.

482 / 500 characters

4.3 Input to Programme communication

☑ **Please confirm that you are aware of the obligatory inputs to Programme communication that must be submitted along the pre-defined progress reports, as described in the Programme Manual.**

If relevant, please describe other important aspects of project communication that you plan to introduce, e.g. a communication plan, opening and closing events, social media channel(s) etc.

Communication plan will be developed in the beginning of project. Opening seminar is organized in Finland during spring 2023 in a cruise ship. MaDaMe web-page will be created. The final seminar will be organized during Q4 of 2025. The project utilizes organisational and personal active social media accounts in Twitter and LinkedIn with the common hashtag #MaDaMeProject. Further communication activities are described in the work plan WP3.

442 / 500 characters

4.4 Cooperation criteria

Please select the cooperation criteria that apply to your project. In your project you need to apply at least three cooperation criteria. Joint development and joint implementation are the obligatory ones you need to fulfill in your project.

Cooperation criteria	
Joint Development	☑
Joint Implementation	☑
Joint Staffing	☑
Joint Financing	☑

5. Work Plan

Number	Work Package Name
1	Preparing solutions

Number	Group of Activity Name
1.1	Smart Fairway Services
1.2	Dynamic information provided by Smart Fairway
1.3	Connectivity and the messaging of Smart Fairway information
1.4	Cybersecurity of the Smart Fairway

Number	Work Package Name
2	Piloting and evaluating solutions

Number	Group of Activity Name
2.1	Pilot: Digital Navigational Information
2.2	Pilot: Digital Aids to Navigation
2.3	Pilot: VTS Digital Information

Number	Work Package Name
3	Transferring solutions

Number	Group of Activity Name
3.1	Contributions to international organizations and standardization
3.2	Communication and Stakeholder engagement
3.3	Future directions for Smart Fairways

Work plan overview

Period:	1	2	3	4	5	6	Leader
WP.1: Preparing solutions							**PP2**
A.1.1: Smart Fairway Services							PP8
D.1.1: Guidelines for Smart Fairway services		D					
A.1.2: Dynamic information provided by Smart Fairway							PP2
D.1.2: Smart Fairway data offering		D					
A.1.3: Connectivity and the messaging of Smart Fairway information							PP6
D.1.3: Smart Fairway connectivity methods			D				
A.1.4: Cybersecurity of the Smart Fairway							PP1
D.1.4: Cybersecurity methods for the Smart Fairway				D			
WP.2: Piloting and evaluating solutions							**PP4**
A.2.1: Pilot: Digital Navigational Information							PP4
O.2.1: Digital navigational services				O			
A.2.2: Pilot: Digital Aids to Navigation							PP7
O.2.2: Digital Aids to Navigation services					O		
A.2.3: Pilot: VTS Digital Information							PP5
O.2.3: Digital VTS services					O		
WP.3: Transferring solutions							**PP3**
A.3.1: Contributions to international organizations and standardization							PP3
D.3.1: Report on standardization activities						D	
A.3.2: Communication and Stakeholder engagement							PP1
D.3.2: Report on dissemination activities						D	
A.3.3: Future directions for Smart Fairways							PP2
D.3.3: Smart Fairway roadmap						D	

Outputs and deliverables overview

Code	Title	Description	Contribution to the output	Output/ deliverable contains an investment

D 1.1	Guidelines for Smart Fairway services	"Guidelines for Smart Fairway services" is a report which describes the studies carried out in the Group of activities 1.1. and their results and from performed analyses. The report provides information on the needs for new Smart Fairway services, current maturity or technology readiness level for technologies required to implement those services, and creates a proposal for a roadmap for the development of fairway services. The report is divided to five main chapters 1. Smart fairway physical and digital (including virtual) devices 2. Smart Fairway information and standardizes data models for information delivery 3. Connectivity solutions 4. Cybersecurity 5. Efficient utilization of services by end-users The report acts as an essential basis for developing and piloting the Smart Fairway services in other Groups of Activities and Work packages. The deliverable serves are a basis for implementing pilots in WP2. The deliverable works as a tool to engage stakeholders outside project partnership in transnational setting. The work will be revisited in WP3 GoA 3.3, where the roadmap for the Smart Fairways beyond the project duration will be given.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	
D 1.2	Smart Fairway data offering	The deliverable "Smart Fairway data offering" consists following components to be piloted in WP2: 1) Description of IHO S-100 & S-200 and IMO data model utilization to deliver the Smart Fairway services in pilots. These include Digital Navigational Warnings, Notice to Mariners, and Vessel Traffic Services. 2) Physical and digital AtoN methods to provide improved fairway information for vessels. Digital AtoN services are prepared for piloting in WP2. With the digital AtoN service a fairway administration can deploy virtual buoys for the use of vessels' navigation systems concerning fairway specific information. The result includes improved positioning accuracy service in fairways and port areas for geofencing required by virtual AtoN services. 3) Prototype of virtual layout for ECDIS to deliver added navigational and situational information onboard vessels. Together these three components fulfill the dynamic data needs of smart fairway in form of an applications based on IALA, IMO and IHO S-100 and S-200 frameworks. The deliverable will be the set of applications to be piloted in WP2 with documentation and reporting. The transnational value of the deliverable is based on necessary cooperative development between public service providers and technology providers to match with the needs of end users from the Baltic Sea region countries.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	
D 1.3	Smart Fairway connectivity methods	The deliverable is a report, which describes the smart hybrid communication system prepared for piloting in all WP2 pilots in order to provide access to services offered via Smart Fairway. Different services impose various requirements for the connectivity solutions. Thus, the deliverable provides different connectivity solutions for each pilot in WP2. The report details the coverage of each connectivity option in BSR area. Technical comparisons are made IP-based methods, AIS/VDES, and MCP MMS to deliver services to be piloted in WP2. For satellite-based VDES piloting the satellite by Sternula will be utilized. The launch of the satellite is October 2022. This is huge advantage for MaDaMe project. MCP messaging service MMS: This service facilitates the exchange of data between entities providing and utilizing Smart Fairway services. The MMS supports both data exchange using internet protocol, but also other means of digital data exchange, and mitigates some of the burden of having heterogeneous communication networks. For Maritime Connectivity Platform (MCP) using the Maritime Messaging Service (MMS). The report will consist of: • functional requirements identification, • impact on existing guidelines standards and recommendations, • description of the hybrid communication system architecture, • concept of the seamless roaming for the purpose of the hybrid communication system, • seamless roaming algorithm, • concept of the MMS integration with the hybrid communication system using MCP framework, • concept of the hardware implementation (laboratory prototype) of the system's on-board module. TRL level for MCP MMS is 7, while other utilized communication networks are commercial level.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	
D 1.4	Cybersecurity methods for the Smart Fairway	The deliverable is reference implementation for MCP and cybersecurity in general, which overs following components - Identity management is the core feature of the MCP. The MCP features a decentralised identity registry MIR, in which all entities that need to exchange information can be registered. Each entity (ship, VTS, agent, etc.) will be assigned a unique identifier, and it is possible to acquire digital certificates for the entity – such that the entity can authenticate itself towards other entities when exchanging information. - Another component of the MCP is the service registry, which is also decentralised, Various maritime services including Smart Fairway can be registered, and end users are able to locate these services in the registry. The main use case are ships roaming the seas being able to locate services in all regions of the word. - The decentralised trust system builds upon both the MIR and the MMS (prepared in GoA 1.3), and supports the concept of trust in identities and services. For example, many different entities/organisations may be registered in the MIR and may provide for instance navigational warnings as a Smart Fairway service. However, only some organisations have been endorsed by IHO to provide this type of information directly to the ECDIS of a vessel. Thus, the trust system provides a mean to identify services providing specific types of information that have been endorsed by relevant organisations (e.g. IHO). Trust relations can be rather complex and on several layers. Thus, the MCP trust system will be able to model (almost) arbitrary trust relations. - Cybersecurity testing methodology and the utilization of cyber threat intelligence to protect Smart Fairway services. These four features will be piloted in WP2. TRL levels for deliverable components MIR: 9, MSR: 9, and for the Trust system: 6-7.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	

O 2.1	Digital navigational services	The Output is piloted Digital Navigational services ready to be transferred to target groups in WP3. These services include Navigational Warnings (NW) and Notices to Mariners (NtM). NW are messages containing urgent information relevant to safe navigation broadcast to ships. NtM are frequent updates that provide ships with the latest safety-critical navigational information. "Ready to be transferred" means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. As an example. the output will be compliant with the current versions of S-124 and S-125 standards. Output provides input also for the standardization of connectivity (D1.3), the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation. TRL level of the Output will be 9 by the end of project duration. Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows: D1.1: End-user requirements for the piloted services. D1.2: Dynamic data offering is based on S-100 standard series. For example, the S-124 is a standard developed primarily by the IHO which defines a vector product intended for encoding the nature and extent of navigational warnings, for navigational purposes in an ECDIS. It allows to broadcast practically every safety-related case. Another relevant standard is S-125. D1.3: The key element to ensure that digital navigational information ia successfully provided to the intended end-user ships is the associated communication system – in this project developed in the form of a hybrid network (GoA 1.3). It will provide automatic and seamless connections (seamless roaming), utilizing different communication technologies (VDES, AIS, cellular networks, satellite systems, etc.) to allow information distribution between ships and between ships and shore-based users depending on the link availability and other factors (including user's preferences) considered by the relevant sophisticated algorithms. In this case, these algorithms will operate in a way to ensure a successful and error-free delivery of the selected navigational warnings The group of activity serves a pilot action purpose because for the first time selected services related to digital navigational information framework will be broadcasted in the dedicated network based on MCP and using the hybrid solutions. D1.4: The service itself will utilize the MCP, which is used for service registry, identity management, and trust system. The issue of cybersecurity in the context of S-124 warnings will also be addressed.		Yes
O 2.2	Digital Aids to Navigation services	The Output is piloted Digital Aids to Navigation (AtoN) services ready to be transferred to target groups in WP3. AtoN is a device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or vessel traffic. The purpose of physical AtoN's, such as buoys and deacons, is to mark safe waters and help mariners in determining their position with respect to land or any navigational hazard or hidden danger. A virtual (digital) aid to navigation itself does not physically exist unlike buoys and beacons but comprises a signal broadcast to a location in a waterway. "Ready to be transferred" means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. The output will be compliant with the current version S-125 standard. Output provides input also for the standardization of connectivity (D1.3), the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation. TRL level of the Output will be 8-9 depending of components. Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows: D1.1: The final list of Smart Fairway data offering D1.2: The S-125 standard is focused on the maritime navigational services including virtual AtoN for temporary and seasonal marks as well as local AIS application-specific messages. Virtual AtoN's can provide early notification to the mariner of urgent, temporary or dynamic information, this could provide valuable additional element to the information provided in Navigational Warnings, which are piloted in GoA 2.1. Also the automatic adjustment of the physical or virtual AtoN's based on the weather conditions and traffic situation will be piloted in this GoA. This Output includes also adjustments to existing hardware equipment e.g. Portable Pilot Units and virtual AIS AtoN generators, as well as firmware and software of the adjusted equipment in order to prepare the existing devices to support the piloting services and scenarios. D1.3: Utilizing the hybrid communication system based on the Maritime Connectivity Platform MCP and utilizing various communication links, including VDES, AIS, cellular and satellite, the consortium partners, within this GoA, will perform practical real-life test scenarios of the Digital AtoN services. This Output includes also adjustments to existing AIS/VDES receivers. D1.4: The service itself will be based on the MCP, which is used for service registry, identity management, and trust system. The issue of cybersecurity in the context of S-125 will also be addressed. Field test results are evaluated in cooperation with mariners and the Output is adjusted service based on the evaluation.		

O 2.3	Digital VTS services	The Output is piloted is ready-made and tested electronic VTS services for ships and other maritime operators that can be integrated into the operational VTS system. In practice this means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. In WP3, the experience of the pilot will be taken in various forms to the comittees responsible for the development of the IALA S-200 standards. Specifically, services will be S-210 for the electronic exchange of VTS data between VTS and ships and land users in the VTS area, and S-212, which provides guidance on the delivery of different types of services provided by a VTS. The standard is designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with traffic and to respond to traffic situations developing in the VTS area. Output provides input also for the standardization of connectivity (D1.3), as the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation. TRL Level of the Output is 8-9 for different components. Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows: D1.1: End-user requirements for the VTS services. D1.2: Dynamic data offering is based on S-200 standard series. D1.3: The digital information provided in these services can be delivered by several different means, such as Automatic Identification System (AIS) or VHF data exchange system (VDES) messages, by IP-based communication and using S-100 based product specifications D1.4: The service will utilize the MCP, which is used for service registry and identity management, and trust system. The issue of cybersecurity in the context of S-210 and S-212 will also be addressed. Field test results are evaluated in terms of improved safety, possibility to optimize operations for sustainability, and usability for ship crew. Evaluation is performed in cooperation with mariners and the Output is adjusted service based on the evaluation. Smart Fairway services must be available fluently onboard of vessels, which have numerous information systems, and therefore usability of the smart fairway information needs to be carefully considered. VTS services that are transferred to operation will be maintained and supported by Fintraffic VTS operational budget.		Yes
D 3.1	Report on standardization activities	The deliverable transfers O2.1, O2.2, O2.3 to target groups by standardization inputs. The deliverable is a report that collects all input and analyzes the project impact. The main results of the deliverable in this regard will be technical service specifications. Results from the development of such specifications will be contributed to IALA continuously through the project at every stage. The deliverable contains following standardization inputs, which correspond to the project WP structure: - Identification of services (WP1) - It will be important to include even the first step of identifying services - since it will be much more difficult to introduce more mature material at a later stage. - Draft specifications (WP1) - This phase includes the definition of all required technical components to implement services - Implementation of prototype (WP2) - The validation and verification of the draft specification requires prototype implementations - Tests (WP2) - Pilots with prototypes provide input how to adjust components for the final specification - Final specifications Specifically two main committees to contribute in IALA are - ENAV committee that focuses on generic digital solutions within IALA's domain. Several standards/guidelines from this committee will be covered, including G1128 'the specification of e-navigation technical services' and G1157 'Web Service Based S-100 Data Exchange'. Several project members are following and contributing to this committee, and will continue to do so based on the Outputs of the WP2. - VTS committee; many of the smart fairway services to be developed in the project are VTS services – and thus will be standardised through the IALA VTS committee. As in the ENAV committee, several MaDaMe partners are actively involved and are also leading relevant task groups within the VTS committee.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	
D 3.2	Report on dissemination activities	The deliverable is a report that contains performed dissemination activities and their impact analysis. Evaluation is based on the dissemination plan produced in the beginning of the project by the management WP. Training materials for supporting project solution (the set of Smart Fairway services) uptake will be provided: 1) Video for general audience: An information video to introduce the smart fairway and raise awareness. This material explains briefly what smart fairway is, how it helps the seafaring and how smart fairway works. The basic guidance booklet aims to attract attention and lead viewer to get acquainted with the training material. 2) Informative booklet: An informative booklet for target groups to introduce the smart fairway concept. The booklet is shared with maritime authorities, public service providers, technology developers, shipping companies, and pilot. The material will be disseminated with other BSR countries not involved in the project. 3) Information material for target groups: An information material about the smart fairway concept, consisting of description of the smart fairway concept and its purpose, benefits, and utilization. 4) Training material in PowerPoint presentation format. The presentation can be used to demonstrate the smart fairway in other future projects or other events apart of the MaDaMe. The deliverable supports Output O2.1, O2.2, and O2.3 transfer to Target groups.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	

D 3.3	Smart Fairway roadmap	This deliverable is a report entitled "Smart Fairway roadmap", which serves also as durability plan on how Outputs from WP2 will be utilized, maintained, and further developed after the project ends. Roadmap includes also the recognized services in WP1 GoA 1.1. that were not prepared and piloted in the project. The roadmap includes the developing and maintaining plan for the developed and piloted services. The roadmap contains all components required to implement smart fairway services, combinations of digital and data components to physical infrastructure. The roadmap takes into account the human and financial resources of smart fairway, from end user (shipping company) and smart fairway service provider points of view. In addition, there is future oriented plan for smart fairway concept including autonomous shipping scenario. This deliverable bridges the Smart Fairway solution to a four-layer model corresponding on a common understanding for the degrees of Maritime Autonomous Surface Ships (MASS) used in regulatory scoping exercise by the Maritime Safety Committee in IMO. These degrees are: Degree one: Ship with automated processes and decision support - Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but with seafarers on board ready to take control. Degree two: Remotely controlled ship with seafarers on board - The ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions. In the case of remote pilotage the pilot is in remote operation center and seafarers operate the ship according to pilot instructions. Degree three: Remotely controlled ship without seafarers on board Degree four: Fully autonomous ship Required Smart Fairway services are described for the each degree.	O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service	

Work package 1

5.1 Preparing solutions

5.2 Aim of the work package

The aim of this work package is to prepare solutions to help address the identified challenge. You can either develop entirely new solutions or adapt existing solutions to the needs of your target groups. Prepare your solutions in a way that you can pilot them in Work Package 2. Consider how you involve your target groups in preparation of the solutions.
Organise your activities in up to five groups of activities to present the actions you plan to implement. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1	PP 2 - Novia University of Applied Sciences
Work package leader 2	Please select

5.4 Work package budget

Work package budget	25%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe. 293 / 500 characters	The national authorities are responsible for arranging safe and efficient fairway services. Thus, they are the key players in planning, defining and developing new smarter services for the maritime traffic. In the MaDaMe project we have been able to involve responsible authorities from several BSR countries. Some of them are involved in the project partnership and thus actively participate in development activities. Authorities in all BSR countries have been reached out and made aware of the project already in the preparation phase. In this WP Group of Activity 1.1. includes interviews with relevant stakeholders such as authorities to define Smart Fairway services. In addition, project produces input papers to international standardization such as IALA, IHO, and MCC, where also target groups organizations outside project partnership are active. Other relevant organizations are IMO and HELCOM. 906 / 1,000 characters
2	Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland. 310 / 500 characters	Key companies of smart fairway enablers are partners in this project. Collaboration with authorities and public service providers speeds up time to market. Generally work towards standardized solutions and aim to make impact to IALA's and IMO's processes opens new opportunities for all SME's in the field of businesses. In this WP Group of Activity 1.1. includes interviews with relevant stakeholders such as SMEs to get feedback on technology maturity to implement Smart Fairways. In addition, project produces input papers to international standardization such as IALA, IHO, and MCC, where also target groups are active. 624 / 1,000 characters
3	Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland. 202 / 500 characters	Shipping companies are present in project partnership. In this WP Group of Activity 1.1. includes interviews with relevant stakeholders. All services provided by authorities will be eventually utilized by shipping companies. Thus, their views are crucial in defining required Smart Fairway services. Important organization is BIMCO, which has been contacted already it the preparation phase. It is a membership-based non-governmental organisation with members ranging from the largest shipowners in the world to small local port agents and law firms. 551 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
1.1	**Smart Fairway Services**
1.2	**Dynamic information provided by Smart Fairway**
1.3	**Connectivity and the messaging of Smart Fairway information**
1.4	**Cybersecurity of the Smart Fairway**

WP 1 Group of activities 1.1

5.6.1 Group of activities leader

Group of activities leader PP 8 - Finnish Transport Infrastructure Agency

A 1.1

5.6.2 Title of the group of activities

Smart Fairway Services

22 / 100 characters

5.6.3 Description of the group of activities

The smart fairway services will be developed in close collaboration with the maritime authorities, public service providers and end-users, such as shipping companies and other fairway users. This Group of Activity provides information on services necessary throughout the sea voyage. The details for the of Smart Fairway services are defined in this Group of Activity to guarantee the solutions prepared in this WP will correspond to up-to-date requirements from end-users. This is necessary for a common understanding of various service requirements. The Group of Activity consists of
(1) defining and mapping of the future smart fairway services where known proposals and studies available globally on new fairway services will be compiled, and the list will be extended with the partners as necessary.
(2) The services will be described and clarified based on the user need analysis throughout the BSR. A survey will be sent to the fairway users, in which the users' views on the necessity, prioritization and charges for the proposed services will be ascertained. Users will also be asked to complete the list of services if necessary. Focus group interviews will be performed to provide more detailed information on survey results.
(3) The maturity analysis of smart fairway's technologies and operating environment. The maturity analysis provides important information on the level of complexity and cost of developing each service. The analysis will be done together within the project partnership and with external stakeholders, and it takes into account technological trends as well as other influencing factors such as regulatory framework or standardization requirements. By mapping, the services for different user groups will determine the smart fairway service development timeline.
(4) Drivers and trends affecting to the service requirements such as emission trading will be covered also.

Activities (1)-(4) lead to a deliverable that is baseline for all the following Group of Activities inside this WP and they will be utilised to define details of pilots in WP2. The topic will be revisited in WP3 Group of Activity 3.3., where the focus will be a roadmap for Smart Fairway services after the project end how e.g. remote operations and autonomous shipping can be supported with the Smart Fairway services.

2,328 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.1

Title of the deliverable

Guidelines for Smart Fairway services

37 / 100 characters

Description of the deliverable

"Guidelines for Smart Fairway services" is a report which describes the studies carried out in the Group of activities 1.1. and their results and from performed analyses. The report provides information on the needs for new Smart Fairway services, current maturity or technology readiness level for technologies required to implement those services, and creates a proposal for a roadmap for the development of fairway services.

The report is divided to five main chapters
1. Smart fairway physical and digital (including virtual) devices
2. Smart Fairway information and standardizes data models for information delivery
3. Connectivity solutions
4. Cybersecurity
5. Efficient utilization of services by end-users

The report acts as an essential basis for developing and piloting the Smart Fairway services in other Groups of Activities and Work packages. The deliverable serves are a basis for implementing pilots in WP2. The deliverable works as a tool to engage stakeholders outside project partnership in transnational setting. The work will be revisited in WP3 GoA 3.3, where the roadmap for the Smart Fairways beyond the project duration will be given.

1,163 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: Preparing solutions						
A.1.1: Smart Fairway Services						
D.1.1: Guidelines for Smart Fairway services						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.2

5.6.1 Group of activities leader

Group of activities leader PP 2 - Novia University of Applied Sciences

A 1.2

5.6.2 Title of the group of activities

Dynamic information provided by Smart Fairway

45 / 100 characters

5.6.3 Description of the group of activities

Methods to provide dynamic information required by services to be piloted in WP2 are selected for further preparation. The selection will be detailed based on D1.1. The activities are divided to the information generation from the Smart Fairway and how the data is utilized in ships.

1) How information generation is prepared for Smart Fairway services piloted in WP2:
Congested fairways benefit from very accurate information, especially if the fairway is used by vessels unfamiliar with the seabed formations that are not nowadays seen from the charts. This GoA covers the preparation of Digital Navigational Warnings (DNW) and Notices to Mariners (NtW); digitalized marine Aid to Navigation (AtoN) services that enhance safety and efficient navigation; and vessel traffic services (VTS). Physical AtoN's could also be equipped with sensors that can collect information of the environmental conditions on fairway. This information can be used as part of the automatic adjustment of the physical or virtual AtoN's.

In addition to digital technologies, interoperability requires to use standardized data models when implementing Smart Fairway services. MaDaMe utilizes data models from IHO and IMO for hydrographic and bathymetric data. This activity focuses on utilizing a data models determined by end-user needs of the smart fairway to ensure added-value information is provided to ships.

2) How the data utilization (Smart Fairway services) in ships is prepared for piloting in WP2
Improved positioning assistance service on the smart fairway will be based on the required level of accuracy of mapped smart fairway services. The smart fairway is equipped with technology allowing improved positioning accuracy for the vessel. Fairway areas that are found prone to hazards benefit and require higher positioning provided as assistance. End-users will require that services are available in ECDIS Layout. This requires standardization activities that are out-of-the-scope of MaDaMe project. Thus, the SDK application for ECDIS will be used in the visual planning of fairway virtual models for ECDIS. Prototype of new Smart fairway services is added to ECDIS. The prototype is a user interface ready for testing onboard, and the service developers can implement new services into that.

The transnational value of this group of activity is based on the global nature of shipping industry and requirement to standardize navigation technologies. Thus, all technological development should be piloted and preferably also created transnationally to be standardized by regulatory maritime organizations, such as IALA, IHO and IMO. The services are developed in line with the S-100 and S-200 Standard frameworks. This means for example, that International Hydrographic Organization's product: "S-125 Marine Navigational Services" is taken into account to ensure congruent with other AtoN development in global scale now and in future.

2,936 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☑

D 1.2

Title of the deliverable

Smart Fairway data offering

27 / 100 characters

Description of the deliverable

The deliverable "Smart Fairway data offering" consists following components to be piloted in WP2:

1) Description of IHO S-100 & S-200 and IMO data model utilization to deliver the Smart Fairway services in pilots. These include Digital Navigational Warnings, Notice to Mariners, and Vessel Traffic Services.
2) Physical and digital AtoN methods to provide improved fairway information for vessels. Digital AtoN services are prepared for piloting in WP2. With the digital AtoN service a fairway administration can deploy virtual buoys for the use of vessels' navigation systems concerning fairway specific information. The result includes improved positioning accuracy service in fairways and port areas for geofencing required by virtual AtoN services.
3) Prototype of virtual layout for ECDIS to deliver added navigational and situational information onboard vessels.

Together these three components fulfill the dynamic data needs of smart fairway in form of an applications based on IALA, IMO and IHO S-100 and S-200 frameworks. The deliverable will be the set of applications to be piloted in WP2 with documentation and reporting. The transnational value of the deliverable is based on necessary cooperative development between public service providers and technology providers to match with the needs of end users from the Baltic Sea region countries.

1,358 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: Preparing solutions						
A.1.2: Dynamic information provided by Smart Fairway						
D.1.2: Smart Fairway data offering						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

WP 1 Group of activities 1.3

5.6.1 Group of activities leader

Group of activities leader PP 6 - Sternula

A 1.3

5.6.2 Title of the group of activities

Connectivity and the messaging of Smart Fairway information

59 / 100 characters

5.6.3 Description of the group of activities

The available Smart Fairway dynamic information must be delivered to ships. Actions include analysis and optimization of all connectivity options such as Automatic Identification System (AIS)/VHF Data Exchange System (VDES), IP-based networks for webservices (mobile networks, and satellite connections) that are available to ships during the sea voyage. Action utilizes Maritime Connectivity Platform (MCP) for the Maritime Messaging Service (MMS), which is prepared as the solution for data transport in WP2.

MMS provides seamless information exchange between different communication links. Transport may use internet from satellite or mobile broadband, or dedicated maritime channels such as VDES. The concept of the smart hybrid communication system will be developed in order to provide access to several services offered via Smart Fairway on MCP using the MMS. The main idea of the hybrid communication system is based on the assumption that connections are set up automatically and seamlessly using different available communication technologies to allow information distribution between ships and between ships and shore-based users depending on the link availability and other factors (including user's preferences) considered by the relevant sophisticated algorithms.

The hybrid communication system is comprised of three main segments: coastal, on-board and satellite: The coastal segment covers the infrastructure of the radio networks available at seas and includes: (a) cellular networks (2G-5G), (b) AIS and VDE-TER, (c) other access networks operating locally in ports (e.g. Wi-Fi). The Satellite segment covers the areas where terrestrial systems are out of reach and include: (a) VDE-SAT, (b) VSAT or (c) other commercial satellite systems. The on-board segment includes systems and interfaces installed on board of the ship which enables communication via coastal/satellite infrastructure and also direct ship-to-ship communication. The direct communication can be carried out via e.g. a VDE-TER Ship-to-Ship link, and the AIS system allows for the identification of those neighboring ships with which a direct communication is possible.

One of the most important elements of the hybrid communication network is the seamless roaming mechanism, which will select the most suitable radio link (for the given service, in the given time and place) from among all that are currently available at the vessel. The main task of the seamless roaming is a constant monitoring of the available radio links and switching between them to ensure optimal (given the selected set of criteria) conditions for the required maritime services. The seamless roaming algorithm will address service requirements, link availability and real time radio channel quality measurements and also user's preferences, e.g. service priority, optimization of the transmission costs or limiting its duration. The coverage analysis for the BSR will be performed to provide data for hybrid radio planning.

2,993 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.3

Title of the deliverable

Smart Fairway connectivity methods

34 / 100 characters

Description of the deliverable

The deliverable is a report, which describes the smart hybrid communication system prepared for piloting in all WP2 pilots in order to provide access to services offered via Smart Fairway. Different services impose various requirements for the connectivity solutions. Thus, the deliverable provides different connectivity solutions for each pilot in WP2.

The report details the coverage of each connectivity option in BSR area. Technical comparisons are made IP-based methods, AIS/VDES, and MCP MMS to deliver services to be piloted in WP2. For satellite-based VDES piloting the satellite by Sternula will be utilized. The launch of the satellite is October 2022. This is huge advantage for MaDaMe project.

MCP messaging service MMS: This service facilitates the exchange of data between entities providing and utilizing Smart Fairway services. The MMS supports both data exchange using internet protocol, but also other means of digital data exchange, and mitigates some of the burden of having heterogeneous communication networks.
For Maritime Connectivity Platform (MCP) using the Maritime Messaging Service (MMS). The report will consist of:
• functional requirements identification,
• impact on existing guidelines standards and recommendations,
• description of the hybrid communication system architecture,
• concept of the seamless roaming for the purpose of the hybrid communication system,
• seamless roaming algorithm,
• concept of the MMS integration with the hybrid communication system using MCP framework,
• concept of the hardware implementation (laboratory prototype) of the system's on-board module.

TRL level for MCP MMS is 7, while other utilized communication networks are commercial level.

1,717 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: Preparing solutions						
A.1.3: Connectivity and the messaging of Smart Fairway information						
D.1.3: Smart Fairway connectivity methods						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 1 Group of activities 1.4

5.6.1 Group of activities leader

Group of activities leader PP 1 - Turku University of Applied Sciences

A 1.4

5.6.2 Title of the group of activities

Cybersecurity of the Smart Fairway

35 / 100 characters

5.6.3 Description of the group of activities

Digitalization and technological innovations in the maritime logistics bring clear benefits in efficiency and safety. Integrating ICT into operational technology brings cybersecurity risks onboard ships and removes the perception of ships being isolated in their operation and out of reach from cyber attacks. Therefore, cybersecurity-by-design principles will be implemented for digital devices (GoA 1.2) and connectivity (GoA 1.3). Cybersecurity actions cover confidentiality, integrity, and availability. For devices, information systems, and user authentication, authorization and access control will be covered. Methods for cybersecurity testing of deployed systems will be provided. In addition, the methods for efficient utilization of cyber threat intelligence information for proactive actions will be prepared. Cyber threat intelligence is one of the most useful form of information in creating proactive cybersecurity and cyber resilience. Sharing cyber threat intelligence provides clear benefits to all organizations in the supply or logistics chain.

The starting point for cybersecurity is to utilize Maritime Connectivity Platform (MCP). MCP will be utilised to support the smart fairway solutions with regard to authentication of entities, service discoverability, messaging and trust. The MCP is a decentralised platform that facilitates secure and reliable information exchange within the maritime domain and beyond. Beyond – because the maritime world isn't isolated, but needs to exchange information with other domains – for instance with other transport domains to optimize overall logistics chains. The information exchanged can be almost of any nature, ranging from private confidential information between a vessel and the shore office of the shipping company. The focus in MaDaMe is public information provided by authorities, such as the provision of navigational information and other Smart Fairway services. As a decentralised platform, there is no single entity operating this. Several transnational organisations are MCP service providers, and collectively they form "the Maritime Connectivity Platform".

At the beginning of the MaDaMe project, MCP is a partially operational solution, with various components in different stages of maturity. These will be adapted to support Smart Fairway services. Already existing MCP component is Maritime Identity Registry (MIR), which is very mature, while other components will be developed during the MaDaME project. The work will however also identify further requirements from D1.1 to the platform and assist in the development of the MCP to match these requirements. This will benefit both the project / smart fairway solutions – and the MCP. The MCP standards will be developed, as well as the reference implementation. The reference implementation, which is open source, will be used directly in WP2 pilots.

2,887 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 1.4

Title of the deliverable

Cybersecurity methods for the Smart Fairway

43 / 100 characters

Description of the deliverable

The deliverable is reference implementation for MCP and cybersecurity in general, which overs following components
- Identity management is the core feature of the MCP. The MCP features a decentralised identity registry MIR, in which all entities that need to exchange information can be registered. Each entity (ship, VTS, agent, etc.) will be assigned a unique identifier, and it is possible to acquire digital certificates for the entity – such that the entity can authenticate itself towards other entities when exchanging information.
- Another component of the MCP is the service registry, which is also decentralised, Various maritime services including Smart Fairway can be registered, and end users are able to locate these services in the registry. The main use case are ships roaming the seas being able to locate services in all regions of the word.
- The decentralised trust system builds upon both the MIR and the MMS (prepared in GoA 1.3), and supports the concept of trust in identities and services. For example, many different entities/organisations may be registered in the MIR and may provide for instance navigational warnings as a Smart Fairway service. However, only some organisations have been endorsed by IHO to provide this type of information directly to the ECDIS of a vessel. Thus, the trust system provides a mean to identify services providing specific types of information that have been endorsed by relevant organisations (e.g. IHO). Trust relations can be rather complex and on several layers. Thus, the MCP trust system will be able to model (almost) arbitrary trust relations.
- Cybersecurity testing methodology and the utilization of cyber threat intelligence to protect Smart Fairway services.
These four features will be piloted in WP2.

TRL levels for deliverable components MIR: 9, MSR: 9, and for the Trust system: 6-7.

1,864 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.1: Preparing solutions						
A.1.4: Cybersecurity of the Smart Fairway						
D.1.4: Cybersecurity methods for the Smart Fairway						

5.6.7 This deliverable/output contains productive or infrastructure investment

Work package 2

5.1 Piloting and evaluating solutions

5.2 Aim of the work package

The aim of this work package is to pilot, evaluate and adjust solutions. Plan one or several pilots to validate the usefulness of the solutions prepared in Work Package 1. Start Work Package 2 early enough to have time to pilot, evaluate and adjust solutions, together with your target groups. By the end of this work package implementation the solutions should be ready to be transferred to your target groups in Work Package 3.
The piloted and adjusted solution should be presented in one project output.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 4 - National Institute of Telecommunications

Work package leader 2 PP 7 - NavSim Poland Ltd.

5.4 Work package budget

Work package budget 45%

5.4.1 Number of pilots

Number of pilots 3

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe. 293 / 500 characters	The national authorities are responsible for arranging safe and efficient fairway services. Thus, they are the key players in piloting new services for the maritime traffic. In the MaDaMe project we have been able to involve responsible authorities from several BSR countries. Some of them are involved in the project as partners and thus actively participate in piloting activities. Authorities in all BSR countries have been reached out and made aware of the project already in the preparation phase. 504 / 1,000 characters
2	Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland. 310 / 500 characters	Key companies of Smart Fairway enablers are partners in this project. Collaboration with authorities and public service providers speeds up time to market. Generally work towards standardized solutions and aim to make impact to IALA's and IMO's processes opens new opportunities for all SME's in the field of businesses. Some of them are involved in the project as partners and thus actively participate in piloting activities. There will be additional SMEs involved in piloting through external services included in budgets for some partners. 543 / 1,000 characters
3	Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland. 202 / 500 characters	Shipping companies are present in project partnership. All services provided by authorities will be eventually utilized by shipping companies. Thus, their views are crucial in piloting required Smart Fairway services. Shipping companies are offering their ships for piloting project solutions. 294 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
2.1	**Pilot: Digital Navigational Information**
2.2	**Pilot: Digital Aids to Navigation**
2.3	**Pilot: VTS Digital Information**

WP 2 Group of activities 2.1

5.6.1 Group of activities leader

Group of activities leader PP 4 - National Institute of Telecommunications

A 2.1

5.6.2 Title of the group of activities

Pilot: Digital Navigational Information

39 / 100 characters

5.6.3 Description of the group of activities

This GoA will pilot the delivery of digital navigational information to mariners including Navigational Warnings (NW) and Notices to Mariners (NtM). Standardization activities in IHO and IALA aim for technical specifications and creating datasets containing digital navigation information primarily targeting use in ECDIS. Also other relevant information can be delivered as part of the piloted services.

During piloting a distribution framework for the NW and NtM will be set-up including data models and product specifications from S-124 and S-125 on NW and NtM. The service will enable distribution of the digital navigational information and other relevant information via the Maritime Message Service. The service will consist of three elements: (i) onshore server for digital navigation warnings and notices to mariners distribution; (ii) communication protocol; (iii) end-user terminals. The pilot will include also testing of alternative means to promulgate Navigational Warnings, such as using AIS/VDES Application Specific Messages (ASM). The piloting service will be tested by a group of marine pilots, maritime authorities and ferries.

For the first step, building on the results of WP1, this GoA envisions performance analysis of technical tests. Typical technology-dependent characteristics have to be evaluated during the piloting services operation phase and operational parameters have to be defined to enable the definition and basic requirements for a nominal service operation within the standardized S-100 framework. This GoA will test services for distribution of digital navigational information in the testbed area of the Baltic Sea utilizing the hybrid communication system and Maritime Connectivity Platform prepared in GoA 1.3 and GoA 1.4, respectively. The applications, focused on the S-100 framework, will be developed for a selected group of end-users (testers).

This pilot service and components from D1.2, D1.3, and D1.4 will be tested and evaluated first by simulations, then in laboratory conditions and and finally in the target environment, i.e. at sea. Here, field test are performed in Danish and Finnish waters with end-user within project partnership and also with external stakeholders. Field test results are evaluated in terms of improved safety, possibility to optimize operations for sustainability, and usability for ship crew. Evaluation is performed in cooperation with mariners and the Output is adjusted service based on the evaluation. Smart Fairway services must be available fluently onboard of vessels, which have numerous information systems, and therefore usability of the smart fairway information needs to be carefully considered. The final goal for services is the integration of information to ship navigation systems such as ECDIS (Electronic Chart Display and Information System) but in the context of MaDaMe project prototype of a visualization layout on ECDIS will be a technical mockup or overlay on the existing system.

2,991 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 2.1

Title of the output

Digital navigational services

29 / 100 characters

Description of the output

The Output is piloted Digital Navigational services ready to be transferred to target groups in WP3. These services include Navigational Warnings (NW) and Notices to Mariners (NtM). NW are messages containing urgent information relevant to safe navigation broadcast to ships. NtM are frequent updates that provide ships with the latest safety-critical navigational information. "Ready to be transferred" means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. As an example. the output will be compliant with the current versions of S-124 and S-125 standards. Output provides input also for the standardization of connectivity (D1.3), the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation.

TRL level of the Output will be 9 by the end of project duration.

Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows:
D1.1: End-user requirements for the piloted services.
D1.2: Dynamic data offering is based on S-100 standard series. For example, the S-124 is a standard developed primarily by the IHO which defines a vector product intended for encoding the nature and extent of navigational warnings, for navigational purposes in an ECDIS. It allows to broadcast practically every safety-related case. Another relevant standard is S-125.
D1.3: The key element to ensure that digital navigational information ia successfully provided to the intended end-user ships is the associated communication system – in this project developed in the form of a hybrid network (GoA 1.3). It will provide automatic and seamless connections (seamless roaming), utilizing different communication technologies (VDES, AIS, cellular networks, satellite systems, etc.) to allow information distribution between ships and between ships and shore-based users depending on the link availability and other factors (including user's preferences) considered by the relevant sophisticated algorithms. In this case, these algorithms will operate in a way to ensure a successful and error-free delivery of the selected navigational warnings The group of activity serves a pilot action purpose because for the first time selected services related to digital navigational information framework will be broadcasted in the dedicated network based on MCP and using the hybrid solutions.
D1.4: The service itself will utilize the MCP, which is used for service registry, identity management, and trust system. The issue of cybersecurity in the context of S-124 warnings will also be addressed.

2,812 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe.	Authorities will add the piloted service to their offering portfolio and implement required infrastructure investments. Authorities will be able to promulgate the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. 374 / 1,000 characters
Target group 2 Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland.	SMEs will have business opportunities in developing technical solutions for services. Piloting will provide SMEs an opportunity to improve existing products and contribute to future releases of standards that define for example connectivity solutions and MCP features. 268 / 1,000 characters
Target group 3 Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland.	Shipping companies and pilots will be utilizing piloted services in their daily operations. Services will improve the safety of shipping and provide opportunities for shipping companies to optimize their operations in order to support sustainability. 250 / 1,000 characters

Durability of the output

MaDaMe consortium is ideally positioned with regard to the possibility to actually identify and develop technical services which will become global standards. Developing and deploying technical services for smart fairways that are also adopted as international standards is the ideal outcome of the project to guarantee the durability of results. Eventually all vessels visiting the BSR region would be able to utilise the Digital navigational services such as navigational warnings and notices to mariners, and the services would likewise eventually be implemented in other regions of the world – with a global positive effect on environmental protection and carbon footprint.

From the authorities point-of-view secure and operationally solid digital navigational service will be included in the service portfolio, where it will funded as everyday operation and with service fees from customers utilizing services.

917 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: Piloting and evaluating solutions						
A.2.1: Pilot: Digital Navigational Information						
O.2.1: Digital navigational services						

5.6.7 This deliverable/output contains productive or infrastructure investment ☑

	Investment no.	I2.1_1

Title
Development of VDES/MMS gateway
44 / 100 characters

Description
The requirements for digital services over VDES and MCP/MMS is expected to cause modifications to the Sternula gateway in order to carry out pilots in 2.1 (and 2.2). The gateway has been developed by space/maritime software provider Gatehouse, who is expected to carry out such modifications under instruction by Sternula.
335 / 500 characters

Country
Denmark

Responsible project partner(s)
PP 6 - Sternula

Justification
The project will implement digital maritime services for the smart fairway. It is planned to exploit MCP/MMS as the data transportation method, and use a mix of connectivity options, including VDES over satellite. For this to be available in the pilots, the described modifications are needed.
306 / 500 characters

Transitional relevance
The VDES/MCP gateway provides access to a global satellite network. VDES is a global standard defined in ITU recommendation M.2092.
144 / 500 characters

Benefits
The modifications will enable the digital solutions developed in the MaDaMe project, offering digitalisation and optimization of maritime authority processes.
171 / 500 characters

Location
Sternula, Denmark | Nordjylland
30 / 250 characters

Location ownership
Sternula, Denmark
30 / 250 characters

Ownership
Sternula, Denmark
30 / 500 characters

Maintenance
Sternula, Denmark
30 / 500 characters

Climate proofing
☑ Ensured ☐ N/A

WP 2 Group of activities 2.2

5.6.1 Group of activities leader

Group of activities leader PP 7 - NavSim Poland Ltd.

A 2.2

5.6.2 Title of the group of activities

Pilot: Digital Aids to Navigation

33 / 100 characters

5.6.3 Description of the group of activities

Aids to Navigation (AtoN) are used to mark safe waters and to help mariners in determining their position with respect any navigational hazards. A virtual (digital) aid to navigation itself does not physically exist unlike buoys and beacons but comprises a signal broadcast to a location in a waterway. Currently virtual AtoN's are primarily provided to ships using AIS messages. In the future, other means of transmission and presentation may evolve, the data model and a technical service specification for an AtoN information service are actively developed by IALA and IHO as the S-125 standard.

Adjusting the intensity of lights on physical AtoN's or deploying virtual AtoN's automatically when visibility is reduced could enhance the situational awareness of the marines and improve the safety of navigation. Physical AtoN's could also be equipped with sensors that can collect information of the environmental conditions on fairway. This information can be used as part of the automatic adjustment of the physical or virtual AtoN's.

As a basis for transferring solutions in WP3, this GoA is focused on the piloting services within the framework of the S-125 standard. For the first step, building on the results of WP1, this GoA envisions performance analysis of technical tests. Typical technology-dependent characteristics have to be evaluated during the piloting services operation phase and operational parameters have to be defined to enable the definition and basic requirements for a nominal service operation within the S-125 framework. The Smart Fairway data offering and the S-125 system architecture will be tested and iteratively discussed by all project partners and external stakeholders. It is especially important here, that the competences of system providers, device manufacturers and users represented in this project are brought together.

A measurement campaign will be conducted to test the piloting services, the hybrid communication system and other elements of the MaDaMe projects solutions. This GoA will test the Digital AtoN services in the testbed area of the Baltic Sea (Finland, Poland) utilizing the hybrid communication system and Maritime Connectivity Platform prepared in GoA 1.3 and GoA 1.4, respectively. The applications, focused on the S-125 framework, will be developed for a selected group of end-users (testers). Some examples of testing scenarios for MaDaMe piloting services include emergency virtual AIS AtoN (V-AIS) deployment, message relay and chaining, geofencing, distribution of hydro-met data, and other use of V-AIS aid to navigation. Piloting services will also test reporting modes for AIS AtoN messages, using AIS/VDES for urgent, temporary and dynamic information, including scenarios for winter-season, periods of ice risk, and changes to buoys (buoy adrift, no topmark, no light, and replacement scenario). The final list of Smart Fairway data offering will be established based on results of the D1.1.

2,971 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 2.2

Title of the output

Digital Aids to Navigation services

35 / 100 characters

Description of the output

The Output is piloted Digital Aids to Navigation (AtoN) services ready to be transferred to target groups in WP3. AtoN is a device, system or service, external to vessels, designed and operated to enhance safe and efficient navigation of individual vessels and/or vessel traffic. The purpose of physical AtoN's, such as buoys and deacons, is to mark safe waters and help mariners in determining their position with respect to land or any navigational hazard or hidden danger. A virtual (digital) aid to navigation itself does not physically exist unlike buoys and beacons but comprises a signal broadcast to a location in a waterway.

"Ready to be transferred" means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. The output will be compliant with the current version S-125 standard. Output provides input also for the standardization of connectivity (D1.3), the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation.

TRL level of the Output will be 8-9 depending of components.

Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows:
D1.1: The final list of Smart Fairway data offering
D1.2: The S-125 standard is focused on the maritime navigational services including virtual AtoN for temporary and seasonal marks as well as local AIS application-specific messages. Virtual AtoN's can provide early notification to the mariner of urgent, temporary or dynamic information, this could provide valuable additional element to the information provided in Navigational Warnings, which are piloted in GoA 2.1. Also the automatic adjustment of the physical or virtual AtoN's based on the weather conditions and traffic situation will be piloted in this GoA. This Output includes also adjustments to existing hardware equipment e.g. Portable Pilot Units and virtual AIS AtoN generators, as well as firmware and software of the adjusted equipment in order to prepare the existing devices to support the piloting services and scenarios.
D1.3: Utilizing the hybrid communication system based on the Maritime Connectivity Platform MCP and utilizing various communication links, including VDES, AIS, cellular and satellite, the consortium partners, within this GoA, will perform practical real-life test scenarios of the Digital AtoN services. This Output includes also adjustments to existing AIS/VDES receivers.
D1.4: The service itself will be based on the MCP, which is used for service registry, identity management, and trust system. The issue of cybersecurity in the context of S-125 will also be addressed.

Field test results are evaluated in cooperation with mariners and the Output is adjusted service based on the evaluation.

2,986 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe.	Authorities will add the piloted digital AtoN service to their offering portfolio and implement required infrastructure investments. Authorities will be able to promulgate the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. 387 / 1,000 characters
Target group 2 Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland.	SMEs will have business opportunities in developing technical solutions for services and AtoN devices. Piloting will provide SMEs an opportunity to improve existing products and contribute to future releases of standards that define for example virtual buoys, connectivity solutions and MCP features. 300 / 1,000 characters
Target group 3 Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland.	Shipping companies and pilots will be utilizing piloted services in their daily operations. Services will improve the safety of shipping and provide opportunities for shipping companies to optimize their operations in order to support sustainability. Virtual AtoN can provide early notification to the mariner of urgent, temporary or dynamic information, which can prevent accidents. 383 / 1,000 characters

Durability of the output

MaDaMe consortium is ideally positioned with regard to the possibility to actually identify and develop technical services which will become global standards. Developing and deploying technical services for smart fairways that are also adopted as international standards is the ideal outcome of the project to guarantee the durability of results. Eventually all vessels visiting the BSR region would be able to utilise Digital AtoN services for locating marked safe waters and determining their position with respect any navigational hazards. Physical AtoN's could also be equipped with sensors that can collect information of the environmental conditions on fairway. This information can be used as part of the automatic adjustment of the physical or virtual AtoN's. From the authorities point-of-view secure and operationally solid digital AtoN service will be included in the service portfolio, where it will funded as everyday operation and with service fees from customers utilizing services.

997 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: Piloting and evaluating solutions						
A.2.2: Pilot: Digital Aids to Navigation						
O.2.2: Digital Aids to Navigation services						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 2 Group of activities 2.3

5.6.1 Group of activities leader

Group of activities leader PP 5 - Fintraffic VTS ltd

A 2.3

5.6.2 Title of the group of activities

Pilot: VTS Digital Information

30 / 100 characters

5.6.3 Description of the group of activities

This GoA focuses on piloting the digital services offered by the Vessel Traffic Service (VTS). VTS is a service implemented by a competent authority to improve the safety and efficiency of shipping and to protect the environment. The service must have the ability to interact with traffic and react to evolving traffic situations in the VTS area. The purpose of the services piloted in this GoA is to support the provision of VTS to ships by providing information in a digital format. This GoA pilots the elements prepared in WP1 of the MaDaMe project and pilots the services in both laboratory and real marine conditions. Under this GoA, WP1 services will be piloted for deployment within WP3, where they will be transferred to Target Groups.

For the first step, building on the results of WP1, this GoA envisions performance analysis of technical tests. Typical technology-dependent characteristics have to be evaluated during the piloting services operation phase and operational parameters have to be defined to enable the definition and basic requirements for a nominal service operation within the standardized S-200 framework. The technical components D1.2 D1.3 and D1.4 are used in the piloting.

The digital implementations of the services to be piloted will be further defined within GoA 1.2 and GoA 1.3 of WP1, taking into account the cybersecurity aspects of GoA 1.4. The digital information provided in these services can be delivered by several different means, such as Automatic Identification System (AIS) or VHF data exchange system (VDES) messages, by IP-based communication and using S-100 based product specifications and other international standards. The product specifications to be piloted will include the S-212 VTS DIGITAL INFORMATION SERVICE In accordance with IALA Guide 1089 on the provision of vessel traffic services, the guidelines are for the provision of various services provided by the Vessel Traffic Service (VTS) and the S-210 INTER VTS EXCHANGE FORMAT. These services are digital information services for the electronic exchange of VTS data between VTS and ships and land users in the VTS area.

The piloting will be carried out using the VTS system (GoA 1.2), MCP (GoA 1.4) and the VDES infrastructure (GoA 1.3). Information services are published for users and target groups at sea and on land in Finland by Fintraffic VTS. According to the feedback collected on the basis of the pilotage, the services are adjusted to meet the needs of the users.

Transnational cooperation is required to utilize connectivity solutions and MCP. The customers of the VTS information are global, and the vessels that use the services are vessels using the maritime route, regardless of their nationality. The services developed are internationally compatible and the development work is utilized in international forums.

2,849 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ☐

O 2.3

Title of the output

Digital VTS services

20 / 100 characters

Description of the output

The Output is piloted is ready-made and tested electronic VTS services for ships and other maritime operators that can be integrated into the operational VTS system. In practice this means that authorities will be able to provide the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process.

In WP3, the experience of the pilot will be taken in various forms to the comittees responsible for the development of the IALA S-200 standards. Specifically, services will be S-210 for the electronic exchange of VTS data between VTS and ships and land users in the VTS area, and S-212, which provides guidance on the delivery of different types of services provided by a VTS. The standard is designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with traffic and to respond to traffic situations developing in the VTS area.

Output provides input also for the standardization of connectivity (D1.3), as the Output may stimulate consequential revisions of the standards of some communication systems (particularly VDES), and MCP (D1.4) components based on the service implementation.

TRL Level of the Output is 8-9 for different components.

Output contains adjusted elements from D1.1, D1.2, D1.3 and D1.4 as follows:
D1.1: End-user requirements for the VTS services.
D1.2: Dynamic data offering is based on S-200 standard series.
D1.3: The digital information provided in these services can be delivered by several different means, such as Automatic Identification System (AIS) or VHF data exchange system (VDES) messages, by IP-based communication and using S-100 based product specifications
D1.4: The service will utilize the MCP, which is used for service registry and identity management, and trust system. The issue of cybersecurity in the context of S-210 and S-212 will also be addressed.

Field test results are evaluated in terms of improved safety, possibility to optimize operations for sustainability, and usability for ship crew. Evaluation is performed in cooperation with mariners and the Output is adjusted service based on the evaluation. Smart Fairway services must be available fluently onboard of vessels, which have numerous information systems, and therefore usability of the smart fairway information needs to be carefully considered.

VTS services that are transferred to operation will be maintained and supported by Fintraffic VTS operational budget.

2,623 / 3,000 characters

Target groups and uptake of the solution presented in this output

Target groups	How will this target group apply the output in its daily work?
Target group 1 National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe.	Authorities will add the piloted VTS service to their offering portfolio and implement required infrastructure investments. Authorities will be able to promulgate the service for end-user ships and that corresponding input can be provided to international standardization. The service may be modified and updated after the project based on the result of standardization process. 378 / 1,000 characters
Target group 2 Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland.	SMEs will have business opportunities in developing technical solutions for VTS services. Piloting will provide SMEs an opportunity to improve existing products and contribute to future releases of standards that define for example connectivity solutions and MCP features. 272 / 1,000 characters
Target group 3 Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland.	Shipping companies and pilots will be utilizing piloted VTS services in their daily operations. Services will improve the safety of shipping and provide opportunities for shipping companies to optimize their operations in order to support sustainability. 254 / 1,000 characters

Durability of the output

MaDaMe consortium is ideally positioned with regard to the possibility to actually identify and develop technical services which will become global standards. Developing and deploying VTS services for smart fairways that are also adopted as international standards is the ideal outcome of the project to guarantee the durability of results. Eventually all vessels visiting the BSR region would be able to utilise the Digital VTS services, and those services would likewise eventually be implemented in other regions of the world – with a global positive effect on environmental protection and carbon footprint.

Piloting is particularly important from the point of view of the transfer of VTS services to post-project production. Fintraffic VTS has planned the operational utilization of the VTS information services to be implemented after the end of the project.

VTS services that are transferred to operation will be maintained and supported by Fintraffic VTS operational budget.

984 / 1,000 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.2: Piloting and evaluating solutions						
A.2.3: Pilot: VTS Digital Information						
O.2.3: Digital VTS services						

5.6.7 This deliverable/output contains productive or infrastructure investment ☑

	Investment no.	I2.3_1

Title

VTS service development as S-212, S-124 and S-210 compliant

72 / 100 characters

Description

Development of the S-212 VTS DIGITAL INFORMATION SERVICE, S-124 Navigational Warnings and S-210 INTER VTS EXCHANGE FORMAT compatible services. Services shall be implement based on the enhanced specifications to the Fintraffic VTS environment. Testing and piloting of the services shall take place in the reference systems and after succesful piloting developed services will be transferred to operation.

404 / 500 characters

Country

Finland

Responsible project partner(s)

PP 5 - Fintraffic VTS ltd

Justification

"Fintraffic VTS justifies the investment because FIntraffic VTS is responsible for VTS's operations in Finland.
Fintraffic VTS is also responsible for the implementation of the services to be developed after the end of the project."

246 / 500 characters

Transitional relevance

"The customers of the information services provided by Fintraffic VTS to its vessels are global, and the vessels that use the services are vessels using the maritime route, regardless of their nationality. The services developed are internationally compatible and the development work is utilized in international forums."

337 / 500 characters

Benefits

"The developed services will benefit the target groups of the project and all maritime users in general.
Services increase the safety of maritime users, situational awareness and improve the sustainable development of maritime transport. "

254 / 500 characters

Location

Finland, all sea fairways

38 / 250 characters

Åland
Helsinki-Uusimaa
Kymenlaakso
Pohjanmaa
Satakunta
Varsinais-Suomi

Location ownership

Location are owned by Fintraffic VTS, services are to be deployed to Fintraffic VTS computer rooms

111 / 250 characters

Ownership

"Fintraffic VTS will own the productive investment after the project and utilize it to provide eNavigation and smart fairway services to the target groups"

169 / 500 characters

Maintenance

"Fintraffic VTS is an operational VTS service provider in Finland. Productive investments will be transferred to operational VTS system services and will maintained by Fintraffic VTS as part of the VTS maintenance."

229 / 500 characters

Climate proofing

☑ Ensured ☐ N/A

Work package 3

5.1 Transferring solutions

5.2 Aim of the work package

In Work Package 3, communicate and transfer the ready solutions to your target groups. Plan at least one year for this work package to transfer your solutions to the target groups, considering their respective needs. Select suitable activities to encourage your target groups to use the solutions in their daily work.
Organise your activities in up to five groups of activities. Describe the deliverables and outputs as well as present the timeline.

5.3 Work package leader

Work package leader 1 PP 3 - Digital Maritime Consultancy

Work package leader 2 PP 1 - Turku University of Applied Sciences

5.4 Work package budget

Work package budget 25%

5.5 Target groups

	Target group	How do you plan to reach out to and engage the target group?
1	National public authority Maritime authorities that provide fairway services including VTS and authorities implementing PA Safe Actions. Project actions concern all BSR countries. Participating countries in the project partnership are Finland, Denmark, Sweden and Poland. Finland and Denmark are leading EUSBSR PA Safe. 293 / 500 characters	The national authorities are responsible for arranging safe and efficient fairway services. Thus, they are the key players in planning, defining and developing new smarter services for the maritime traffic. In the MaDaMe project we have been able to involve responsible authorities from several BSR countries. Some of them are involved in the project as partners and thus actively participate in development activities. Authorities in all BSR countries have been reached out and made aware of the project already in the preparation phase. In addition, project produces input papers to international groups such as IMO, HELCOM, IALA, IHO, and MCC, where also target groups are active. Target group will be also engaged in industry events such as Nor-Shipping and Åland Maritime Days. 784 / 1,000 characters
2	Small and medium enterprise SMEs have a significant role in providing products such as equipment, information systems, connectivity solutions, and cybersecurity features for the implementation and utilization of the Smart Fairway services provided by authorities. Participating countries in the project partnership are Denmark and Poland. 310 / 500 characters	Key companies of smart fairway enablers are partners in this project. Collaboration with authorities and public service providers speeds up time to market. Generally work towards standardized solutions and aim to make impact to IALA's and IMO's processes opens new opportunities for all SME's in the field of businesses. In addition, project produces input papers to international standardization such as IALA, IHO, and MCC, where also target groups are active. Target group will be also engaged in industry events such as Nor-Shipping and Åland Maritime Days. 560 / 1,000 characters
3	Large enterprise Shipping companies are the most important end-users for Smart Fairway services and they have routes between all BSR countries. Participating countries in the project partnership are Denmark and Finland. 202 / 500 characters	Shipping companies are present in project partnership. All services provided by authorities will be eventually utilized by shipping companies. Thus, their views are crucial in IMO, HELCOM, IALA, IHO, and MCC. Target group will be also engaged in industry events such as Nor-Shipping and Åland Maritime Days. 308 / 1,000 characters

5.6 Activities, deliverables, outputs and timeline

No.	Name
3.1	**Contributions to international organizations and standardization**
3.2	**Communication and Stakeholder engagement**
3.3	**Future directions for Smart Fairways**

WP 3 Group of activities 3.1

5.6.1 Group of activities leader

Group of activities leader PP 3 - Digital Maritime Consultancy

A 3.1

5.6.2 Title of the group of activities

Contributions to international organizations and standardization

64 / 100 characters

5.6.3 Description of the group of activities

Standardization is the most effective way of transferring Deliverables from WP1 and Outputs from WP2 to the all relevant stakeholders. Global standards ensure that equipment and system required for implementing Smart Fairway services are interoperable. MaDaMe project will contribute to all relevant organizations. The goal of this Group of Activity will be to have Outputs of WP2 as finalised standardised technical service specifications. However, many of these processes exceed the project duration.

IALA (International Association Of Marine Aids To Navigation And Lighthouse Authorities) is the most important international organisation through which technical services from the project can be standardised. IALA is a non-profit, international technical association. Established in 1957, it gathers together Marine Aids to Navigation authorities, manufacturers, consultants, and, scientific and training institutes from all parts of the world and offers them the opportunity to exchange and compare their experiences and achievements. Members of the MaDaMe consortium are already actively involved in relevant IALA committees (ARM - AtoN Requirements and Management, ENAV - e-Navigation Information Services and Communication and VTS - Vessel Traffic Services). Through this involvement - the results of the MaDaMe project will be channeled directly to these committees, minimising the time for adoption to actual standards. Active organizations from MaDaMe consortium are DMC, Fintraffic, NIT, FTIA, Sternula, DMA, SMA, and MOG.

MCC (Maritime Connectivity Platform Consortium) is another important organization for MaDaMe. The solutions developed in the MaDaMe project will be using the Maritime Connectivity platform (MCP), and thus it will be important for the project to ensure that the future development of the MCP will support the MaDaMe solutions to the highest degree. Several MaDaMe partners are already deeply involved in the various working groups of the MCC - and will continue to influence the development of the MCP. Some needed features may be implemented as an integral part of the MCP - if they are deemed sufficiently generic - whereas others may need to be implemented as extensions to the MCP. Active organizations from MaDaMe are DMC, Sternula, and Fintraffic.

Additionally, standardization activities that affect MaDaMe are followed closely. For example IHO (The International Hydrographic Organization) is an intergovernmental organization that works to ensure all the world's seas, oceans and navigable waters are surveyed and charted. Established in 1921, it coordinates the activities of national hydrographic offices and promotes uniformity in nautical charts and documents. It issues survey best practices, provides guidelines to maximize the use of hydrographic survey data and develops hydrographic capabilities in Member States.

2,868 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 3.1

Title of the deliverable

Report on standardization activities

36 / 100 characters

Description of the deliverable

The deliverable transfers O2.1, O2.2, O2.3 to target groups by standardization inputs. The deliverable is a report that collects all input and analyzes the project impact.

The main results of the deliverable in this regard will be technical service specifications. Results from the development of such specifications will be contributed to IALA continuously through the project at every stage. The deliverable contains following standardization inputs, which correspond to the project WP structure:

- Identification of services (WP1) - It will be important to include even the first step of identifying services - since it will be much more difficult to introduce more mature material at a later stage.
- Draft specifications (WP1) - This phase includes the definition of all required technical components to implement services
- Implementation of prototype (WP2) - The validation and verification of the draft specification requires prototype implementations
- Tests (WP2) - Pilots with prototypes provide input how to adjust components for the final specification
- Final specifications

Specifically two main committees to contribute in IALA are
- ENAV committee that focuses on generic digital solutions within IALA's domain. Several standards/guidelines from this committee will be covered, including G1128 'the specification of e-navigation technical services' and G1157 'Web Service Based S-100 Data Exchange'. Several project members are following and contributing to this committee, and will continue to do so based on the Outputs of the WP2.
- VTS committee; many of the smart fairway services to be developed in the project are VTS services – and thus will be standardised through the IALA VTS committee. As in the ENAV committee, several MaDaMe partners are actively involved and are also leading relevant task groups within the VTS committee.

1,861 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: Transferring solutions						
A.3.1: Contributions to international organizations and standardization						
D.3.1: Report on standardization activities						

5.6.7 This deliverable/output contains productive or infrastructure investment

☐

WP 3 Group of activities 3.2

5.6.1 Group of activities leader

Group of activities leader PP 1 - Turku University of Applied Sciences

A 3.2

5.6.2 Title of the group of activities

Communication and Stakeholder engagement

40 / 100 characters

5.6.3 Description of the group of activities

Dissemination activities will be performed to all relevant stakeholders to raise awareness on the possibilities that smart fairway solution provides. Training materials for target groups and end users, such as seafarers, will be provided in order to make solutions easily available for ships. Solutions are introduced to target groups in the following ways:
-Dissemination is performed in relevant organizations, where stakeholders are present. MaDaMe partners are participating in different working groups in IMO and HELCOM. IMO is the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. HELCOM is an intergovernmental organization bridging policy and science on matters related to the environment of the Baltic Sea.
-Associated organizations Traficom and DMA are leading EUSBSR PA Safe, which gives the opportunity to input results directly to the Action Plan.
-Experience exchange is the tool to encourage external stakeholders to start utilizing Smart Fairway services in all BSR countries. Best practices from piloting are shared. The optimal solutions for Smart Fairway services can only be found in cross-cutting cooperation and this activity is providing the discussion platform for all stakeholders and participants outside project partnership. The goal is to find synergies among regional and national actors and between public and private sector actors who will lead to joint actions of common planning and strategy development. To provide a stakeholder dialogue it is crucial to identify main challenges, bottlenecks and provided solutions from other WP's. It means that all project partners are involved in implementation of this activity and it plays a significant role to achieve one of the main objectives - finding key-players and defining different roles of organizations.
-Transnational workshops and seminars - MaDaMe project will arrange yearly seminars. The first seminar (early 2023) raises awareness of Smart Fairway development goals. Second seminar (mid 2024) presents results from WP1 and initial findings from pilots in WP2. Final seminar (late 2025) will wrap-up project findings and gives a roadmap ahead how project outputs will be part of Smart Fairway offering by authorities after the project end. Special workshops will be organized with key stakeholders during the project to get continuous feedback and also to coordinate efforts with other on-going project and activities.

To facilitate the uptake of Smart Fairway solutions by external stakeholders training materials are produced. The material will focus on description of the smart fairway, its benefits and how to use it from seafaring perspective. The material can be used freely after the project has ended. The material can be used by maritime education institutions or other training organizations. Material will be disseminated online.

2,943 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 3.2

Title of the deliverable

Report on dissemination activities

35 / 100 characters

Description of the deliverable

The deliverable is a report that contains performed dissemination activities and their impact analysis. Evaluation is based on the dissemination plan produced in the beginning of the project by the management WP.

Training materials for supporting project solution (the set of Smart Fairway services) uptake will be provided:
1) Video for general audience: An information video to introduce the smart fairway and raise awareness. This material explains briefly what smart fairway is, how it helps the seafaring and how smart fairway works. The basic guidance booklet aims to attract attention and lead viewer to get acquainted with the training material.
2) Informative booklet: An informative booklet for target groups to introduce the smart fairway concept. The booklet is shared with maritime authorities, public service providers, technology developers, shipping companies, and pilot. The material will be disseminated with other BSR countries not involved in the project.
3) Information material for target groups: An information material about the smart fairway concept, consisting of description of the smart fairway concept and its purpose, benefits, and utilization.
4) Training material in PowerPoint presentation format. The presentation can be used to demonstrate the smart fairway in other future projects or other events apart of the MaDaMe.

The deliverable supports Output O2.1, O2.2, and O2.3 transfer to Target groups.

1,437 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: Transferring solutions						
A.3.2: Communication and Stakeholder engagement						
D.3.2: Report on dissemination activities						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

WP 3 Group of activities 3.3

5.6.1 Group of activities leader

Group of activities leader PP 2 - Novia University of Applied Sciences

A 3.3

5.6.2 Title of the group of activities

Future directions for Smart Fairways

36 / 100 characters

5.6.3 Description of the group of activities

Smart fairway concept is wide and MaDaMe project will develop and pilot the set of the services. In addition to deployment and maintaining plan of piloted services in WP2, this Group of Activity ensures that the entire smart fairway concept will be further developed. The concept takes into account the needs of human and financial resources of smart fairway, from both the end user (shipping company) and the smart fairway service provider points of view.

In this activity the D1.1 is revisited based on Outputs O2.1, O2.2, and O2.3. and feedback from other project and general progress in the standardization activities will be taken into account.

MaDaMe project creates a smart fairway roadmap that consists of:
1) Service deployment plan focusing on services prepared in WP1 and piloted in WP2. This provides target groups practical information how to uptake solutions.
2) Guidelines for maintaining Smart Fairway. Based on maturity analysis, a life cycle of smart fairway is defined, reflecting the project outcomes and being aware of future development. Special attention is given to cybersecurity as vulnerabilities are likely to found after the project durations and it is essential that authorities will be able to react swiftly to emerging cyber threats.
3) Development plan for smart fairway concept after the project duration. Future development includes potentially changes in legislation and advances in shipping automation. The plan includes description how Smart Fairway services should support remote operations and autonomous ships. Focus of MaDaMe is not remote controlled and autonomous ships, but in this roadmap further development of the services for autonomous vessels will be considered.

The activities will be performed in transnational setting involving also external stakeholders.

1,812 / 3,000 characters

5.6.4 This group of activities leads to the development of a deliverable ✔

D 3.3

Title of the deliverable

Smart Fairway roadmap

21 / 100 characters

Description of the deliverable

This deliverable is a report entitled "Smart Fairway roadmap", which serves also as durability plan on how Outputs from WP2 will be utilized, maintained, and further developed after the project ends. Roadmap includes also the recognized services in WP1 GoA 1.1. that were not prepared and piloted in the project. The roadmap includes the developing and maintaining plan for the developed and piloted services. The roadmap contains all components required to implement smart fairway services, combinations of digital and data components to physical infrastructure. The roadmap takes into account the human and financial resources of smart fairway, from end user (shipping company) and smart fairway service provider points of view.

In addition, there is future oriented plan for smart fairway concept including autonomous shipping scenario. This deliverable bridges the Smart Fairway solution to a four-layer model corresponding on a common understanding for the degrees of Maritime Autonomous Surface Ships (MASS) used in regulatory scoping exercise by the Maritime Safety Committee in IMO. These degrees are:
Degree one: Ship with automated processes and decision support - Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated and at times be unsupervised but with seafarers on board ready to take control.
Degree two: Remotely controlled ship with seafarers on board - The ship is controlled and operated from another location. Seafarers are available on board to take control and to operate the shipboard systems and functions. In the case of remote pilotage the pilot is in remote operation center and seafarers operate the ship according to pilot instructions.
Degree three: Remotely controlled ship without seafarers on board
Degree four: Fully autonomous ship

Required Smart Fairway services are described for the each degree.

1,905 / 2,000 characters

Which output does this deliverable contribute to?

O.2.1:Digital navigational information;O.2.2:Digital navigational service;O.2.3:Digital VTS service

99 / 100 characters

5.6.6 Timeline

Period:	1	2	3	4	5	6
WP.3: Transferring solutions						
A.3.3: Future directions for Smart Fairways						
D.3.3: Smart Fairway roadmap						

5.6.7 This deliverable/output contains productive or infrastructure investment ☐

6. Indicators

Indicators

Output indicators				Result indicators		
Output indicators	**Total target value in number**	**Project outputs**	**Please explain how the solution presented in this output serves the target group(s).**	**Result indicator**	**Total target value in number**	**Please explain how organisations in the target groups within or outside the partnership will take up or upscale each solution.**
RCO 84 – Pilot actions developed jointly and implemented in projects	3	N/A	N/A	**RCR 104 - Solutions taken up or up-scaled by organisations**	3	During the WP3 implementation - Transferring the solutions the focus is given on standardization activities in IALA, IHO, and MCC. Also relevant working groups in IMO and HELCOM will be utilized. These are forums where the maximum amount of relevant stakeholders can be reached. After globally agreed specifications are created, companies and technology provides can start providing interoperable equipment and systems for all organizations willing to utilize Smart Fairway services. Dissemination activities will be performed to all relevant stakeholders to raise awareness on the possibilities that smart fairway solution provides. Training materials for target groups and end users, such as seafarers, will be provided in order to make solutions easily available for ships. Experience exchange is the tool to encourage external stakeholders to start utilizing Smart Fairway services in all BSR countries. Best practices from piloting are shared. Similar approach applies to all Outputs. 991 / 2,000 characters

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
		O.2.1: Digital navigational services	Piloted Digital navigational services include digital navigation warnings and notices to mariners. Authorities will be able to serve ships faster and more accurately when delivering warnings and other information to ships as the information will appear directly to ship navigational systems such as ECDIS. SMEs will have business opportunities in developing technical solutions for services. Piloting will provide SMEs an opportunity to improve existing products and contribute to future releases of standards that define for example connectivity solutions and MCP features. Shipping companies and pilots will be utilizing piloted services in their daily operations. Services will improve the safety of shipping and provide opportunities for shipping companies to optimize their operations in order to support sustainability. All target groups participate in standardization activities to make Output globally available. 923 / 1,000 characters

Output indicators	Total target value in number	Project outputs	Please explain how the solution presented in this output serves the target group(s).
RCO 116 – Jointly developed solutions	3	O.2.2: Digital Aids to Navigation services	Piloted Smart Fairway service "Digital Aids to Navigation" consists of utilization of for example virtual Aid-to-Navigation (AtoN) systems. Authorities will be able to serve ships dynamically and more accurately. The use virtual AtoN also reduces infrastructure costs as parts of fairways do not need physical installations. SMEs will have business opportunities in developing technical solutions for AtoN. Piloting will provide SMEs an opportunity to improve existing products and contribute to future releases of standards that define for example connectivity solutions and MCP features. Shipping companies and pilots will be utilizing piloted services in their daily operations. Services will improve the safety of shipping and provide opportunities for shipping companies to optimize their operations in order to support sustainability. All target groups participate in standardization activities to make Output globally available. 938 / 1,000 characters

Output indicators	Result indicators

Output indicator	Total target value in number	Result indicator	Total target value in number	Please describe what types of organisations are planned to actively participate in the project. Explain how this participation will increase their institutional capacity. These types of organisations should be in line with the target groups you have defined for your project.	
RCO 87 - Organisations cooperating across borders	16	PSR 1 - Organisations with increased institutional capacity due to their participation in cooperation activities across borders	50	Project partners and associated organisations	Target group of public national authorities from several different countries are involved in the project as associate partners with high interest. Other target groups, maritime technology industry SMEs and shipping companies (large enterprises) are represented as partners as well as associate partners. For national authorities the project provides solutions to offer new services to ships and seafarers. For SMEs the project provides opportunity to develop equipment or products for the authorities and ships. Shipping companies are able to increase operational safety and efficiency. Specifically, increased partner competences are the following: Authorities are responsible for planning and deploying services; SME companies provide components required by services: digital and virtual Aid-to-Navigation (Aton) devices, Maritime Connectivity Platform (MCP), new connectivity methods to reach ships such as VDES utilizing dedicated satellite connections, and cybersecurity. Shipping companies provide end-user requirements and possibility for pilots in the real environments. Project outputs facilitate target groups to achieve social environmental and economic goals by digitalization of fairway services for navigation, AtoN, and VTS via new information systems. 1,270 / 1,500 characters
				Other organisations	Other relevant organizations for project activities are all organizations that are part of shipping operations. For example, ports that are end-points for fairways and therefore important organizations to provide added value for MaDaMe project. Thus, they will be contacted during project activities. 300 / 1,500 characters

7. Budget

7.0 Preparation costs

Preparation Costs

Would you like to apply for reimbursement of the preparation costs?	No

7.1 Breakdown of planned project expenditure per cost category & per partner

No. & role	Partner name	Partner status	CAT1 - Staff	CAT2 - Office & administration	CAT3 - Travel & accommodation
1 - LP	Turku University of Applied Sciences	Active 22/09/2022	324,000.00	48,600.00	48,600.00
2 - PP	Novia University of Applied Sciences	Active 22/09/2022	304,000.00	45,600.00	45,600.00
3 - PP	Digital Maritime Consultancy	Active 22/09/2022	342,000.00	51,300.00	51,300.00
4 - PP	National Institute of Telecommunications	Active 22/09/2022	316,153.84	47,423.08	47,423.08
5 - PP	Fintraffic VTS ltd	Active 22/09/2022	157,000.00	23,550.00	23,550.00
6 - PP	Sternula	Active 22/09/2022	246,000.00	36,900.00	36,900.00
7 - PP	NavSim Poland Ltd.	Active 22/09/2022	249,000.00	37,350.00	37,350.00
8 - PP	Finnish Transport Infrastructure Agency	Active 22/09/2022	38,000.00	5,700.00	5,700.00
9 - PP	DFDS A/S	Active 22/09/2022	38,000.00	5,700.00	5,700.00
Total			2,014,153.84	302,123.08	302,123.08

No. & role	Partner name	CAT4 - External expertise & services	CAT5 - Equipment	CAT6 - Infrastucture & works	Total partner budget
1 - LP	Turku University of Applie	42,600.00	40,000.00	0.00	503,800.00
2 - PP	Novia University of Applie	16,000.00	1,500.00	0.00	412,700.00
3 - PP	Digital Maritime Consulta	9,000.00	5,000.00	0.00	458,600.00
4 - PP	National Institute of Telec	4,000.00	85,000.00	0.00	500,000.00
5 - PP	Fintraffic VTS ltd	247,000.00	0.00	0.00	451,100.00
6 - PP	Sternula	90,000.00	20,000.00	0.00	429,800.00
7 - PP	NavSim Poland Ltd.	20,000.00	15,000.00	0.00	358,700.00
8 - PP	Finnish Transport Infrastr	360,000.00	0.00	0.00	409,400.00
9 - PP	DFDS A/S	0.00	0.00	0.00	49,400.00
Total		788,600.00	166,500.00	0.00	3,573,500.00

7.1.1 External expertise and services

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value
4. National Institute	Events/meetings	CAT4-PP4-A-0	Conference fees 15 / 100 characters	No	2.2	2,500.00
4. National Institute	Other	CAT4-PP4-G-0	Promotion and publicity 23 / 100 characters	No	1.1 1.3 2.2	1,500.00
1. Turku University	Communication	CAT4-PP1-C-0	Communication materials 24 / 100 characters	No	1.1 3.2 3.3	25,000.00
1. Turku University	Events/meetings	CAT4-PP1-A-0	Seminar and other dissemination event organization 51 / 100 characters	No	1.1 3.1 3.2 3.3	12,000.00
1. Turku University	Events/meetings	CAT4-PP1-A-0	Project meeting costs 22 / 100 characters	No	N/A	5,600.00
8. Finnish Transport	Specialist support	CAT4-PP8-E-0	System architect 31 / 100 characters	No	1.2 2.1 2.2	60,000.00
8. Finnish Transport	IT	CAT4-PP8-B-0	Software development on Smart Fairway information services 73 / 100 characters	No	1.2 2.1 2.2	180,000.00
8. Finnish Transport	IT	CAT4-PP8-B-0	Development for Aids to Navigation sensors and information systems 81 / 100 characters	No	1.2 2.2	120,000.00
6. Sternula	Specialist support	CAT4-PP6-E-0	MMS proxy development with partner JSE 53 / 100 characters	No	1.3 2.1 2.2 2.3	35,000.00
	Total					788,600.00

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
2. Novia Universitv	IT	CAT4-PP2-B-1	ECDIS SDK License 18 / 100 characters	No	1.2 2.1	5,000.00	
2. Novia Universitv	IT	CAT4-PP2-B-1	Novia simulator utilization fee 32 / 100 characters	No	2.1 2.2 2.3	5,000.00	
2. Novia Universitv	Events/meetings	CAT4-PP2-A-1	Consortium meeting organization 32 / 100 characters	No	N/A	3,000.00	
2. Novia Universitv	Communication	CAT4-PP2-C-1	Training material 18 / 100 characters	No	3.2	3,000.00	
7. NavSim Poland L	Events/meetings	CAT4-PP7-A-1	Consortium meeting organization 31 / 100 characters	No	N/A	5,000.00	
7. NavSim Poland L	Project management	CAT4-PP7-D-1	Project management and financial/accounting reporting 53 / 100 characters	No	N/A	15,000.00	
5. Fintraffic VTS ltd	Specialist support	CAT4-PP5-E-1	VTS system expert support WP1 ja WP2 project activities 71 / 100 characters	No	1.3 3.1 3.3	35,000.00	
5. Fintraffic VTS ltd	IT	CAT4-PP5-B-1	VTS system development to implement maritime services based on S-212/124/210 formats 99 / 100 characters	Yes	I2.3_1	105,000.00	
5. Fintraffic VTS ltd	Specialist support	CAT4-PP5-E-1	Fintraffic VTS Maritime Connectivity Platform (MCP) development and deployment 93 / 100 characters	No	1.4 2.1 2.3	58,000.00	
	Total					788,600.00	

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
5. Fintraffic VTS ltd	Specialist support	CAT4-PP5-E-1	Technical support for WP2 pilot activities and transferring solutions to operations . 100 / 100 characters	No	2.1 2.2 2.3	45,000.00	
5. Fintraffic VTS ltd	Events/meetings	CAT4-PP5-A-2	Consortium meeting in Finland including stakeholder and target group engagement 94 / 100 characters	No	1.1 3.1 3.2	4,000.00	
3. Digital Maritime	National control	CAT4-PP3-F-2	National Control 17 / 100 characters	No	N/A	9,000.00	
6. Sternula	Specialist support	CAT4-PP6-E-2	MCP/VDES GW development with partner Gatehouse 61 / 100 characters	Yes	I2.1_1	55,000.00	
	Total					788,600.00	

7.1.2 Equipment

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
3. Digital Maritime	IT hardware and soft	CAT5-PP3-B-0	Computer for running and testing MCP components 48 / 100 characters	No	1.3 1.4	5,000.00	
4. National Institute	Laboratory equipmen	CAT5-PP4-D-0	RF analyzer 11 / 100 characters	No	1.3 2.1 2.2 2.3	21,000.00	
	Total					166,500.00	

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
4. National Institute	Laboratory equipmen	CAT5-PP4-D-0	RF amplifiers and radios 24 / 100 characters	No	1.3 2.1 2.2 2.3	8,000.00	
4. National Institute	Tools or devices	CAT5-PP4-F-0	RF antennas 12 / 100 characters	No	1.3 2.1 2.2 2.3	8,000.00	
4. National Institute	Other specific equip	CAT5-PP4-H-0	Materials (connectors, cables, modems) 38 / 100 characters	No	1.3 2.1 2.2 2.3	8,000.00	
1. Turku University	Other specific equip	CAT5-PP1-H-0	Piloting connectivity equipment for VDES and hybrid radio solution 66 / 100 characters	No	1.3 2.1 2.2 2.3	40,000.00	
4. National Institute	IT hardware and soft	CAT5-PP4-B-0	System for digital navigational warnings:1x on-shore server 2xclients, 2xworkstations 100 / 100 characters	No	1.3 2.1 2.2	40,000.00	
6. Sternula	Other specific equip	CAT5-PP6-H-0	MMS proxy units (10 pieces) manufactured as specified. 54 / 100 characters	No	1.3 1.4 2.1 2.2 2.3	20,000.00	
2. Novia University	IT hardware and soft	CAT5-PP2-B-0	Workstation for modeling and calculation processes in the project. 66 / 100 characters	No	1.2 2.1 2.2 2.3	1,500.00	
7. NavSim Poland L	IT hardware and soft	CAT5-PP7-B-1	2x V-AIS generators, 4x AIS AtoN Type1/3 receivers, 3x client machines, 3x remote client machines 98 / 100 characters	No	1.2 1.3 2.1 2.2 2.3	15,000.00	
	Total					166,500.00	

7.1.3 Infrastructure and works

Contracting partner	Group of expenditure	Item no.	Specification	Investment item?	Group of activities no.	Planned contract value	
Please select	Please select	CAT6-PP--01	0 / 100 characters	Please select		0.00	
	Total					0.00	

7.1.4 Investment summary

Investment item no.	Investment title	Total planned value
I2.1_1	Development of VDES/MMS gateway	55,000.00
I2.3_1	VTS service development as S-212, S-124 and S-210 compliant	105,000.00

Investment no. I2.1_1 - Development of VDES/MMS gateway

Contracting partner	Planned contract value
6. Sternula	55,000.00

Investment no. I2.3_1 - VTS service development as S-212, S-124 and S-210 compliant

Contracting partner	Planned contract value
5. Fintraffic VTS ltd	105,000.00

7.2 Planned project budget per funding source & per partner

No. & role	Partner name	Partner status	Country	Funding source	Co-financing rate [in %]	Total [in EUR]	Programme co-financing [in EUR]	Own contribution [in EUR]	State aid instrument
1-LP	Turku University of Applied Sciences	Active 22/09/2022	FI	ERDF	80.00 %	503,800.00	403,040.00	100,760.00	For each partner, the State aid relevance and applied aid measure are defined in the **State aid section**
2-PP	Novia University of Applied Sciences	Active 22/09/2022	FI	ERDF	80.00 %	412,700.00	330,160.00	82,540.00	
3-PP	Digital Maritime Consultancy	Active 22/09/2022	DK	ERDF	80.00 %	458,600.00	366,880.00	91,720.00	
4-PP	National Institute of Telecommunications	Active 22/09/2022	PL	ERDF	80.00 %	500,000.00	400,000.00	100,000.00	
5-PP	Fintraffic VTS ltd	Active 22/09/2022	FI	ERDF	80.00 %	451,100.00	360,880.00	90,220.00	
6-PP	Sternula	Active 22/09/2022	DK	ERDF	80.00 %	429,800.00	343,840.00	85,960.00	
7-PP	NavSim Poland Ltd.	Active 22/09/2022	PL	ERDF	80.00 %	358,700.00	286,960.00	71,740.00	
8-PP	Finnish Transport Infrastructure Agency	Active 22/09/2022	FI	ERDF	80.00 %	409,400.00	327,520.00	81,880.00	
9-PP	DFDS A/S	Active 22/09/2022	DK	ERDF	80.00 %	49,400.00	39,520.00	9,880.00	
Total ERDF						3,573,500.00	2,858,800.00	714,700.00	
Total						3,573,500.00	2,858,800.00	714,700.00	

7.3 Spending plan per reporting period

	EU partners (ERDF)		Total	
	Total	Programme co-financing	Total	Programme co-financing
Period 1	475,414.00	380,331.20	475,414.00	380,331.20
Period 2	631,187.00	504,949.60	631,187.00	504,949.60
Period 3	805,456.00	644,364.80	805,456.00	644,364.80
Period 4	728,097.00	582,477.60	728,097.00	582,477.60
Period 5	515,389.00	412,311.20	515,389.00	412,311.20
Period 6	417,957.00	334,365.60	417,957.00	334,365.60
Total	3,573,500.00	2,858,800.00	3,573,500.00	2,858,800.00