NAVELINK

Developer forum

25-04-2024

DocId: 0189
Version: v1.0

Navelink.org

Agenda

1) Navelink Platform status & update

2) Navelink Roadmap (Head of concept Navelink)

3) Service development discussions & information
   a) Forum service developers (Each developer)
   b) Forum security and interoperability (Each developer)

4) Overview of Navelink usage

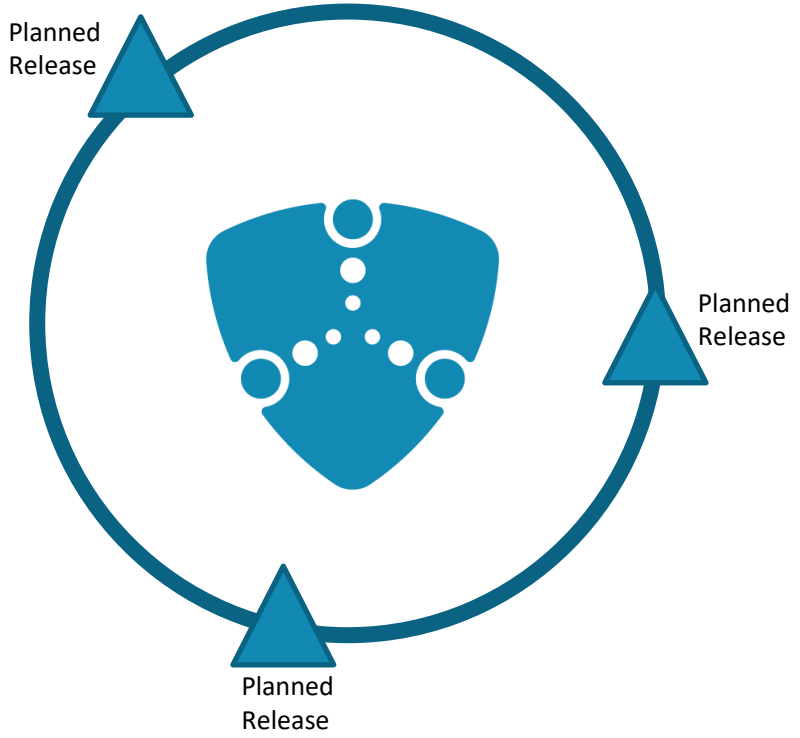
5) Q&A
   a) New questions (All)

6) Presentation – Route/Route exchange and the road to S421 by John-Morten Klingsheim (Kystverket/ Norwegian Costal Administration)

7) Closing remarks

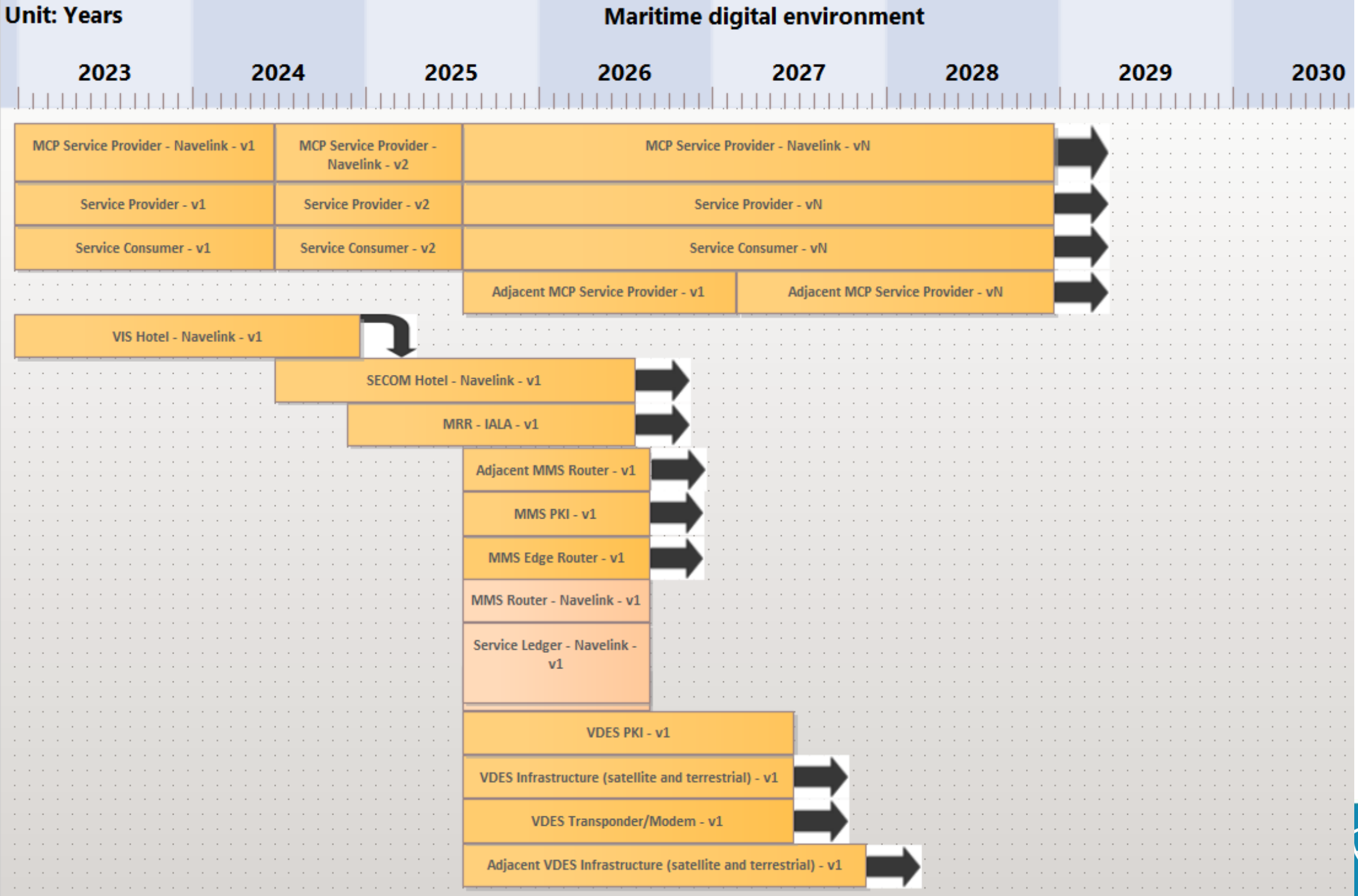
1) Navelink Platform status & update

- Since the last meeting:
  - Work on implementing SECOM Hotel to DEV and TEST
    - *Due to illness and unforeseen obstacles, the implementation of the SECOM Hotel in DEV and TEST was delayed with the new estimated finish date of the implementation being sometime next week (v.18)*
- Current work:
  - Deep analysis on what long-term effects the EU sanctions will have on the MCP system
  - Analysis on the updated NIST directive and its consequences on Navelink and the MCP system



Received questions

-


Unit: Years
Maritime digital environment
2023
2024
2025
2026
2027
2028
2029
2030
MCP Service Provider - Navelink - v1
MCP Service Provider - Navelink - v2
MCP Service Provider - Navelink - vN
Service Provider - v1
Service Provider - v2
Service Provider - vN
Service Consumer - v1
Service Consumer - v2
Service Consumer - vN
Adjacent MCP Service Provider - v1
Adjacent MCP Service Provider - vN
VIS Hotel - Navelink - v1
SECOM Hotel - Navelink - v1
MRR - IALA - v1
Adjacent MMS Router - v1
MMS PKI - v1
MMS Edge Router - v1
MMS Router - Navelink - v1
Service Ledger - Navelink - v1
VDES PKI - v1
VDES Infrastructure (satellite and terrestrial) - v1
VDES Transponder/Modem - v1
Adjacent VDES Infrastructure (satellite and terrestrial) - v1

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Connectivity - Today

Describes current situation (2023/2024) with VIS Hotel

Current connectivity

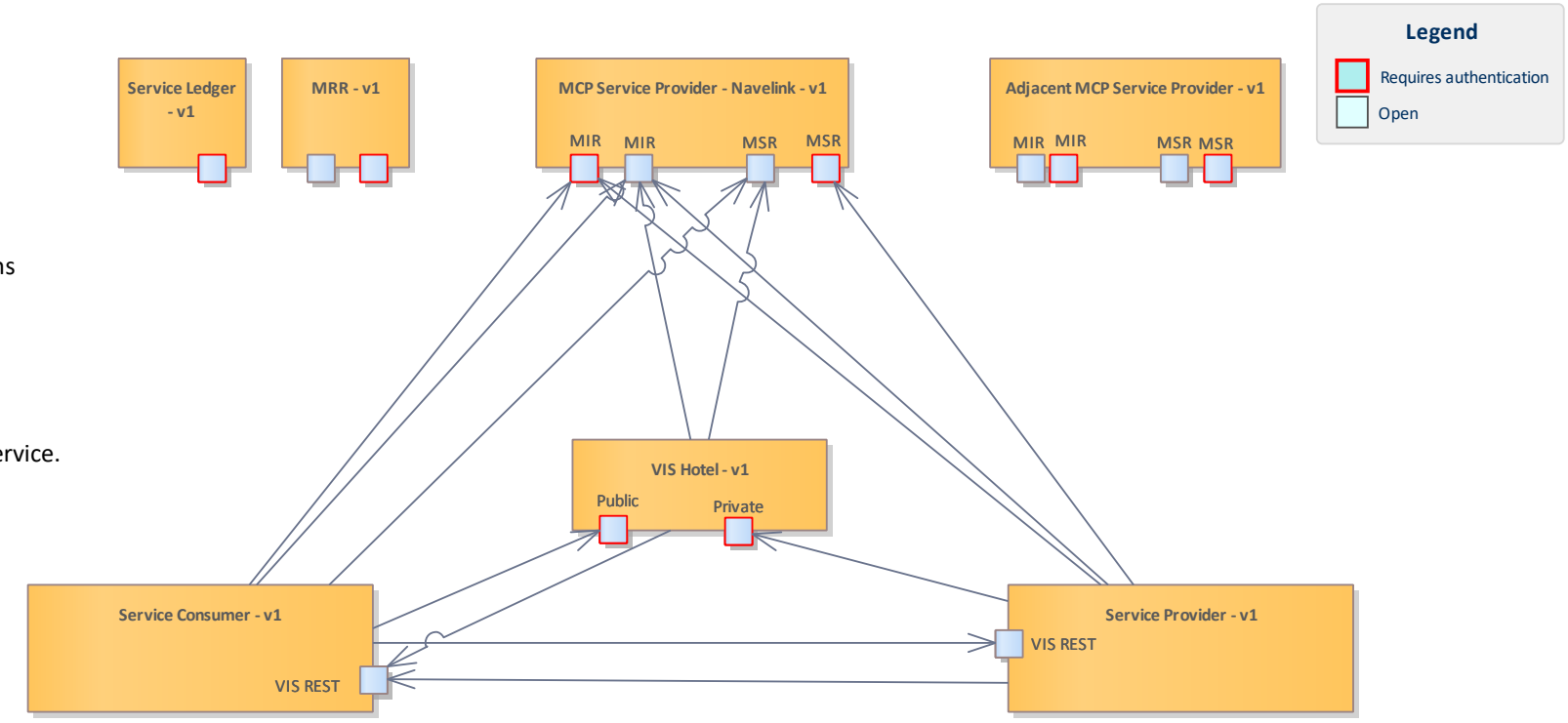
Customer services

Service Consumer registers entity in MIR
Service Consumer issues certificate in MIR
Service Consumer searches in MSR and retrieves endpoint to Service Provider
Service Consumer invokes VIS REST in Service Provider
Service Provider authenticates client certificate by call to MIR
Service Provider invokes callbackEndpoint to send Ack, Uploads and Notifications
Service Provider registers endpoint in MSR
Service Provider registers entity in MIR
Service Provider issues certificate in MIR

VIS Hotel

Service Consumer searches in MSR and retrieves endpoint to VIS Hotel Public service.
Service Consumer invokes public endpoint in VIS Hotel
VIS Hotel authenticates client certificate by call to MIR
VIS Hotel invokes callbackEndpoint to send Ack, Uploads and Notifications
Service Provider registers VIS Hotel Public endpoint in MSR
Service Provider invokes private endpoint in VIS Hotel
VIS Service searches in MSR
VIS Hotel searches/gets entities from MIR

Version 1 describes current (2023/2024) with VIS Hotel

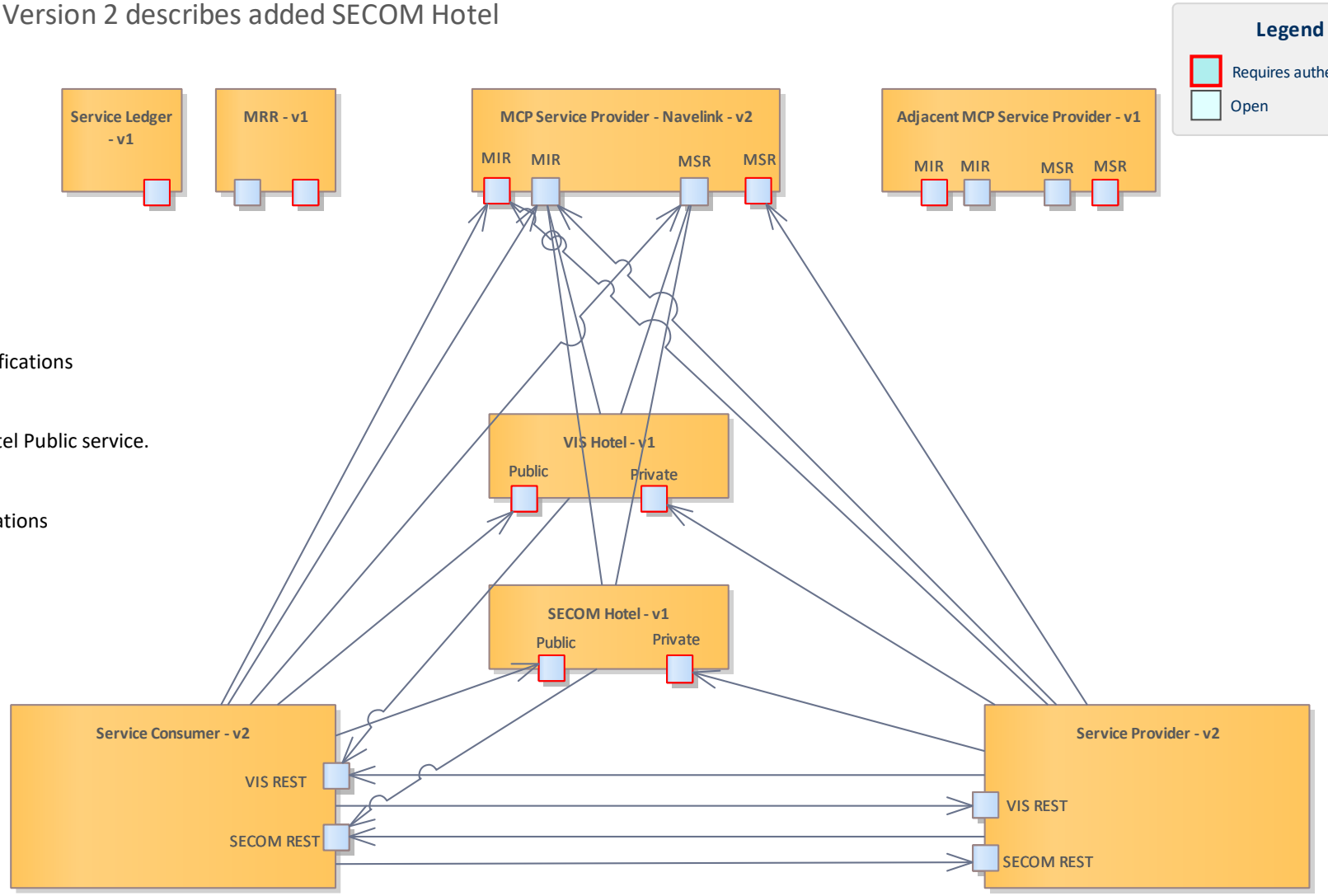


callbackEndpoint always provided by Service Consumer in the service invocation

Connectivity - Tomorrow

Version 2 describes added SECOM Hotel

Describes the added SECOM Hotel (2024)



Added connectivity

Customer services

Service Consumer invokes SECOM REST in Service Provider
Service Provider invokes callbackEndpoint to send Ack, Uploads and Notifications

SECOM Hotel

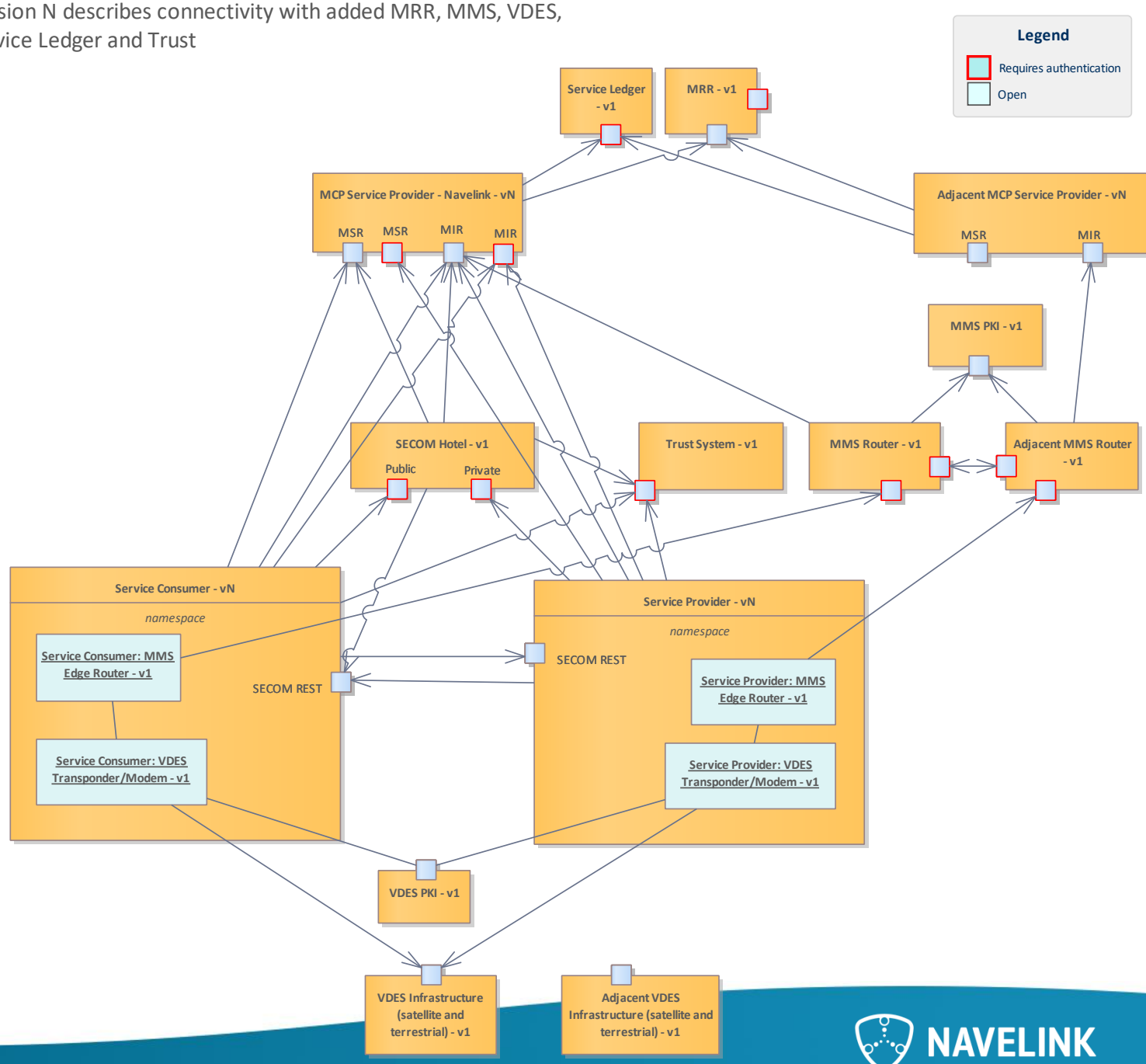
Service Consumer searches in MSR and retrieves endpoint to SECOM Hotel Public service.
Service Consumer invokes public endpoint in SECOM Hotel
SECOM Hotel authenticates client certificate by call to MIR
SECOM Hotel invokes callbackEndpoint to send Ack, Uploads and Notifications
Service Provider registers SECOM Hotel Public endpoint in MSR
Service Provider invokes private endpoint in SECOM Hotel
SECOM Service searches in MSR
SECOM Hotel searches/gets entities from MIR

callbackEndpoint can be provided by Service Consumer in the service invocation or it can be looked up in MSR based on the MRN identifier in the service invocation.

Connectivity - Future

Version N describes all of currently (2024 Q1) known connectivity in relation to Navelink

Version N describes connectivity with added MRR, MMS, VDES, Service Ledger and Trust



Added connectivity

MMS
MMS Router connects to Adjacent MMS Router(s) and gets authenticated by using MMS PKI
MMS Edge Router(s) connects to MMS Router and gets authenticated by using MIR

MRR
MSR invokes search/get in MRR to verify e.g. design ID

Service Ledger
MSR connects to read and write data in Service Ledger

Trust
Service Consumer and Service Provider invokes Trust service to read and write ”rules”

VDES
Service Consumer and Service Provider connects to VDES infrastructure to read and write data and gets authenticated by VDES PKI

Adjacent MCP Service Provider
???

-VIS Hotel
Removed and replaced by SECOM

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Interfaces

MIR Open interface	Open interface to MCP Identity Registry Main functions are: - OCSP certification check - CRL download http:// No authentication required.
MIR Secure interface	Secure interface to MCP Identity Registry Main functions are: - Create, Get, Update and Delete entities - Issue certificates - Create, Update and Delete Roles - KeyCloak Protected by Navelink Certificates and HTTPS
MSR Open interface	Open interface to Navelink Service Registry Main functions are: - Search and Get Service Specifications - Search and Get Service Designs - Search and Get Service instances metadata Protected by HTTPS No authentication required.
MSR Secure interface	Secure interface to Navelink Service Registry Main functions are: - Create, Update and Delete Service Specification - Create, Update and Delete Service Design - Create, Update and Delete Service Instance metadata Protected by Navelink Certificates and HTTPS
SECOM - Public	SECOM Service interface for connecting public SECOM users to the SECOM Service. Main functions are - Uploaded Message - Get Summary - Get Message - Create and Remove Subscription - Request Access - Send EncryptionKey Defined by OpenAPI file (JSON) designed by IEC 63173-2 SECOM Protected by SECOM PKI Certificates and HTTPS.
SECOM Hotel - Private	Vendor specific interface for connecting user application to the SECOM Service. Main functions are - Get Uploaded Messages - Get Notifications - Publish Messages to downloaders and subscribers - Set Access Control on published messages - Create subscriptions for users Defined by OpenAPI file (JSON) designed in Navelink, based on SECOM Test Project. Protected by HMAC and HTTPS.
VIS - Public	VIS Service interface for connecting public VIS users to the VIS Service. Main functions are - Uploaded Message - Get Summary - Get Message - Create and Remove Subscription Defined by OpenAPI file (JSON) designed by STM Project. Protected by MCP PKI Certificates and HTTPS.
VIS Hotel - Private	Vendor specific interface for connecting user application to the VIS Service. Main functions are - Get Uploaded Messages - Get Notifications - Publish Messages to downloaders and subscribers - Set Access Control on published messages - Create subscriptions for users Defined by OpenAPI file (JSON) designed in STM Project. Protected by HMAC and HTTPS.

Information from IALA meetings

IALA VTS Committee meeting March 2024

- VTS Service Specification for Traffic Clearance using S-212 ready!
- Work ongoing with VTS Service Specification for route plan exchange (S-421) ongoing

IALA DTEC Committee meeting March 2024

- Updated edition of G1128 Service Documentation Guidelines reviewed and elaborated
- Service Design for Traffic Clearance based on SECOM reviewed and in final stage to be ready
- Service Design Template for SECOM updated and sent to IEC for copywrite approval
- Cyber Security assessment with focus on VTS services and Aids to Navigate services reviewed
- SECOM and MMS discussions

IALA ARM Committee meeting March 2024

- Service Specification for Aids to Navigate using S-125 and S-xxx in final stages to be ready

Information from IEC meetings

IEC TC80/WG17 meeting April 2024

IEC 63173-1 Route Plan S-421

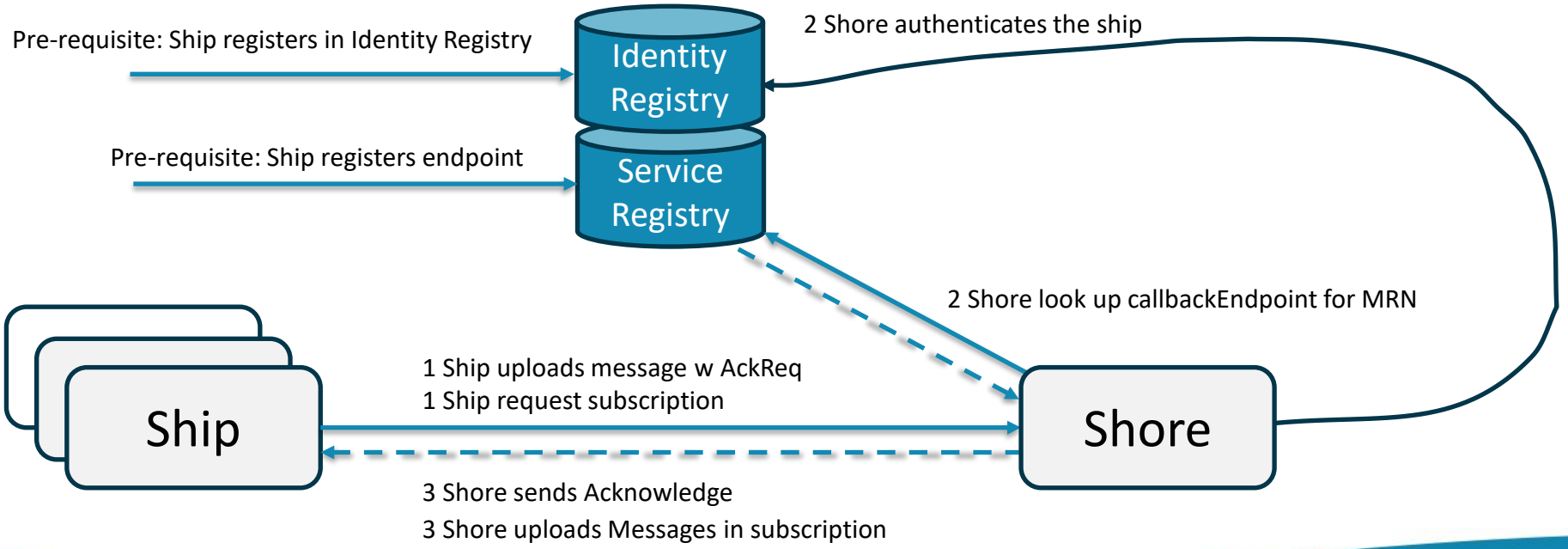
- Work ongoing on Amendment to IEC 63173-1 S-421 Route Plan
- The amendment contains elaborated Identifiers allowing MRN and include support for S-100 Interoperability Identifier to enable correlation of information across different S-products, such as grapical products in same area in different S-products.
- The amendment will also contain update of the S-421 XML Schema to allow improved use in development and stronger validation of the XML
- Textual corrections and clarifications

IEC 63173-2 SECOM

- Work ongoing on Amendment to IEC 63173-2 SECOM
- The amendment will contain recommendation to use ECDSA-384-SHA2 as signing algorithm in compliance with S-100 ed 5.2. SECOM will not define exact algorithm to use.
- The amendment will contain optional callbackEndpoint parameter in all POST requests that contain service callback.
- Textual corrections and clarifications

SECOM v1.0.0

The endpoint of services are registered in Maritime Service Registry to be reviewed and searched for. The rationale to look up the endpoint rather than to retrieve it from consumer is increased security and mitigating ”man-in-the-middle” attacks. The rationale is also to enable search for any service, including ships, to enable e.g. VTS to find ship and send information to ship.



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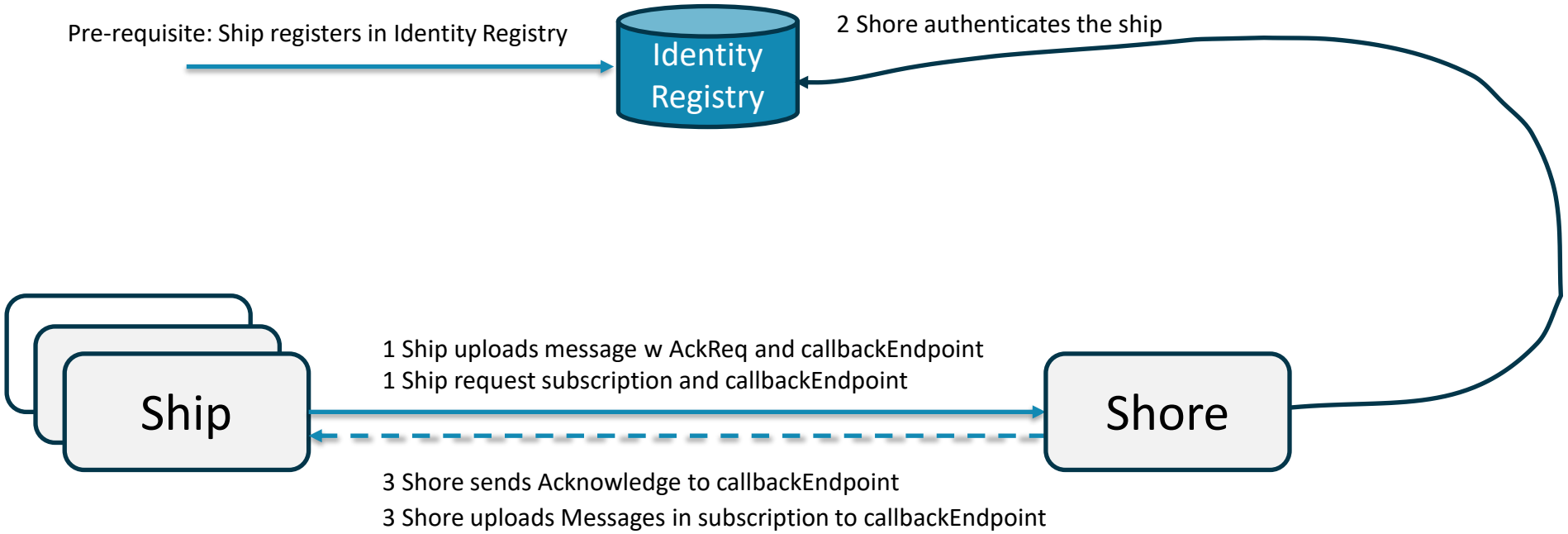
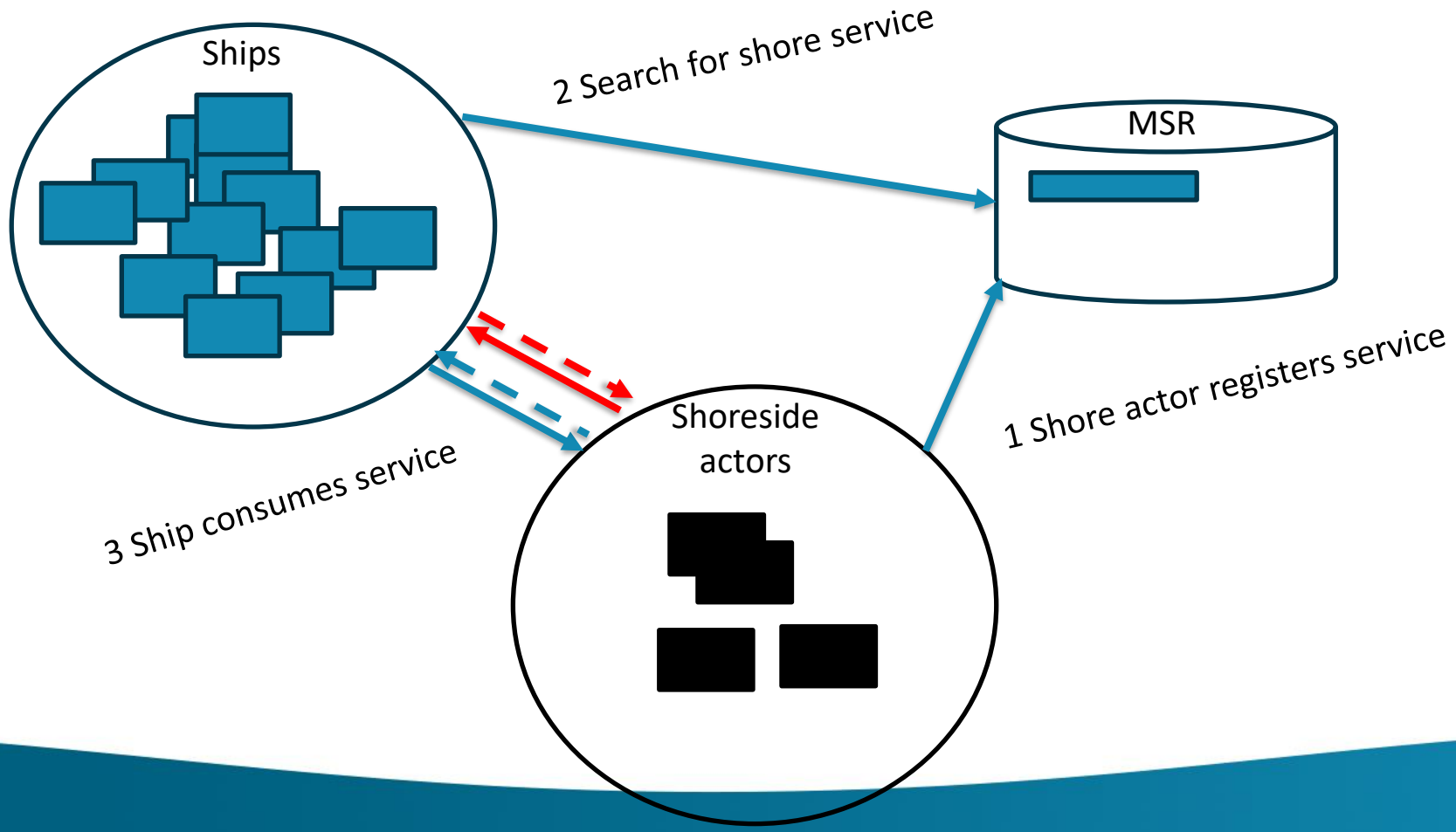
Proposed Amendment

The proposed amendment where the endpoint is sent by the consumer enables consumers that are not registered in Maritime Service Registry. The rationale is that for e.g. S-124 Nav Warning there should be no need for ship to be registered in MSR, and the full security is not needed. If a warning is sent to ”wrong” consumer it has less consequences from confidentiality reasons.



Maritime Service Registry

What are expected to be registered in Maritime Service Registry?
Shoreside services?
Ship (technical) services?



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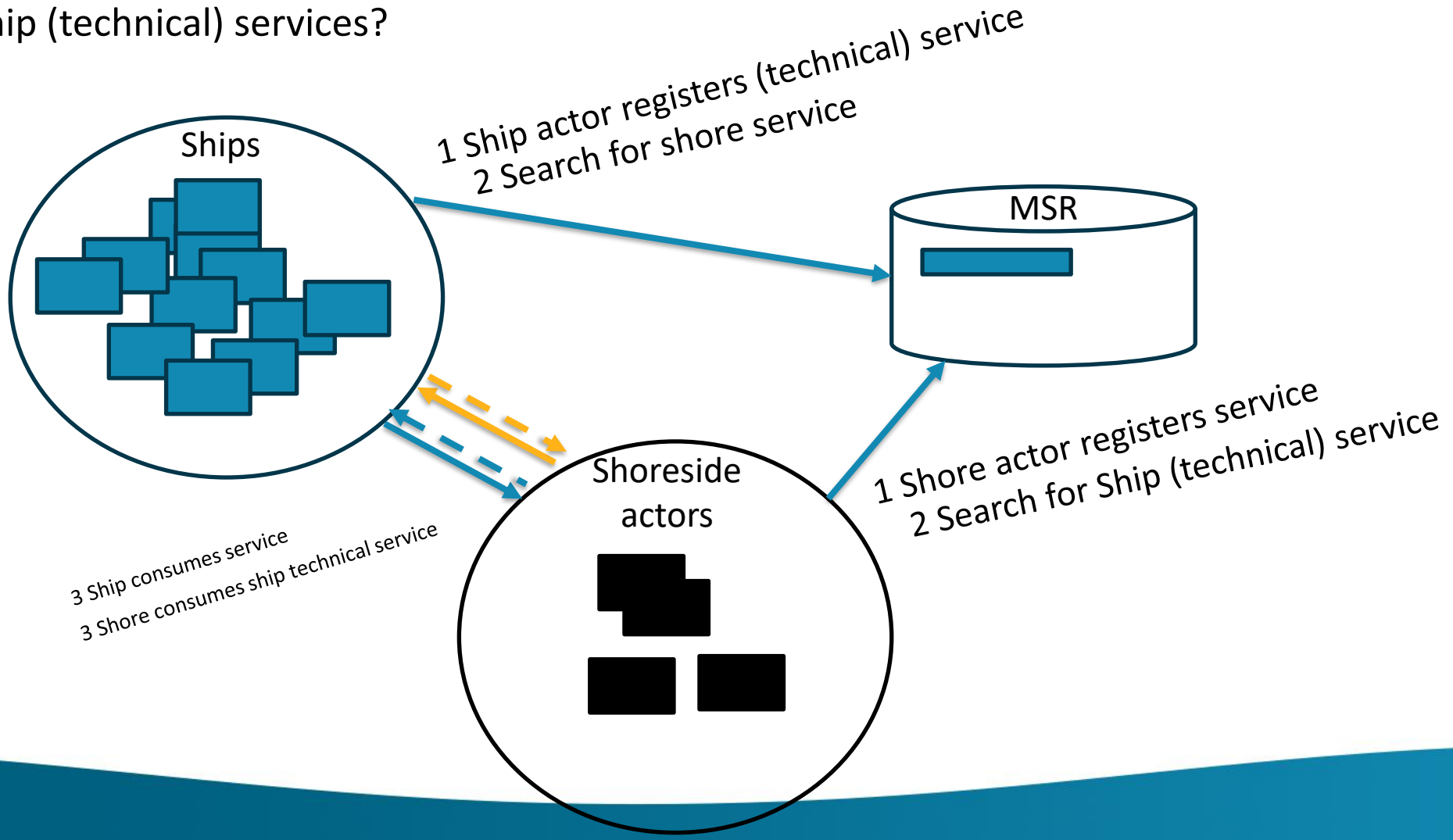
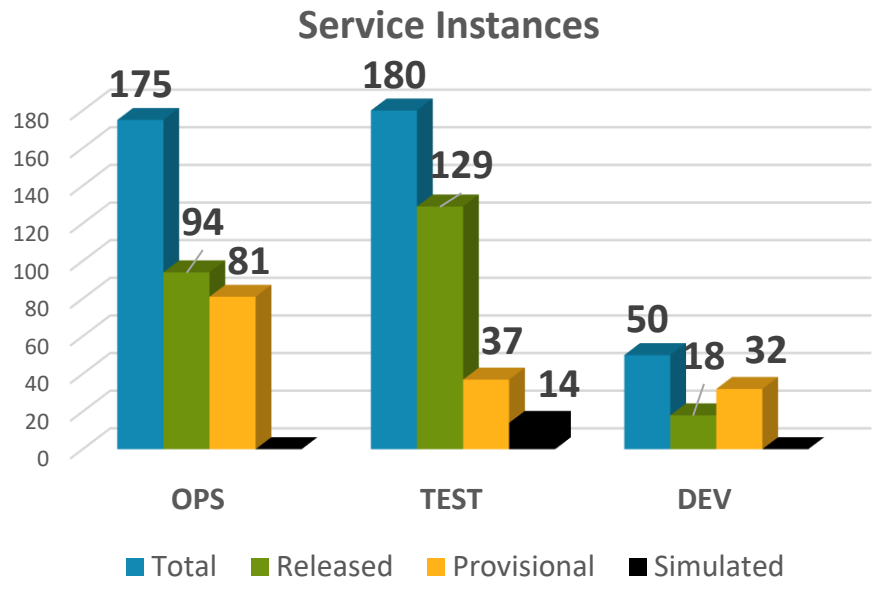


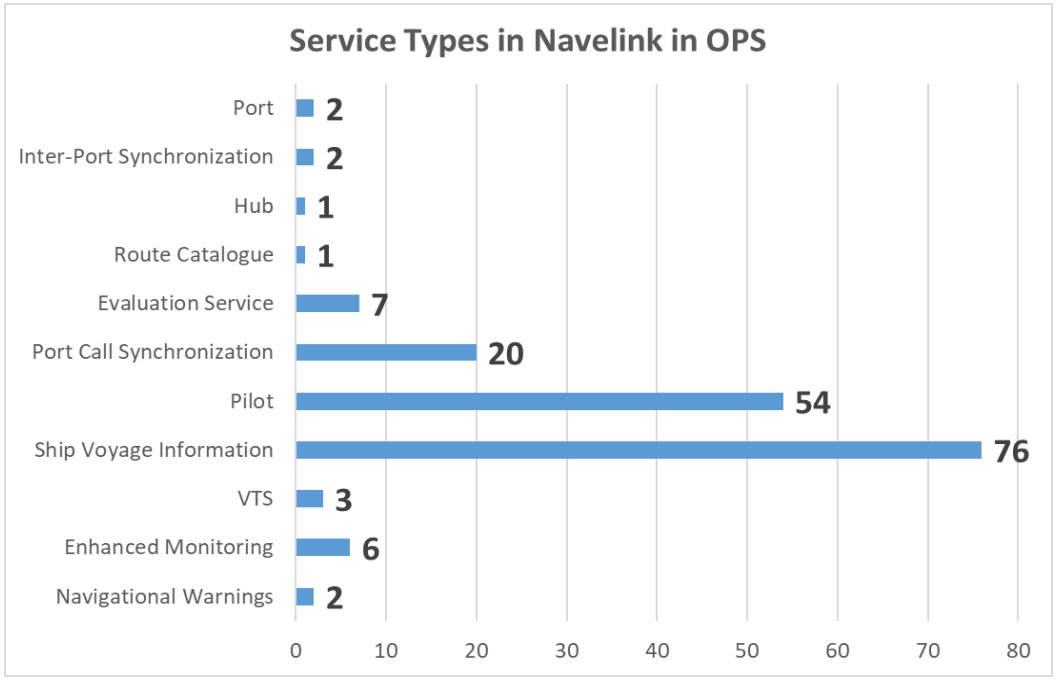
3) Service development discussions & information

- Forum service developers
  - Common discussions
- Forum Security and interoperability
  - Common discussions

4) Overview on Navelink usage

2024-04-24





Navelink Operational environment Service Registrations

Service Specifications: 2 (Voyage Information Service v2.2) + **SECOM Generic Service Specification v1**
Service Technical Design: 2 (Voyage Information Service Design v2.2) + **SECOM Service Design Template v1**
Service Instances: 175

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Services in Operational Navelink

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5) Q&A

- Any Questions? The floor is open.

6) Presentation

- Route/Route exchange and the road to S421 by John-Morten Klingsheim (Kystverket/ Norwegian Costal Administration)

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Route / Route exchange

Haugesund, 25.04.2024

– Clean, safe and efficient seaways

Route and Route exchange

Norwegian Coastal Administration

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- Background: Establishing services based on exchange of route plans (RTZ)
- To migrate to S421, and new possibilities.

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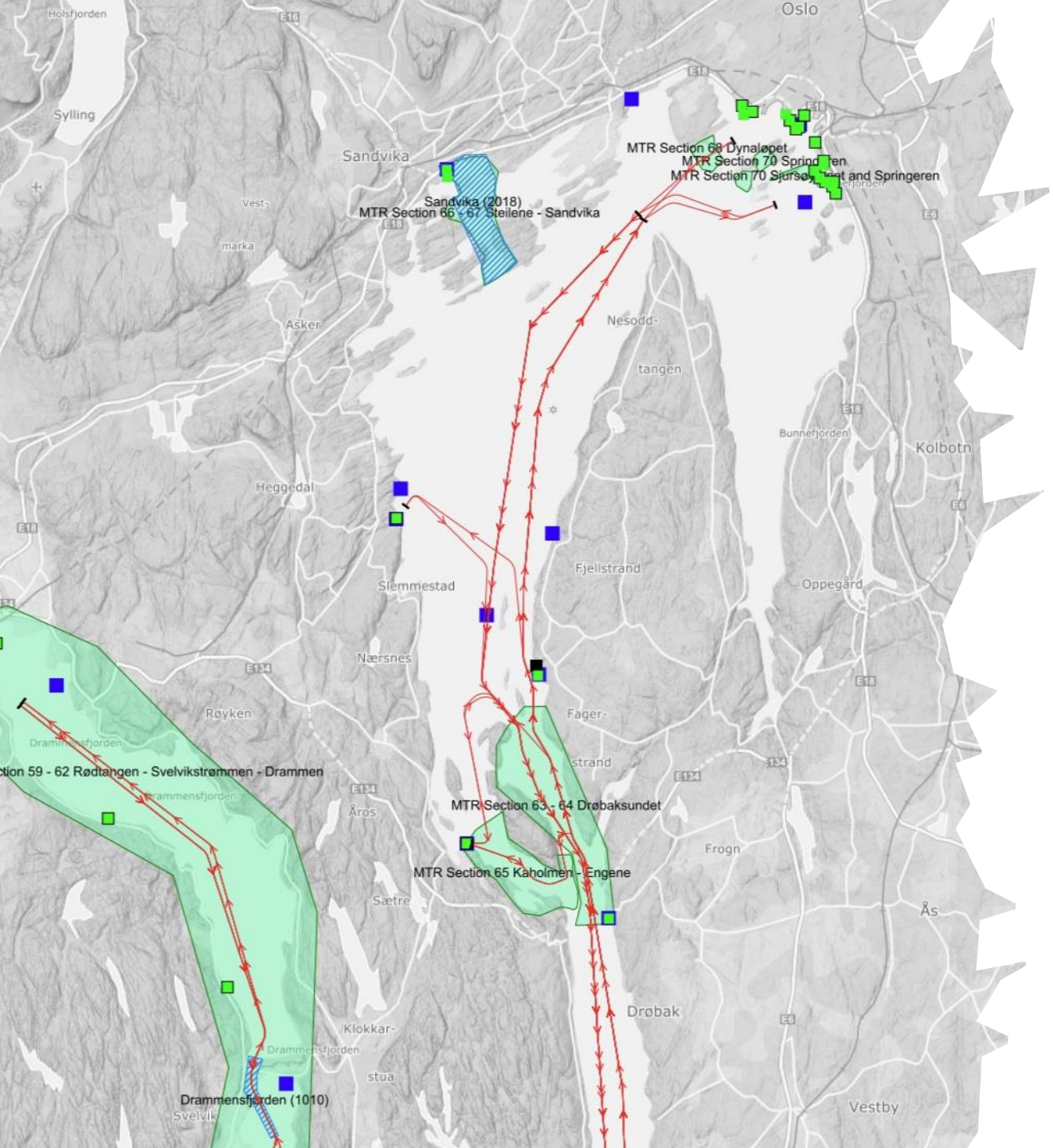
The missing link!



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Background

Performance standard for ECDIS - IEC61174:2015 includes RTZ 1.0

Two business-cases:

- NCA is responsible for a lot of navigation services, why can we not give ships a route (+ route information).

- Information needed in route planning and sailing is very much decided by ship-information, datetime, and chosen route.

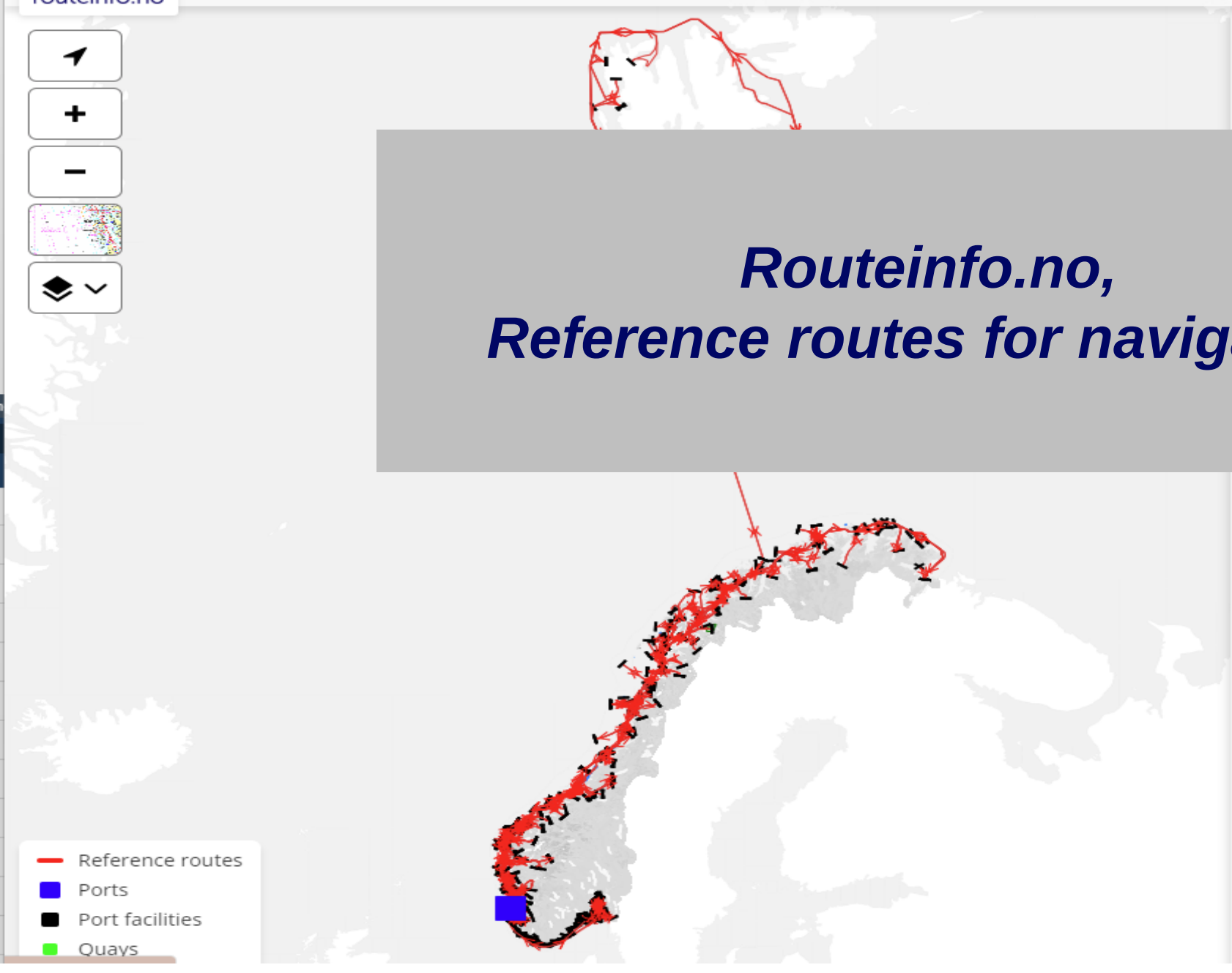
- (by utilizing GIS technology)

routeinfo.no

Haugesund

Info & Help | Map & Search | Test - Cruise Routes | Transit Routes | FAQ

Routeinfo.no, Reference routes for navigation



Port:

Haugesund

Feistein_In_20240322... Go to route

Skudefjorden_In_202... Go to route

ersfjorden_In_202403... Go to route

Out (3)

NCA_Haugesund_Feistein_Out_202403... Go to route

NCA_Haugesund_Skudefjorden_Out_2... Go to route

NCA_Husoy_Rovaersfjorden_Out_2024... Go to route

Between (0)

Open sea and Inshore (14)

NCA_Langesundsbukta_Skudefjorden_... Go to route

NCA_Skudefjorden_Langesundsbukta_... Go to route

NCA_7_5m_Skudefj_Granesundet_Stad... Go to route

NCA_7_5m_Skudefj_Hlmgra_Krakh_Sta... Go to route

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Looking both ways

- Include the users. User requirements. User experiences
- Look into enablers: technology, standards

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Operational Use of route exchange

- **Navigator**: reference routes and route information are downloaded directly into the navigation display on board all utility vessels – to support route planning.
- **Pilot**: when the pilot comes on board or the mission is planned, the reference routes/route information can improve cooperation between the pilot and bridge crew.
- **VTS operator**: more predictable and clearer voyage plan.

Reference route in the C-Scope VTS tool


Good cooperation and communication

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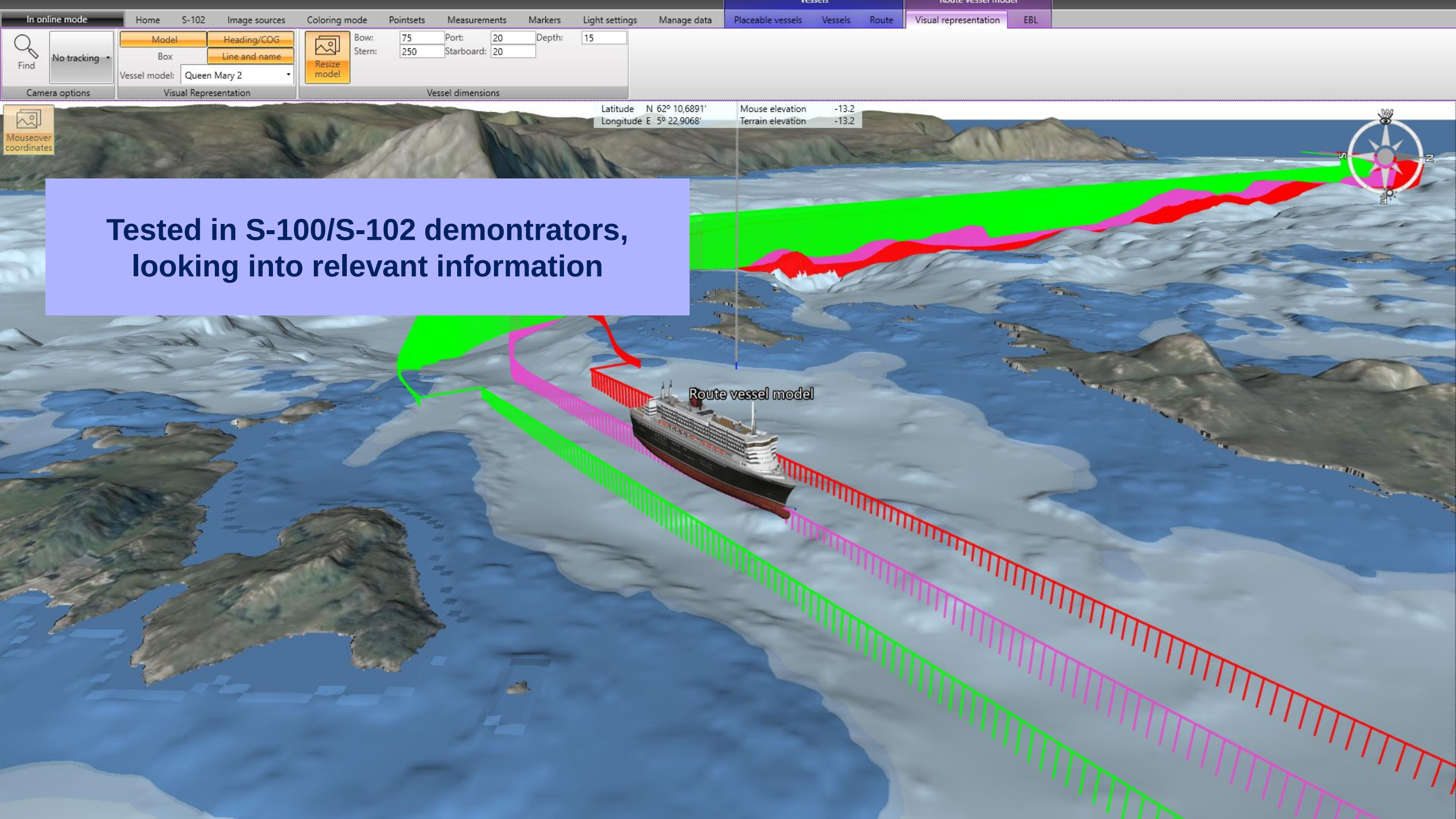
Integrated with other supporting services

- Today, the quality-assured digital sailing routes are available in the pilots' support system (Njord Pilot).
- The digital route service is used by vessels to send voyage-related information to the Norwegian authorities in the SafeSeaNet ship reporting system.
- The routes are available through PRIMAR, the subscription service for electronic sea charts.
- Is available in commercial navigation solutions. Based on Open Data License (NLOD).


In online mode
Home
S-102
Image sources
Coloring mode
Pointsets
Measurements
Markers
Light settings
Manage data
Placeable vessels
Vessels
Route
Visual representation
EBL
Find
No tracking
Camera options
Model
Heading/COG
Box
Line and name
Vessel model:
Queen Mary 2
Visual Representation
Resize model
Bow:
75
Port:
20
Depth:
15
Stern:
250
Starboard:
20
Vessel dimensions
Mouseover coordinates
Latitude N 62° 10,6891'
Longitude E 5° 22,9068'
Mouse elevation -13.2
Terrain elevation -13.2
Route vessel model
Tested in S-100/S-102 demontrators, looking into relevant information

Route plan in VR-simulator / Digital twin

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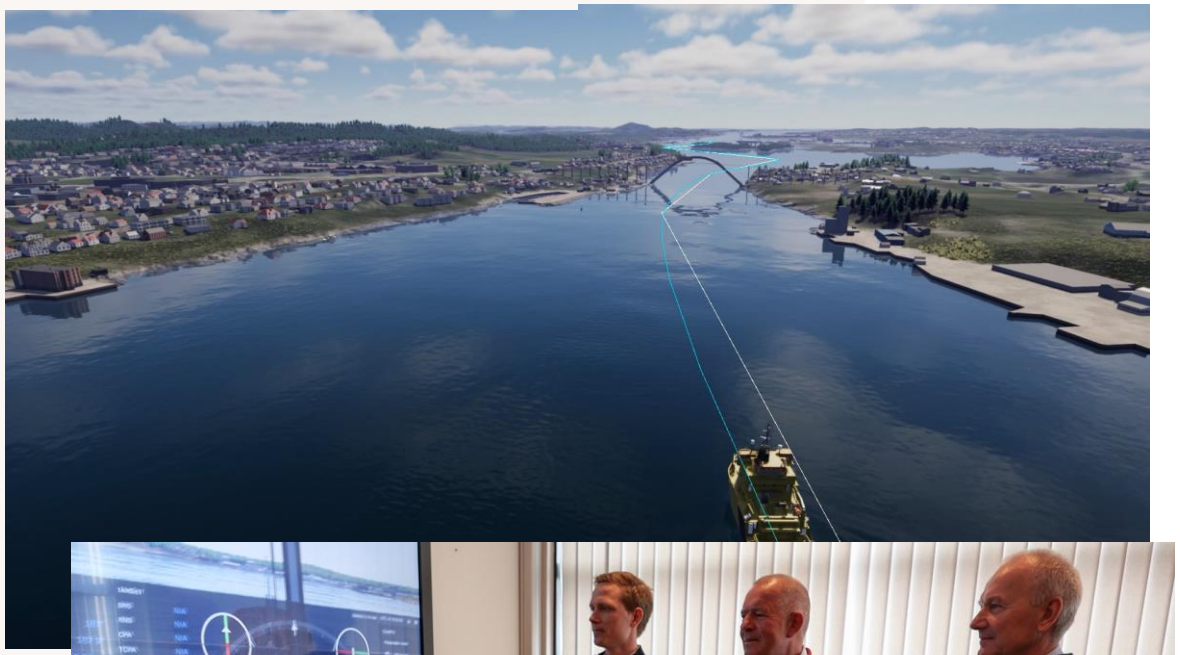

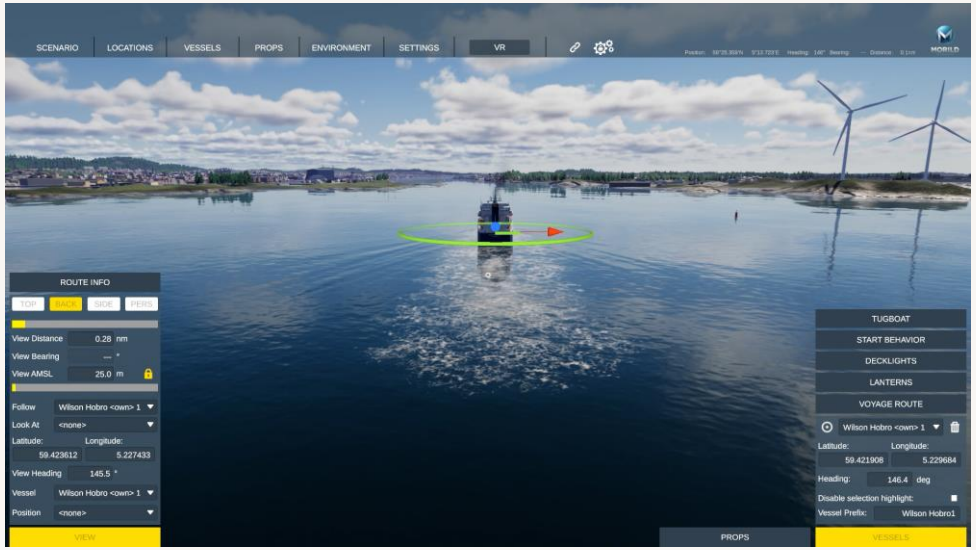

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A Quality-Assured Service

- Quality-assured by NCA services:
  - Pilot Service
  - Vessel Traffic Service
  - Aids to Navigation Service
  - Pilot Exemption Certificate Unit
- Depth data reviewed by the Norwegian Hydrographic Service.

- Routes are quality assured for vessels up to 150 meters length and 9 meters draught, with some exceptions.

Route plan - API

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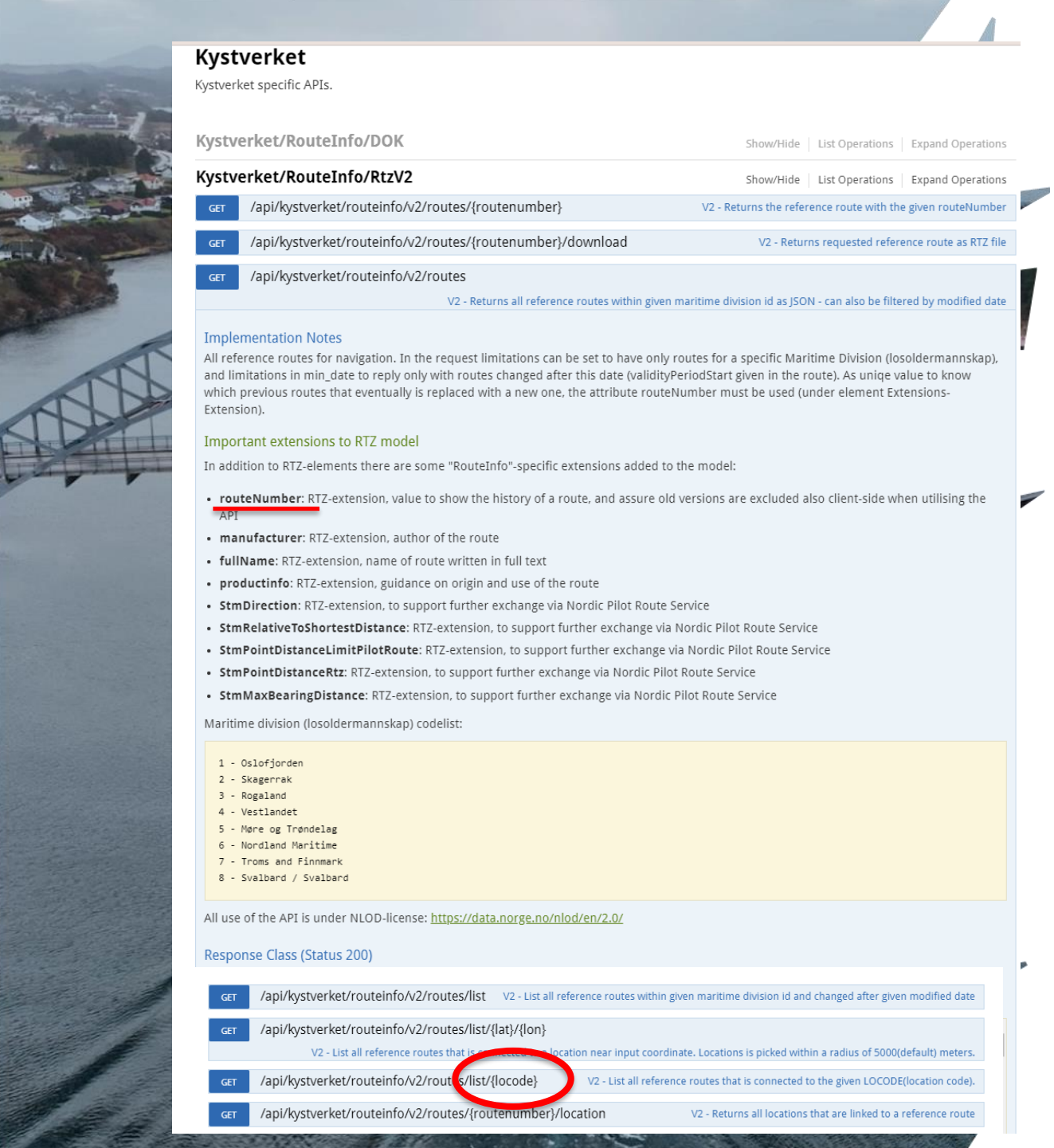
- Open API



Kystverket

Kystverket specific APIs.

Kystverket/RouteInfo/DOK Show/Hide | List Operations | Expand Operations

Kystverket/RouteInfo/RtzV2 Show/Hide | List Operations | Expand Operations

GET /api/kystverket/routeinfo/v2/routes/{routenumber} — V2 - Returns the reference route with the given routeNumber

GET /api/kystverket/routeinfo/v2/routes/{routenumber}/download — V2 - Returns requested reference route as RTZ file

GET /api/kystverket/routeinfo/v2/routes

V2 - Returns all reference routes within given maritime division id as JSON - can also be filtered by modified date

Implementation Notes

All reference routes for navigation. In the request limitations can be set to have only routes for a specific Maritime Division (losoldermannskap), and limitations in min_date to reply only with routes changed after this date (validityPeriodStart given in the route). As uniqe value to know which previous routes that eventually is replaced with a new one, the attribute routeNumber must be used (under element Extensions-Extension).

Important extensions to RTZ model

In addition to RTZ-elements there are some "RouteInfo"-specific extensions added to the model:

- **routeNumber**: RTZ-extension, value to show the history of a route, and assure old versions are excluded also client-side when utilising the API
- **manufacturer**: RTZ-extension, author of the route
- **fullName**: RTZ-extension, name of route written in full text
- **productinfo**: RTZ-extension, guidance on origin and use of the route
- **StmDirection**: RTZ-extension, to support further exchange via Nordic Pilot Route Service
- **StmRelativeToShortestDistance**: RTZ-extension, to support further exchange via Nordic Pilot Route Service
- **StmPointDistanceLimitPilotRoute**: RTZ-extension, to support further exchange via Nordic Pilot Route Service
- **StmPointDistanceRtz**: RTZ-extension, to support further exchange via Nordic Pilot Route Service
- **StmMaxBearingDistance**: RTZ-extension, to support further exchange via Nordic Pilot Route Service

Maritime division (losoldermannskap) codelist:

```
1 - Oslofjorden
2 - Skagerrak
3 - Rogaland
4 - Vestlandet
5 - Møre og Trøndelag
6 - Nordland Maritime
7 - Troms and Finnmark
8 - Svalbard / Svalbard
```

All use of the API is under NLOD-license: https://data.norge.no/nlod/en/2.0/

Response Class (Status 200)

GET /api/kystverket/routeinfo/v2/routes/list — V2 - List all reference routes within given maritime division id and changed after given modified date

GET /api/kystverket/routeinfo/v2/routes/list/{lat}/{lon}

V2 - List all reference routes that is connected to a location near input coordinate. Locations is picked within a radius of 5000(default) meters.

GET /api/kystverket/routeinfo/v2/routes/list/{locode} — V2 - List all reference routes that is connected to the given LOCODE(location code).

GET /api/kystverket/routeinfo/v2/routes/{routenumber}/location — V2 - Returns all locations that are linked to a reference route

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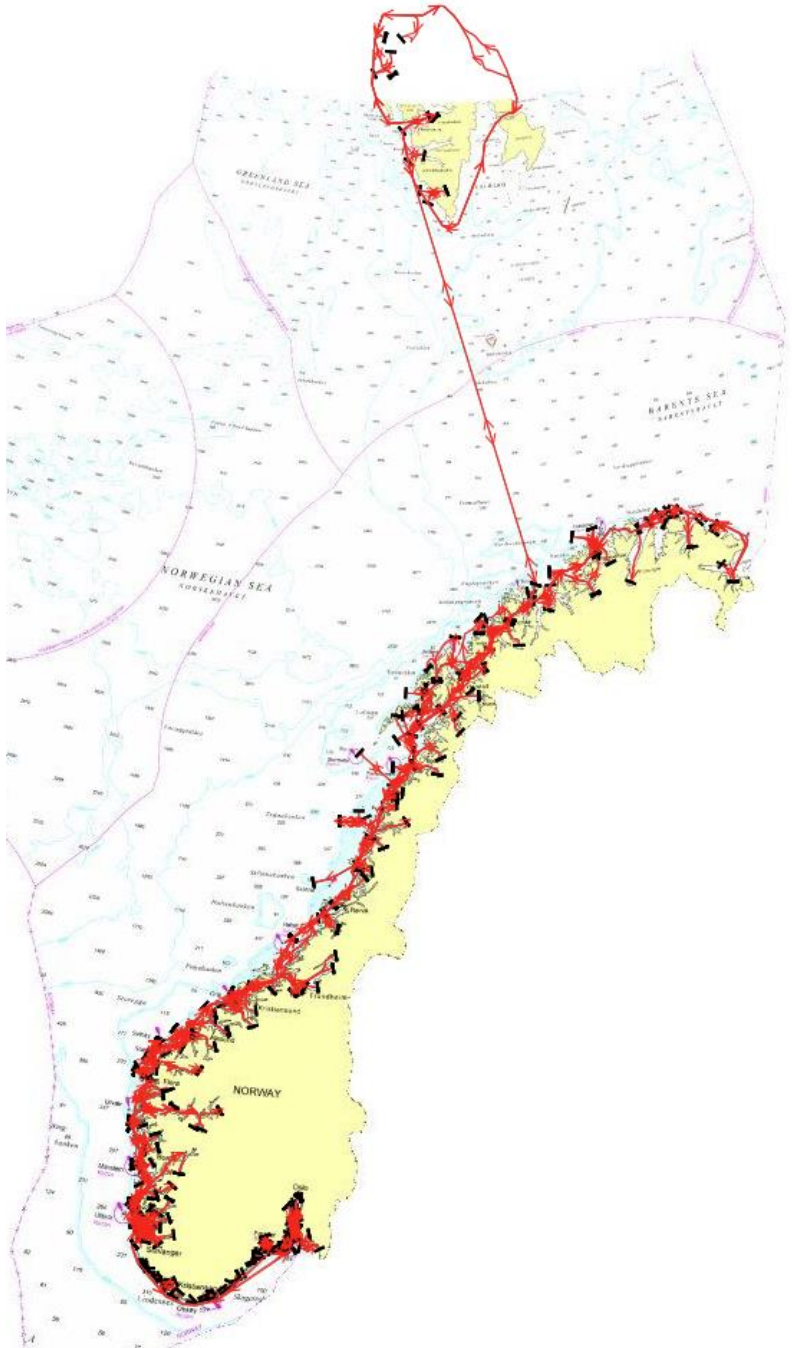
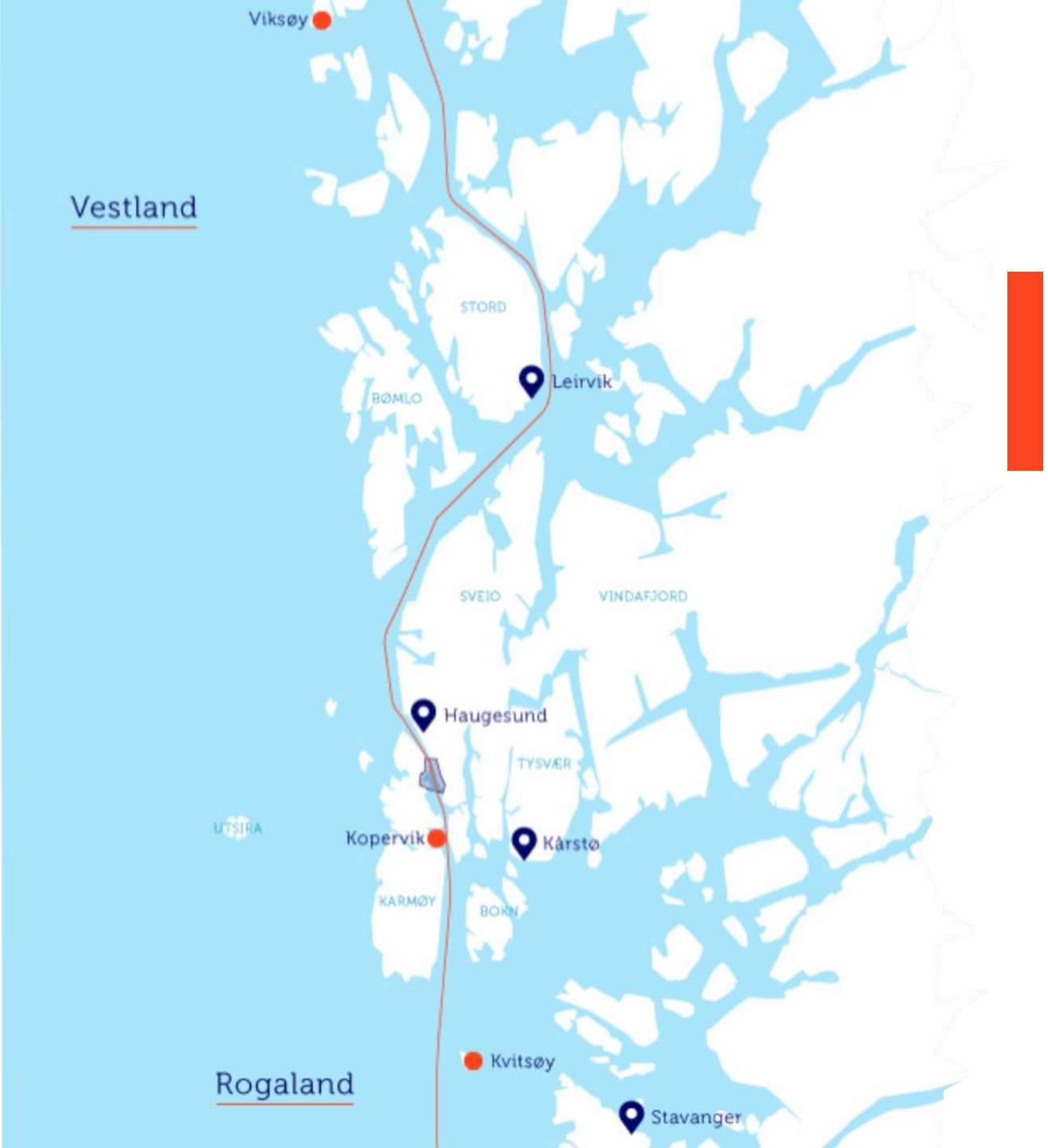


Sep 2018 – Apr 2024

- 687 reference routes for navigation (april 2024). For easier and improved route planning

- Four voyage categories: Inbound, outbound, between ports and coastal.



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Goals

- Safer and easier voyage to port
  - Reduce the number of ship accidents
  - Fewer groundings and collisions
  - Lower risk of unwanted traffic situations at sea
- More efficient route planning
  - Just-in-time arrival
  - Environmental benefit
  - Reduced fuel consumption
- Easy access to the right information
  - Sailing regulations
  - Navigational warnings
- Better interaction between ships and the Norwegian Coastal Administration's pilot service and Vessel Traffic Service

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Maritime Traffic Regulation, Section 117 - 120

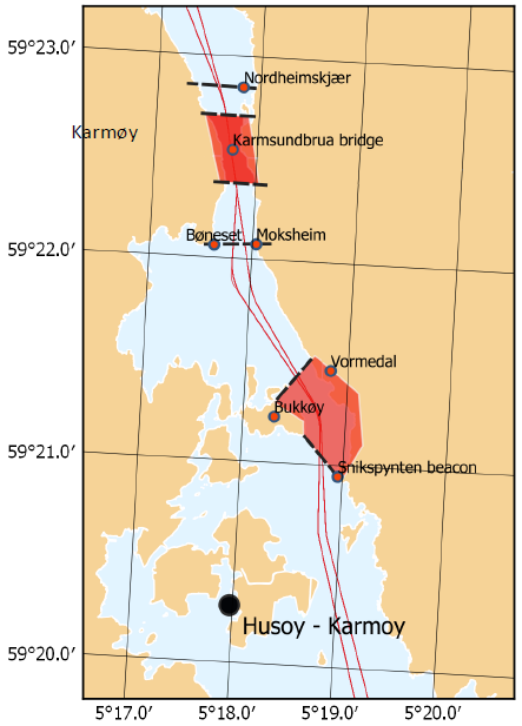
Statutory authority: Laid down by the Ministry of Transport and Communications on 10 February 2021 (no. 523) pursuant to sections 2, 7, 11 and 13, of Act no. 70 of 21 June 2019 relating to harbours and fairways, etc. (the Harbour Act)

Section 118. (Ban on passing on the stretch Skudenesfjorden–Karmsundet–Sletta)
Vessels must not pass other vessels under Karmsundbrua bridge, in the waters 300 metres north and south of the bridge or in the strait at Bukkøy on the stretch between a line in a 050° direction from the northern brink of Bukkøy to shore north of Vormedal and a straight line from the south-east brink of Bukkøy to the Snikspynten beacon if:

a) the vessel is carrying hazardous or noxious cargo and has a length greater than 100 metres
b) the vessel has a length greater than 120 metres
c) visibility is less than 0.5 nautical mile.

In the instances mentioned in the first paragraph, vessels must maintain a distance of at least 0.5 nautical mile from other vessels sailing in the same direction.

continues on page 2



Red areas in the chart indicate parts where vessels must not pass, given in section 118

Route Information

- Offers information that is currently scattered in various maps and publications:
  - Local regulations, for example meeting bans in narrow fairways.
  - Visibility and size restrictions for vessels.
  - Quay and port locations, sailing distances.
  - VHF channels for communication in risk areas where VTS centres monitor and organize ship traffic.
  - Information about the VTS service.

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- Information elements -

VesselTrafficServiceClearanceRequestID
VoyageID
VesselTrafficServiceRouteID
VesselTrafficServiceETA
Remark
CreatedDate
ModifiedDate
ShipName
VesselTrafficServiceRouteNor

Route plan exchange as part of VTS Clearence

- Reporting in maritime single window include a step to refer to sailing route (reference route) before entering.

VesselTr	VoyageID	VesselTr	VesselTrafficServiceETA	Remark	CreatedDate	ModifiedDate	ShipName	VesselTrafficServiceRouteNor
3446	1904848	46	2022-06-15 17:00:00.000	NULL	14.06.2022 10:14	14.06.2022 10:14	KEY MARMAR	Sarpsborg Fredrikstad - Mefjordbaen Inbound
3957	1934026	46	2022-08-14 05:00:00.000	From Vidgrunnen PS to Fredrikstad Denofa 2.	11.08.2022 13:15	12.08.2022 11:11	KEY MARMAR	Sarpsborg Fredrikstad - Mefjordbaen Inbound
3730	1923089	46	2022-07-22 03:00:00.000	NULL	18.07.2022 19:20	18.07.2022 19:20	KEY MARMAR	Sarpsborg Fredrikstad - Mefjordbaen Inbound
3722	1922530	46	2022-07-21 15:00:00.000	NULL	17.07.2022 15:03	17.07.2022 15:03	KEY MARMAR	Sarpsborg Fredrikstad - Mefjordbaen Inbound
453	1718945	46	2021-06-16 03:45:00.000	PEC 647	15.06.2021 05:40	15.06.2021 05:40	ISLAND VALI	Sarpsborg Fredrikstad - Mefjordbaen Inbound
8117	2161503	46	2023-10-20 11:30:00.000	NULL	16.10.2023 18:32	19.10.2023 23:50	GUNGA	Sarpsborg Fredrikstad - Mefjordbaen Inbound
7264	2091816	46	2023-06-13 20:00:00.000	Vidgrunnen p/s - Fredrikstad	12.06.2023 13:52	12.06.2023 13:52	GUNGA	Sarpsborg Fredrikstad - Mefjordbaen Inbound
376	1712710	46	2021-06-05 00:45:00.000	NULL	2021-06-02 21:28:	04.06.2021 20:22	FRAKT VIK	Sarpsborg Fredrikstad - Mefjordbaen Inbound
1487	1779900	46	2021-10-16 08:30:00.000	NULL	13.10.2021 11:55	15.10.2021 18:55	NORDSTRAU	Sarpsborg Fredrikstad - Mefjordbaen Inbound
2236	1835798	46	2022-02-01 15:00:00.000	NULL	28.01.2022 12:13	28.01.2022 12:13	NORDSTRAU	Sarpsborg Fredrikstad - Mefjordbaen Inbound
2220	1834505	46	2022-01-31 12:00:00.000	NULL	25.01.2022 20:40	25.01.2022 20:40	NORDSTRAU	Sarpsborg Fredrikstad - Mefjordbaen Inbound
3669	1919347	46	2022-07-13 17:00:00.000	NULL	11.07.2022 08:27	2022-07-11 09:20:50.0	NORDSTRAU	Sarpsborg Fredrikstad - Mefjordbaen Inbound
8460	2187153	46	2023-12-02 10:00:00.000	NULL	29.11.2023 11:49	30.11.2023 09:48	STOLT CORM	Sarpsborg Fredrikstad - Mefjordbaen Inbound
429	1717537	46	2021-06-16 05:00:00.000	NULL	12.06.2021 09:31	12.06.2021 09:31	NEXANS AUR	Sarpsborg Fredrikstad - Mefjordbaen Inbound
				DP test completed, returning to Borg Havn - Pilot				

Route plan and Route exchange

Norwegian Coastal Administration

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- Background: Establishing services based on exchange of route plans (RTZ)
- To migrate to S421, and new possibilities.

Navigation lab

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1. Knowhow
2. VTS test-environment + bridge equipment + Digital twin
3. VDES
4. Be a partner in projects to push forward on maritime ITS (Intelligent Transport Systems) including e-Navigation
5. Autonomi – Test areas

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ISTS project – Route (S421) part of a demo 2024

(Intelligent Ship Transport Systems 2021-2024)
A3.1 Initial support for Voyage planning / Route planning (testing S421 and S131?)
A3.2 Transmission of planned route

– Clean, safe and efficient seaways

MARITIME ITS

Navigation lab

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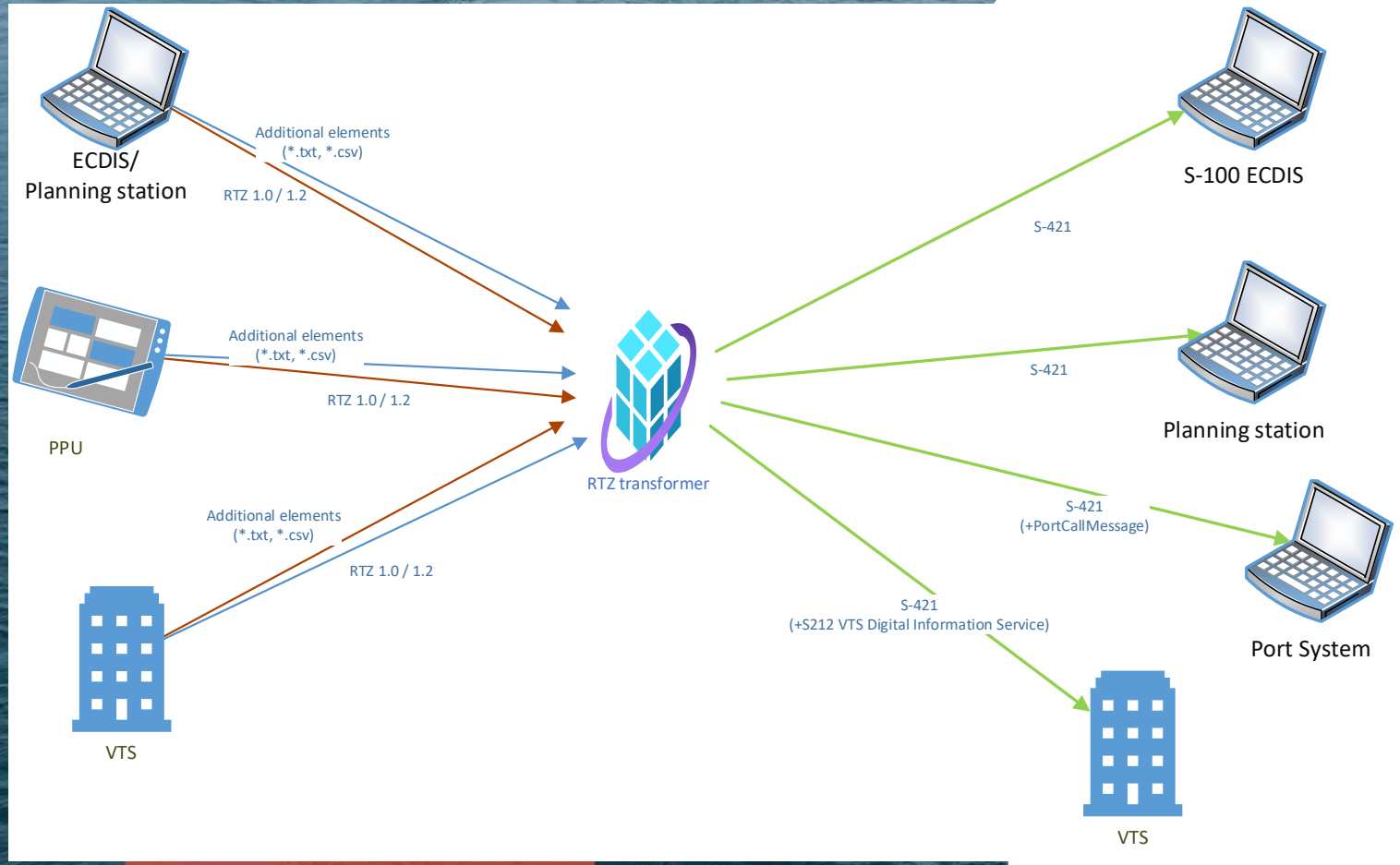

ISTS – Project 2022-2024
Information exchange for better Just in time Arrival
RTZ-files can be brought in from any environment (RTZ 1.0, RTZ 1.2, maybe RTZ 1.1 / RTZ 1.7..): https://s421creator.ecc.no/

The main information elements brought in from the RTZ-file. Additional elements by manually input in the service, including Action points.

Primitive version for proof of concept. Schedule is not included in the test.

MARITIME ITS

1) RTZ -> S421 transformer

Waypoints,
and
Action points

https://s421creator.ecc.no/index.html

NCA_OsloWest_In_20230607.rtz Upload RTZ

Route Details

Route Format Version *
1

Route ID *
urn:mrn:iho:no01:test:referenceroute:no-110003

Route Edition No *
1

Route Info

Route Info Name *
NCA_OsloWest_in_20230607

Mandatory elements

Route Info

Route Info Author
Norwegian Coastal Administration

Route Info Status
1

Route Info Length Max
150

Route Info Draft Max
9

Route Info Air Draft Max

Route Info Description
See information on www.routeinfo.no before use of this Reference Route for Navigation. The Ref

ADD ACTION ROUTE POINT

Route Action Point ID: 1, External Reference: urn:mrn:iho:no01:test:com:vhf:horten_vts_sector_s, Radius: , Latitude: 58.960, Longitude: 10.6223, Time to act: 15, Action: 2, Description: Request clearence to access VTS area from Horten VTS via VHF channel 18 or via the Maritime Single Window SafeSeaNet Norway

Route Action Point ID: 2, External Reference: urn:mrn:iho:no01:test:pilot_boarding:Faerder, Radius: , Latitude: 59.0, Longitude: 10.41666667, Time to act: 150, Action: 1, Description: Final confirmation no later than 2 hours prior to pilotage in Safe Sea Net Norway

Route Action Point ID: 3, External Reference: urn:mrn:iho:no01:test:norwegian_nautical_information:element000999:Master-Pilot_Exchange_Information_Card, Radius: , Latitude: 59.0, Longitude: 10.41666667, Time to act: 60, Action: 1, Description: Master-Pilot Exchange Information Card including Required Boarding Arrangements for Pilot

Route Action Point ID: 4, External Reference: urn:mrn:iho:no01:test:com:vhf:horten_vts_sector_n, Radius: , Latitude: 59.16086, Longitude: 10.65817, Time to act: 60, Action: 1, Description: Change to VHF channel 18 (Horten VTS sector north)

Route Action Point ID: 5, External Reference: urn:mrn:iho:no01:test:S127:maritime_traffic_regulation:section_67_68, Radius: , Latitude: 59.65983, Longitude: 10.61955, Time to act: 10, Action: 1, Description: Ban on passing on the stretch Drøbaksundet - Oslo, between Småskjærene beacon in the south and Aspond beacon in the north

Route Action Point ID: 6, External Reference: urn:mrn:iho:no01:test:S131:port_facility:NOOSL-0027, Radius: , Latitude: 59.88683, Longitude: 10.75567, Time to act: 30, Action: 1, Description: Contact lines men to confirm details on mooring (phone +47 ## ## ## ##)

SUBMIT

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E ITS

Activities - Demo

A3.1 Initial support for Voyage planning / Route planning (testing S421 and S131?)
A3.2 Transmission of planned route

March – October 2024:

1 Test of RTZ->S421 converter:

Testing April – May 2024. A test-description will be sent out. Includes using MRN. Test week 15. – 19. april? (22. – 26. april)

Participants: NCA, ECC, ITS Norway, SINTEF Ocean, NAVTOR

Minor updates before October (ECC).

Use in demonstration A3.1 and A3.2

2 Choose one or more detailed voyage examples (A3.1 / A3.2). Task meeting ca. end of April (24 – 30.)? Include others?

April – May 2024

Participants: NCA, NHS, ITS Norway, SINTEF Ocean, NAVTOR

Update data elements and description in Excel-file

Agree on relevant information elements: Route, Action Points on reporting (port information?). Includes using MRN.

3 Setup of demonstration – Communciation setup

April – October 2024

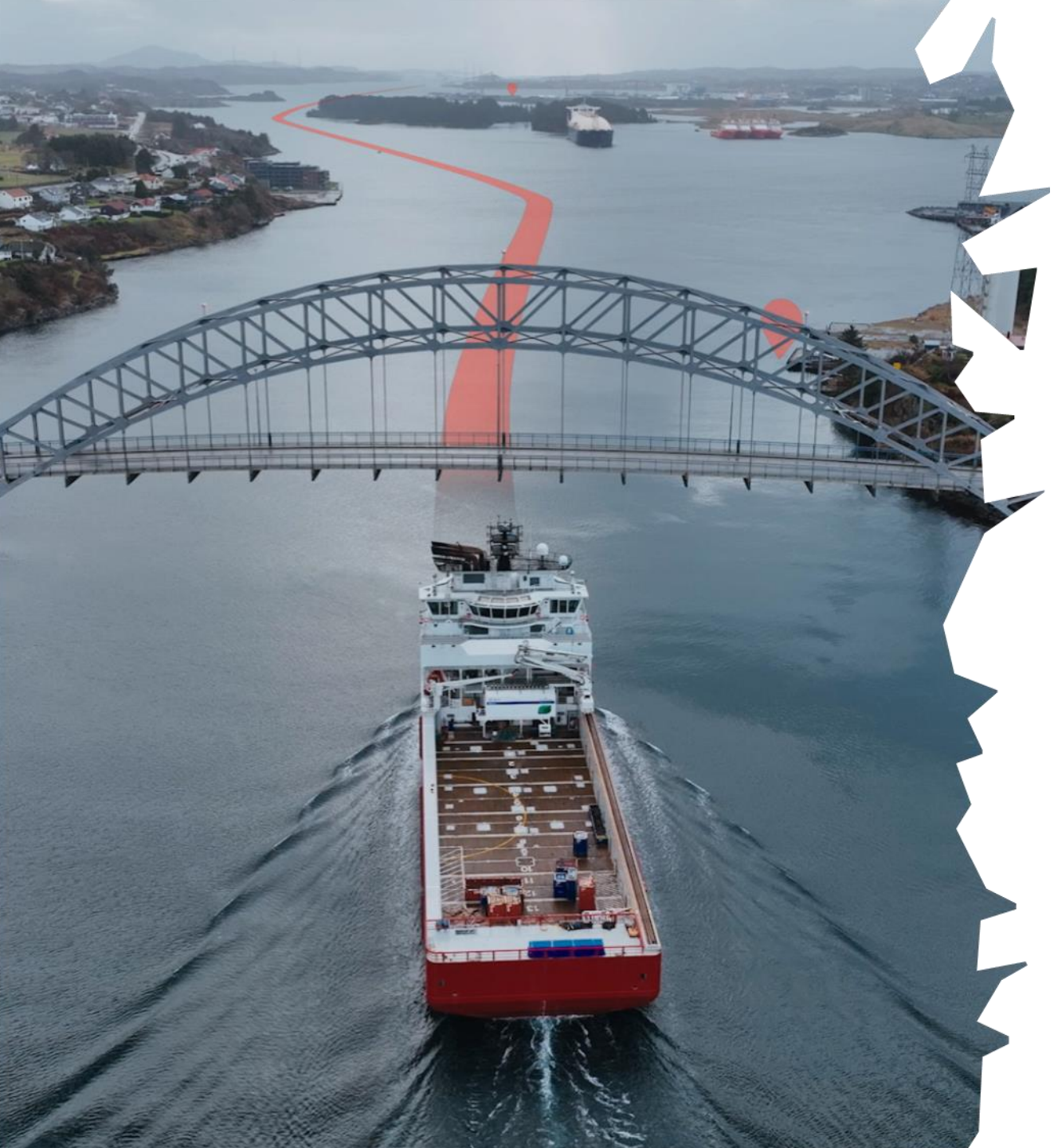
Communication setup - Use in demonstration A3.1 and A3.2

Include handling different versions (Interoperability id)

Possible visualisation of routes in graphical display? (NAVTOR, others)

RTZ test data:- Own applications + https://cirm.org/rtz/

S-421 test data https://cirm.org/s-421/



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S421 Route plan

- A more complex data model than RTZ, with many more elements
- More than one way of doing what you want

- The new ECDIS performance standard a key element, but a lot of software/hardware development also needed elsewhere including communication (port, single window, VTS, etc.).
- Action points
- mrn
- XTDL + CL (Crosstrack distance limit + Crosstrack distance check limit)
- Further testing probably to be based on version after amendments 2024.

S421 Route plan

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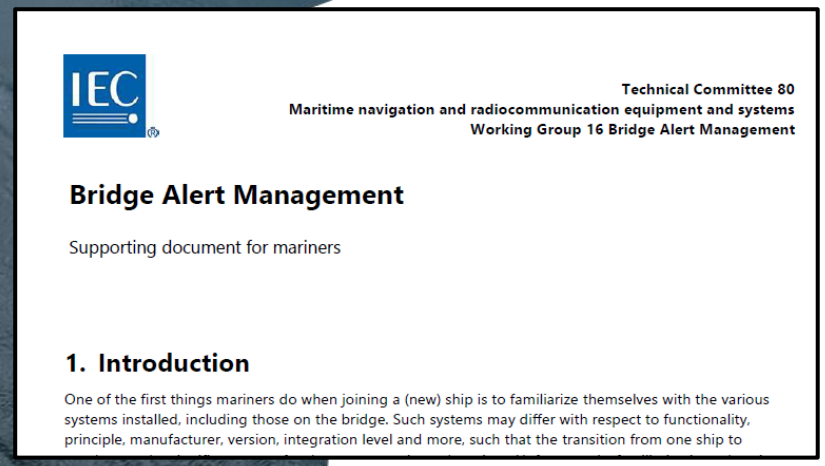
- Taken initiative for an open supporting document to mariners, parallel to document on BAM:
- Use cases: Part of Nautical Publication (MS12), Part of Search and Rescue services (MS16), Part of Vessel Traffic Services (MS1). Part of shore reporting



IEC

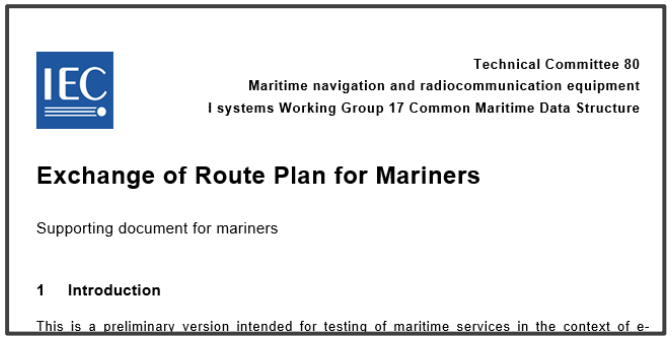
Technical Committee 80
Maritime navigation and radiocommunication equipment and systems
Working Group 16 Bridge Alert Management

Bridge Alert Management

Supporting document for mariners

1. Introduction

One of the first things mariners do when joining a (new) ship is to familiarize themselves with the various systems installed, including those on the bridge. Such systems may differ with respect to functionality, principle, manufacturer, version, integration level and more, such that the transition from one ship to



IEC

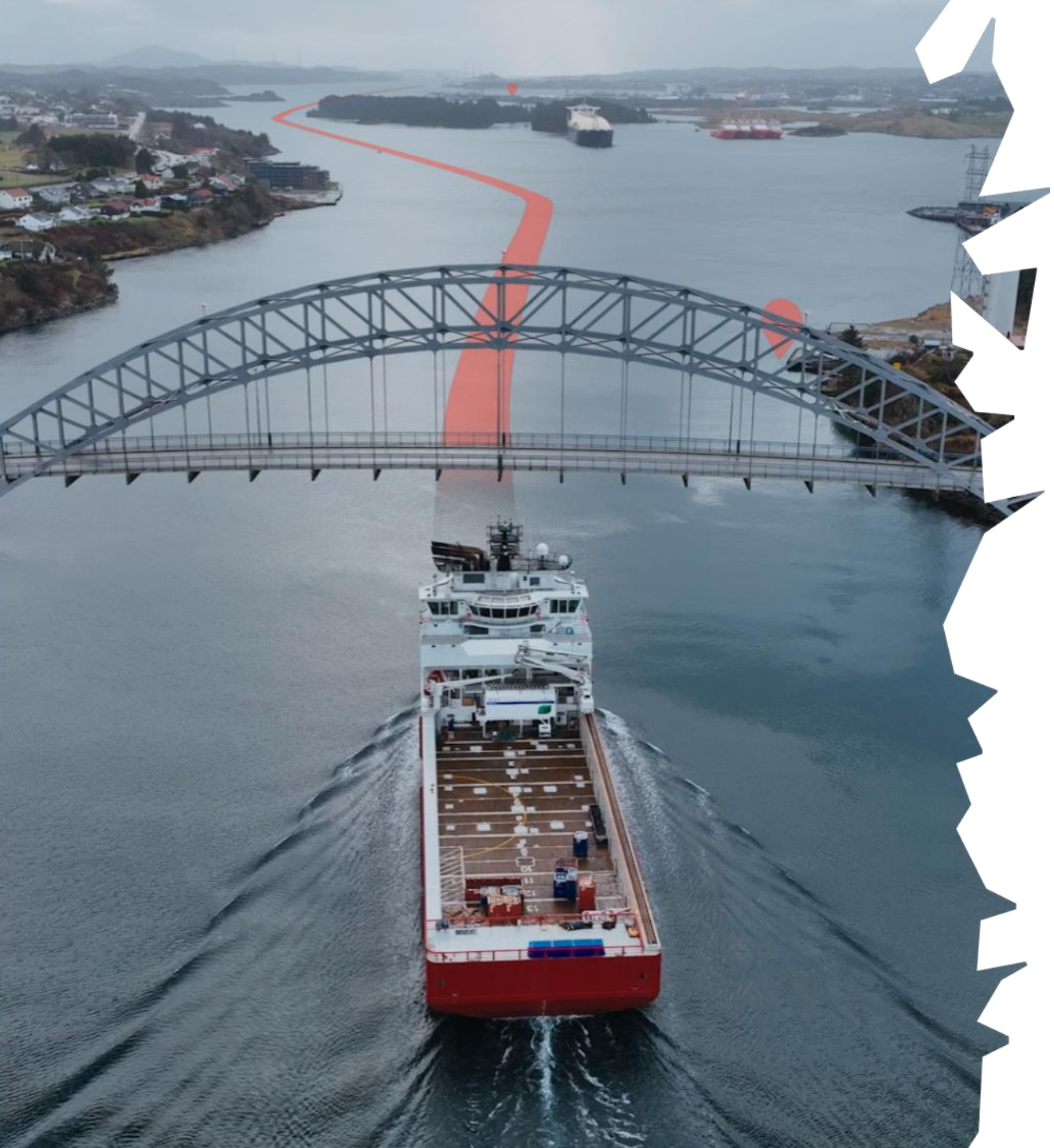
Technical Committee 80
Maritime navigation and radiocommunication equipment
I systems Working Group 17 Common Maritime Data Structure

Exchange of Route Plan for Mariners

Supporting document for mariners

1 Introduction

This is a preliminary version intended for testing of maritime services in the context of e-



S421 Route plan

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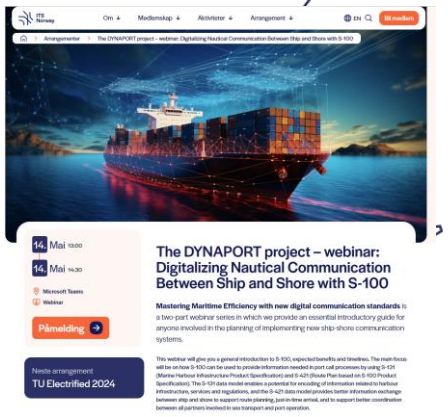
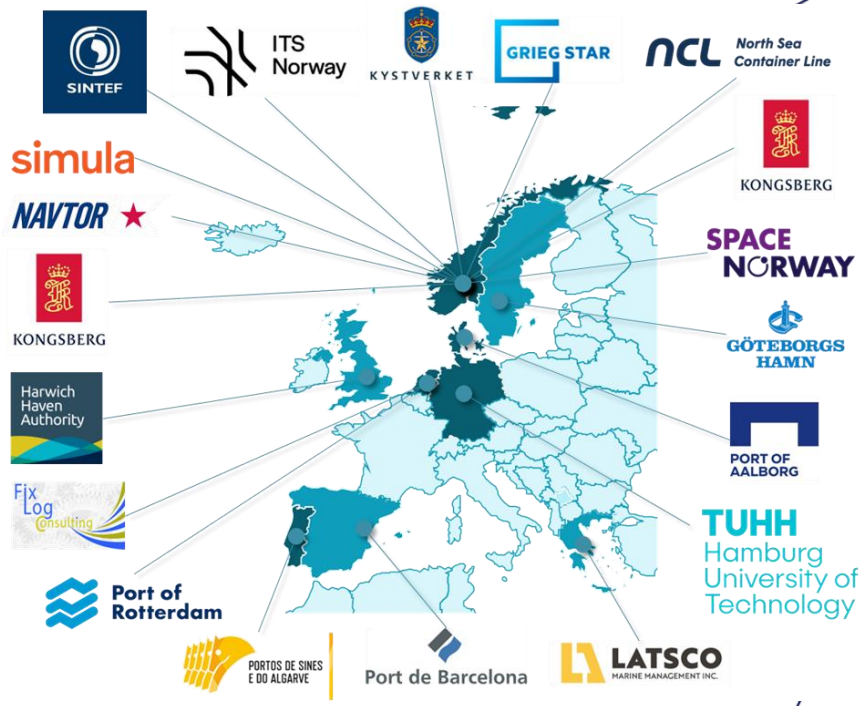
- Services will have to support both S421 and RTZ!(?)

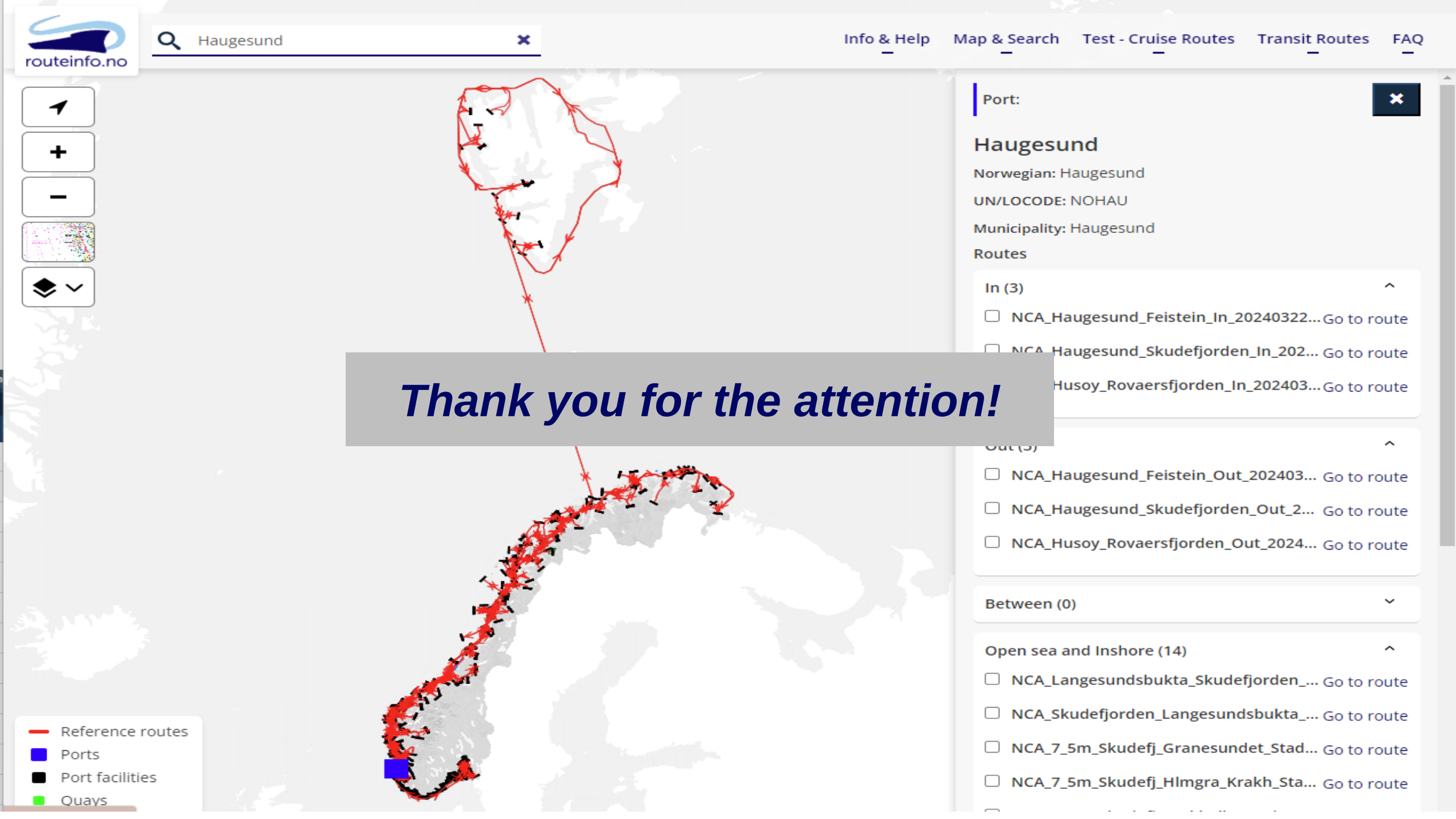
Dynaport, 2024 – 2026 (JIT planning and more)

- 1 hour webinar - Digitalizing Nautical Communication Between Ship and Shore with S-100 (S100/S131/S421), 14th May
- https://its-norway.no/arrangementer/the-dynaport-project-webinar-digitalizing-nautical-communication-between-ship-and-shore-with-s-100/
- 1 hour webinar - Digitalizing Operational Communication Between Ship and Shore with ISO 28005, 6th May
- https://its-norway.no/arrangementer/the-dynaport-project-webinar-digitalizing-operational-communication-between-ship-and-shore-with-iso-28005/





https://www.sintef.no/en/projects/2024/dynaport-dynamic-navigation-and-port-call-optimisation-in-real-time/



Thank you for the attention!

7) Closing remarks

- Next Developer Forum at 23/05-2024

Meeting notes (1/3)

- Due to illness and unforeseen obstacles, the implementation of the SECOM Hotel in DEV and TEST was delayed with the new estimated finish date of the implementation being sometime next week (v.18)
- The NIS2 directive is updated and Navelink is currently investigating what consequences on Navelink and the MCP system this may have
  - Users need to be aware that if you consider your system falls into category “essential” or “important” you may need to ensure that Navelink has the same requirements in the future
- In the Navelink pipeline is making use of the Maritime Resource Registry together with Service Registry.
  - Thomas Christensen: Unfortunately, there are no firm plan or road map for the MRR currently.
  - Mikael Olofsson: What remains is also to decide where documents will be stored so we know where the master document is. The design of services need to be retrievable by both service provider and consumer to achieve interoperability across different service developments.
- At some time in the pipeline is discussion on whether we should have a Navelink MMS router, but nothing has been decided yet. No date for when we have a working MMS environment ready in the Operational environment.
- VDES is in the pipeline but further in the future
  - Peter Bergljung: Before this summer some critical decisions regarding VDES will be made in regarding SOLAS ships that is worth to have in mind
- On slides 9-10, summarized information from the IALA meetings can be found.
- John-Morten Klingsheim (Norwegian Costal Administration) gave a presentation on Route exchange and the Norwegian plans regarding use of S421 in reference routes (slides 20-46)
  - The missing link in IHO S-100 Roadmap is the route.
  - Not all ships today use S-421 but having a standard defined is an enabler for interoperability.

Meeting notes (2/3)

- The value when we have these routes is that they have a common reference.
- We tested in previous projects and have the same route in the simulated environments to test them on other vessels coming into the same scenario.
- The routes are quality assured for a specific dimension, so the quality assurance depends on what type of vessel you are.
- There is an open API where Norwegian Reference Routes can be retrieved (se slide 31)
- As of this week there are 687 reference routes for navigation created, including to Svalbard.
- The next step is getting the actual route from the ship to the portside.

- How to migrate to S-421, what are the next steps?
  - It requires systems capable of digital connectivity and use of standard formats such as S-421
  - In a current project, ISTS, we will try to test S-421 and exchange route plan between ship and shore
  - Going from RTZ to S-421, S-421 has a lot of more possibilities and information now fits in standardized format instead of the manufacturer specific extensions in the RTZ format or metadata content that is not generally interpreted.
  - The S421 is a more complex data model, and the challenge is that what you want to do, you can do in more than one way. The ECDIS performance standard says how to deal with the details in ECDIS but we also need the standard for the shoreside systems.
  - A suggestion from Norway is a document “Route Exchange for Mariners”, like the bridge alert management (BAM) for the mariners, describing how to use Route Exchange (S-421) in different use cases, such as how the route plan can be an element in the nautical publications
  - Any manufacturers or partners can refer to the supporting document on how it will refer to the mariners' side making harmonization of the sides easier.
    - What will the mariners see, what should they not see etc

Meeting notes (3/3)

- Questions:
  - Mikael Olofsson: Do you intend to use SECOM or how is your thinking regarding SECOM as currently you use a webpage more or less?
  - John-Morten: I predict that SECOM will be one solution. We are distributing in different channels.
  - Mikael Olofsson: Do you see any updates for the futures when the ships can send according to the S421?
  - John-Morten: The project is at an end so I do not think it will be this October but in the future perhaps.
- Next meeting 2024-05-23

NAVELINK

Navelink.org