Maritime Intelligent Transport Systems

Marine Geospatial Information, Genoa, January 31st 2023

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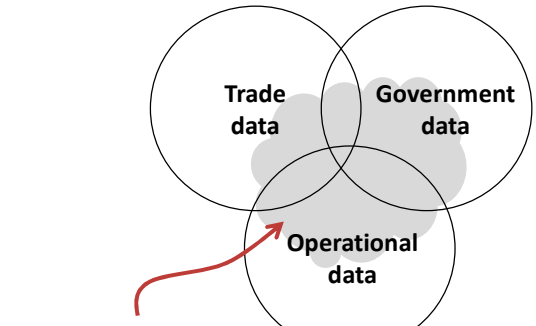
1

The IMO Compendium and IMO Reference Data Model

Technology for a better society

2

Started as a cooperation between IMO, UNECE, WCO and ISO



IMO Reference Data Model

"IMO Compendium"

Key sources of data

- The FAL Forms
- Maritime Declaration of Health
- Stowaways
- Waste reporting
- Just in Time arrival
- Ship Certificate list
- Mandatory Ship Reporting System
- Ballast water reporting
- …

Initial contributors

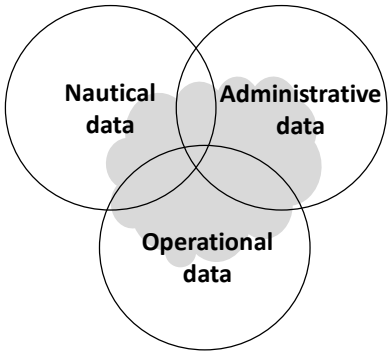
IMO

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE

ISO

3

Harmonizes data elements between domains



Agreed on common definitions

Growing number of contributors

IALA

GS1

IAPH

dcsa

BIMCO

EMSA

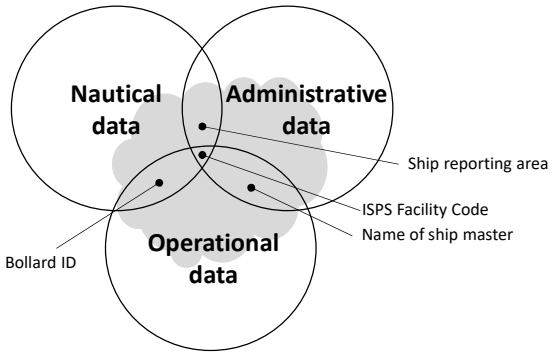
European Maritime Safety Agency

…

International Standards

4

Harmonizes data elements between domains



5

Note also complexity of identification

```
<xs:complexType name="LocationType">
  <xs:sequence>
    <xs:element name="Name" type="epc:string" minOccurs="0" />
    <xs:element name="CountryCode" type="epc:CountryCodeContentType" />
    <xs:element name="FacilityName" type="epc:FacilityNameType" />
    <xs:element name="FacilityCode" type="epc:GISISCodeContentType" />
    <xs:element name="GLN" type="epc:GLNContentCodeType" minOccurs="0" />
    <xs:element name="Position" type="epc:PositionType" minOccurs="0" />
    <xs:element name="UNLoCode" type="epc:UNLoCodeContentType"
  </xs:sequence>
</xs:complexType>
```

6

International cooperation is needed!

International cooperation.
Using the relevant international standards organizations.

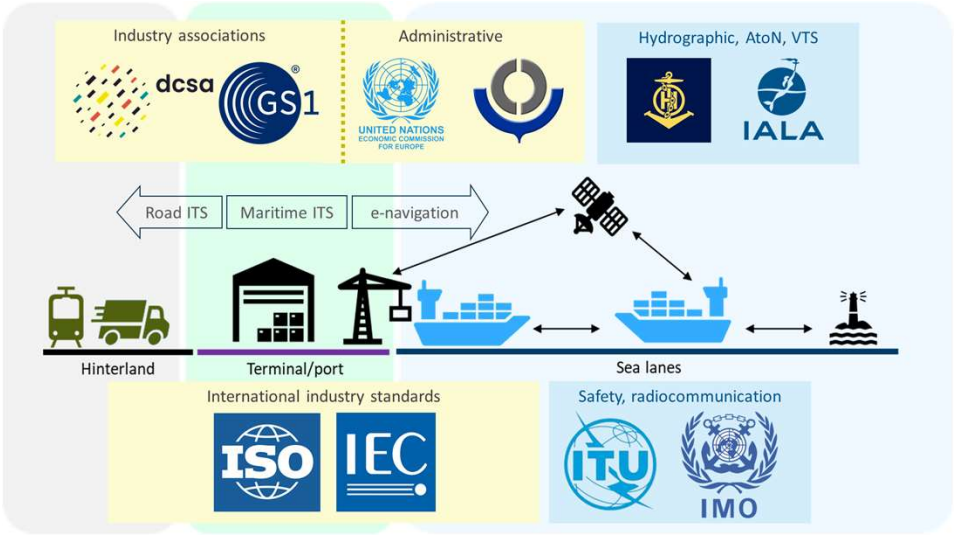
7

The role of Maritime ITS

Technology for a better society

8

MITS bridges the gap between sea and land

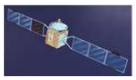


- Cargo tracking
- Hinterland interfaces
- Terminal operations

9

More cooperation in the ITS community

1969: ARPA Anticollision radar

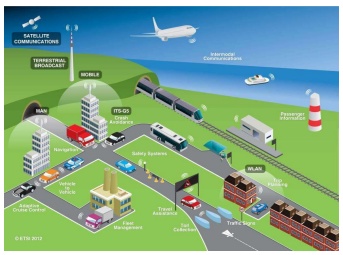


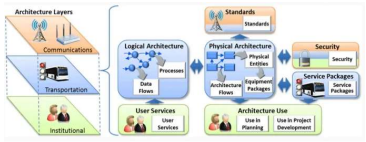
1981:SatCom INMARSAT - MARECS

1982:EPIRB COSPAS - SARSAT

1995: IMO GPS Performance requirements

2000: AIS into SOLAS regulation V19





http://www.iteris.com/itsarch/html/menu/hypertext.htm

10

The role of Maritime ITS
Two examples

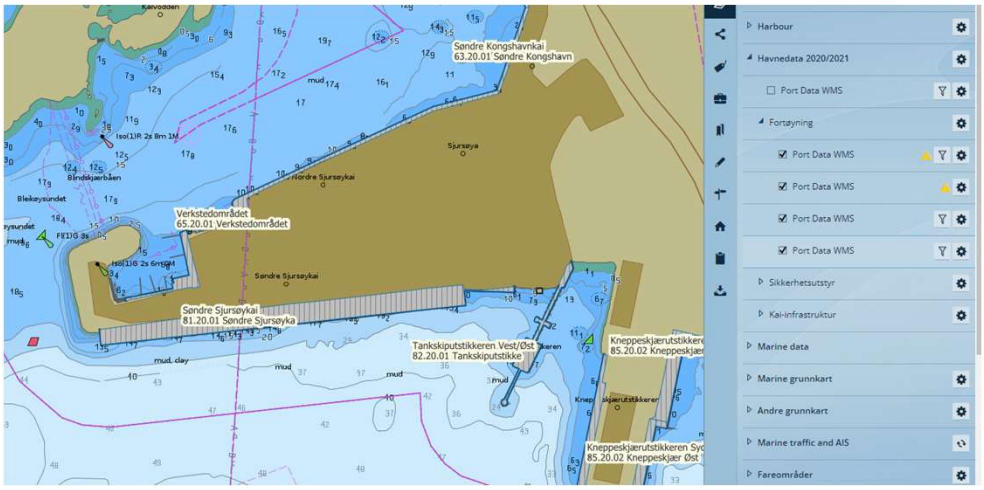
Technology for a better society

11

Port Information: Maritime ITS <-> Marine Geospatial Information

Example - Port of Oslo, Norway

An initiative to establish a national port information system with reference to S-131 Marine Harbour Infrastructure



12

KYSTVERKET

Route Information Service

- *The use of Route plan standard IEC61174:2015 (S421 / RTZ) - Reference routes for navigation*

Film: https://youtu.be/eCVOKJwAQwE?t=0)

temporary link, https://youtu.be/k7_WjxxBhR8

Digital standards:

- **From paper chart to digital charts (ENC)**, app. 2010ish

- **AIS** (ais automatic ship identification) app. 2002-06ish

- **Route plan** (RTZ/S421) 2015ish

13

Oslofjorden
24.9.2018

Skagerrak
31.5.2019

Rogaland
31.5.2019

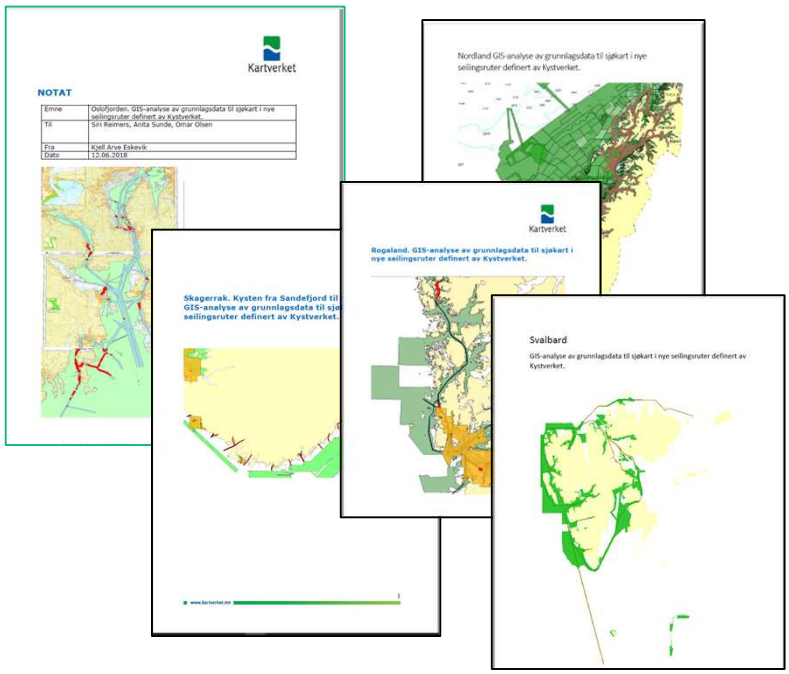
Vestlandet
15.1.2020

Møre og Trøndelag
15.6.2020

Nordland
8.10.2020

Troms og Finnmark
18.1.2022

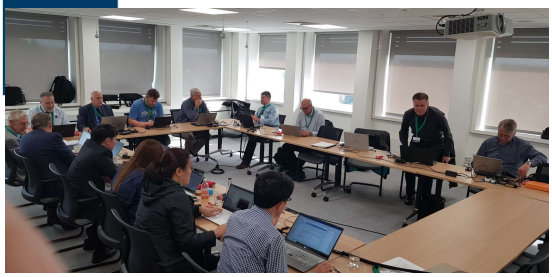
Svalbard



KYSTVERKET

step by step approach

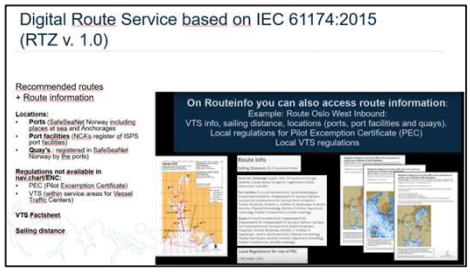
14



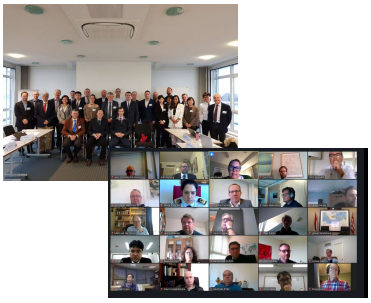
IEC T80 WG 17, 2019-2021

International reference

(ex. IEC T80 WG 17 / NIPWG6 (2019))



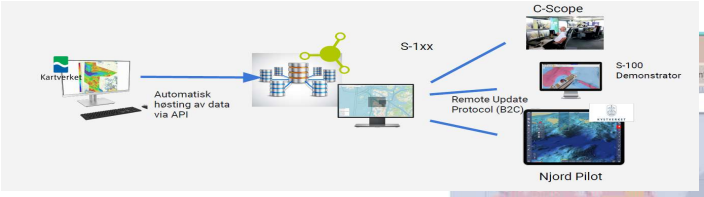
NIPWG6 (2019)

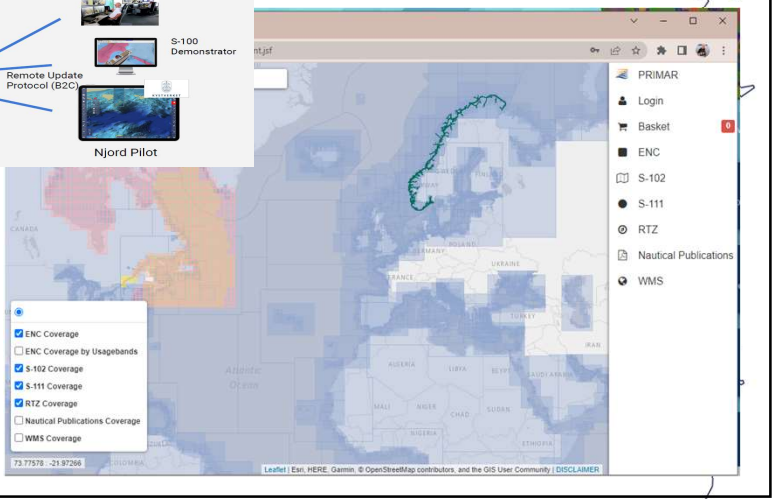


15

Efficient and secure information flow, (S-102, RTZ)

- API's / PRIMAR etc.





16

17

MAIN FINDINGS FROM THE FRAM-ANALYSIS

MENON ECONOMICS

To get and provide rough estimates of the benefit of the potential risk reduction associated with introducing quality assured sailing routes for the Norwegian coast, through routeinfo.no, we have conducted two analyses using FRAM. FRAM is the Norwegian coastal administration's model to calculate costs and benefits at sea. First, we perform an analysis where we reduce the probability of grounding by 1 percent, thereafter we perform another analysis where we reduce the probability for collision by 1 percent. The results are thereafter analyzed in a cost-benefit framework and a net present value over ten years is calculated.

Routeinfo.no is primarily used by ships above 70 meters. Additionally, the accident data we have used to evaluate the risk reductions only cover accidents concerning such ships. The analysis restricts itself to benefits for ship of length above 70 meters.

The results are highly uncertain and do not take other costs or benefits into consideration. They do, however, illustrate the possible benefits the quality assures routes provided by the Norwegian Coastal Administration through Routeinfo.no, could deliver through improved maritime safety.

Given our assumptions, our rough estimates of the net present value of the benefit of reduced risk of grounding over the forthcoming ten year period amounts to 37 MNOK. The equivalent figure is 8 MNOK for collisions, but this estimate is more uncertain and must be interpreted as an upper bound. In total the potential benefit adds up to 45 MNOK.

The benefit of improved maritime safety
(net present value over 10 years)

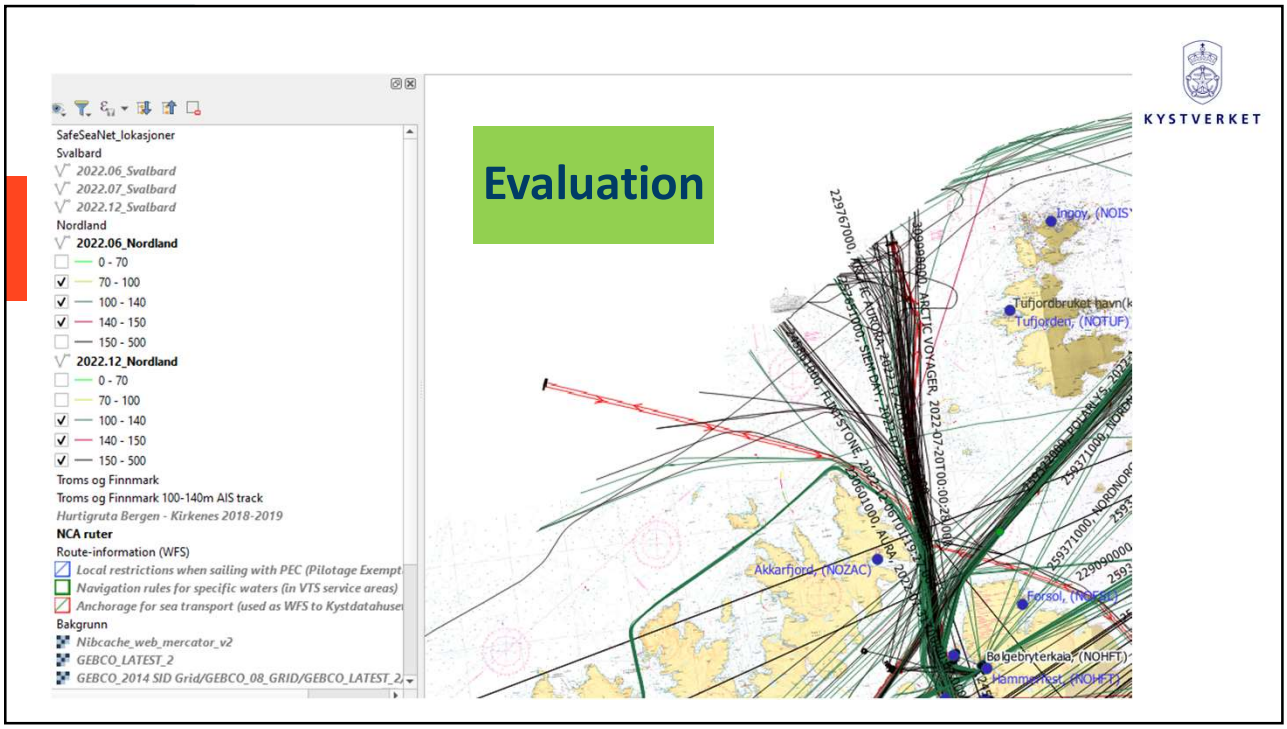
Grounding:
NOK 37 million

Collision:
Up to NOK 8 million

Joint potential benefit:
NOK 45 million

It is important to note that the benefits above does not take incurred costs of implementation of routeinfo.no. Thus, the report simply shows the potential benefits of routeinfo.no with regards to maritime safety.

18



19

SINTEF

Thank you for your attention!

The work presented here has received funding from the Research Council in Norway and the ISTS project (Project number 326679).

Funded by The Research Council of Norway

http://ists.mits-forum.org/

MARITIME ITS

20