Maritime ITS in the making

A Wholistic View built on Standards

Trond Hovland, ITS Norway
1. Emission targets and motivation
2. Multimodal Integration
3. Maritime ITS in the making ...
4. Standards
5. Summing up
What’s going on?

• The EU aims to be climate-neutral by 2050 - with an intermediate net reduction of at least 55% in emissions by 2030

• Transport represents about 25% of the total emissions in the EU

• Following the UN SDGs – Maritime logistics has to do its bit!
Not only clean fuels!

ITS contribution:
- Better use of each vessel/vehicle
- Better use of ports and terminals
- Optimisation and integration
- Automatisation

Leads to:
- Less emissions
- Fewer accidents
- Reduced costs

Source: ITS Norway
Agenda

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ISO/TC 211 56TH PLENARY MEETING

Coastal Administration
Fair/seaways
Maritime ITS Scope and Framework

Road Administration
Road network
Road ITS Mobility + Automatisation

Rail Administration
Rail network
Rail ITS

Aviation Administration
Airways
Aviation ITS

Hub, terminals, harbours, ...
Quays, ramps, gates, ...
ITS Transfer Nodes

International borders
Cross-border ITS systems and services
ITS Hub Systems/services

Source: ITS Norway
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Maritime ITS – What is it?

Maritime ITS: International cooperation to integrate a worldwide maritime digital ecosystem with interoperable products and services.

Shipping is not isolated; cargo and people must still be transported to and from the harbour.

Maritime ITS – many possible definitions – but this might serve as a starting point:

1. Establishment of a Maritime ITS architecture that combines Geospatial-based standards and the nautical, operational and administrative domains into one integrated system for sharing of data – (in the road domain, this is called CCAM or C-ITS)

2. Connecting Maritime ITS to land-based ITS architectures to foster actual multimodal transport and to enhance the exploitation of resources and information ports and terminals
ISTS – Intelligent Ship Transport System

1. Onboard system integration

2. eNavigation

3. Automated data transfer

4. Automated harbour/terminal operations

5. Secure and open data sharing
National Digital Port Infrastructure

Source: Trygve Emil Tønnesen

Source: Norwegian Mapping Authority
Port Information Model for Seamless Maritime Logistics

<table>
<thead>
<tr>
<th>Port Area</th>
<th>Shipping Area</th>
<th>Transfer Area</th>
<th>Yard Area</th>
<th>Gate Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Agent</td>
<td>Remote Crane</td>
<td>Auto Guided Vehicle(AGV), Autonomous Truck</td>
<td>Remote Crane</td>
<td>Autonomous Truck</td>
</tr>
<tr>
<td>Geospatial</td>
<td>Container Crane</td>
<td>Port road network for Transport Vehicle</td>
<td>Yard Crane, Container Yard</td>
<td>Truck Gate Out, Train Gate Out</td>
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<tr>
<td>Feature</td>
<td>Container Crane</td>
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<tr>
<td></td>
<td>Area for Container picking up and</td>
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<tr>
<td></td>
<td>dropping off</td>
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</tbody>
</table>
Digital Corridor from Singapore to Rotterdam

- Showcasing data connectivity for nautical, operational and administrative data using multiple APIs.
- Promote adopting standards to ensure implementation by large numbers of diverse stakeholders. Using ISO 28005-1 API (client/server)
- Ultimately, it will reduce ship emissions en-route, in and around ports, while ensuring greater safety, a cleaner environment and lower costs for Shipping Lines, Shippers, Terminals and Ports.

Source: SINTEF Ocean
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ISO/TC 211 5GTH PLENARY MEETING

Gap Analysis – Standardization Process (2)

ISO/TC 211 GIS
Geographic information/Geomatics

ISO/TC 211/AG 01 "Outreach advisory group"
ISO/TC 211/AG 02 "Advisory group on strategy"
ISO/TC 211/AG 03 "Programme maintenance group (PMG)"
ISO/TC 211/AG 04 "Joint advisory group (JAG) ISO/TC 211 – OGC"
ISO/TC 211/AG 05 "Harmonized model maintenance group (HMMG)"
ISO/TC 211/AG 06 "Ontology maintenance group (OMG)"
ISO/TC 211/AG 07 "Terminology maintenance group (TMG)"
ISO/TC 211/AG 10 "XML maintenance group (XMAG)"
ISO/TC 211/AG 11 "Advisory group to support UN-GGIM and other related UN activities"
ISO/TC 211/AG 12 "Control body for the ISO Geospatial register"
ISO/TC 211/AHG 13 "Improve engagement"
ISO/TC 211/AHG 14 "TC211-TC20X task force"
ISO/TC 211/JWG 11 "Joint ISO/TC 211 - ISO/TC 204 WG, GIS-ITS"
ISO/TC 211/JWG 04 "Geospatial services"
ISO/TC 211/JWG 06 "Imagey"
ISO/TC 211/JWG 07 "Information communities"
ISO/TC 211/JWG 09 "Information management"
ISO/TC 211/JWG 10 "Ubiquitous public access"

ISO/TC 204 ITS
Intelligent transport systems

ISO/TC 204/WG 01 "Architecture"
ISO/TC 204/WG 03 "ITS database technology"
ISO/TC 204/WG 05 "Fee and toll collection"
ISO/TC 204/WG 07 "General fleet management and commercial freight"
ISO/TC 204/WG 08 "Public transport/emergency"
ISO/TC 204/WG 09 "Integrated transport information, management and control"
ISO/TC 204/WG 10 "Traveller information systems"
ISO/TC 204/WG 14 "Vehicle/roadway warning and control systems"
ISO/TC 204/WG 16 "Communications"
ISO/TC 204/WG 17 "NOMadic Devices in ITS Systems"
ISO/TC 204/WG 18 "Cooperative systems"
ISO/TC 204/WG 19 "Mobility integration"
Gap Analysis – Standardization Process (3)

• Needed: Gap analysis between the Maritime ITS and GIS/ITS

• A Joint Work Item under JWG11 or a new JWG?
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Summing up

- Maritime ITS is becoming a technological concept with actors, projects, and standards!
- Maritime ITS will drive automatisation, enable cross-mode data sharing, and streamline logistics through terminals and harbours!
- There will be summits, seminars and excursions.
- There will be new professions reflecting Maritime ITS.
- And there will be standards!
- Support from ISO, IHO, OGC, IMO, IALA, the EU and ...
- ... And there will be less emissions!
Thanks for listening!

trond.hovland@its-norway.no
+47 907 60 831