e-navigasjon - forretningsmuligheter for ITS-industrien?

Jon Leon Ervik
Avdelingssjef
Senter for løs og VTS
"How inappropriate to call this planet Earth when it is quite clearly Ocean"

Arthur C. Clarke
Flight cockpit
Opportunities in e-navigation

E-navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth to berth navigation and related services, for safety and security at sea and protection of the marine environment.
## 5 Agreed e-Navigation Solutions

<table>
<thead>
<tr>
<th>Solution S1</th>
<th>Improved, harmonized and user-friendly bridge design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solution S2</strong></td>
<td>Means for standardized and automated reporting</td>
</tr>
<tr>
<td><strong>Solution S3</strong></td>
<td>Improved reliability, resilience and integrity of bridge equipment and navigation information</td>
</tr>
<tr>
<td><strong>Solution S4</strong></td>
<td>Integration and presentation of available information in graphical displays received via communication equipment.</td>
</tr>
<tr>
<td><strong>Solution S9</strong></td>
<td>Improved Communication of VTS Service Portfolio.</td>
</tr>
</tbody>
</table>
Norwegian e-navigation strategy
e-navigation Concept

SHIP

S1: Harmonized and user-friendly Bridge Design
S2: Reliability of Bridge Equipment and Navigation Information
S3: Integration of Information in Graphical Displays
S4: Standardized and Automated Reporting

Marine Electronic Highway (MEH)

SHIP / VTS / PORT Communications

SHIP REPORTING

IHO S-100 Standard

PORT

IHO S-100 Standard

VTS

MSP1, MSP2, MSP3, MSP4, MSP5, MSP6, MSP7, MSP8, MSP9, MSP10, MSP11, MSP12, MSP13, MSP14, MSP15, MSP16

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e-navigation Concept

- Ship
  - IHO S-100 Standard
  - Standardized and Automated Reporting
- Port
  - IHO S-100 Standard
  - Shore Based Maritime Services Portfolio Provided to Ship
- Marine Electronic Highway
  - SHIP / VTS / PORT Communications
  - Police
  - Defence
  - Customs
  - NCA
  - Port
  - VTS
  - Service Provider

- Harmonized and user-friendly Bridge Design
- Reliability of Bridge Equipment and Navigation Information
- Integration of Information in Graphical Displays

www.kystverket.no
### Example of Maritime Service Portfolio (MSP)

<table>
<thead>
<tr>
<th>MSP1</th>
<th>VTS Information Service (IS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSP2</td>
<td>Navigational Assistance Service (NAS)</td>
</tr>
<tr>
<td>MSP3</td>
<td>Traffic Organization Service (TOS)</td>
</tr>
<tr>
<td>MSP4</td>
<td>Local Port Service (LPS)</td>
</tr>
<tr>
<td>MSP5</td>
<td>Maritime Safety Information (MSI) Service</td>
</tr>
<tr>
<td>MSP6</td>
<td>Pilotage Service</td>
</tr>
<tr>
<td>MSP7</td>
<td>Tugs Service</td>
</tr>
<tr>
<td>MSP8</td>
<td>Vessel Shore Reporting</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>MSP10</th>
<th>Telemedical Maritime Assistance Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSP11</td>
<td>Maritime Assistance Service (MAS)</td>
</tr>
<tr>
<td>MSP12</td>
<td>Nautical Chart Service</td>
</tr>
<tr>
<td>MSP13</td>
<td>Nautical Publications Service</td>
</tr>
<tr>
<td>MSP14</td>
<td>Ice Navigation Service</td>
</tr>
<tr>
<td>MSP15</td>
<td>Meteorological Information Service</td>
</tr>
<tr>
<td>MSP16</td>
<td>Real-Time Hydrographic and Environmental Information Services</td>
</tr>
<tr>
<td>MSP17</td>
<td>Search and Rescue (SAR) Service</td>
</tr>
</tbody>
</table>

The objective of the MSP concept is to align global maritime services with the need for information and communication services in a clearly defined operational area.
User friendly?
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Height</th>
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<td>4.5</td>
</tr>
<tr>
<td></td>
<td>1816</td>
<td>1.9</td>
</tr>
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</table>
Technical opportunities?
Meteorological information
Ship routing in ice waters reduces fuel, emissions and risks

Planned route through the ice
6 hours
Actual route around the ice
3 hours
Marine Highway
Norwegian e-navigation strategy
Bølge varsler

Bølgevarsler for farleder
- Rolvsøy
- Lopphavet
- Vågsfjordbassenget
- Vestfjorden-Indre
- Vestfjorden-Ytre
- Folda
- Trondheimsleia
- Hustadvika
- Breisundet
Bølge varsler
✓ Sailing plan exchanged between the ship and the Norwegian Coastal Administration (NCA) – Quality Assurance and Report.
✓ The VTS provides sailing clearance to the ship and transfers traffic images via AIS.
✓ The VTS transfers electronic updates of local port maps to the ship.
✓ The VTS transfers information about local regulations electronically to the ship.

Single Window
Bergen – hub for trade and tourism
Multimodal transport
Maritime Services
SafeSeaNet Norway in 2013

3 600 ships have provided -

- 140 000 electronic ship notifications registered and distributed to:
  - Norwegian Coastal Administration 45 000
  - Police 18 700
  - Customs 59 000
  - Defense 37 000
  - Norwegian Maritime Authority 400

Replaced a lot of paper!
SafeSeaNet Norway – efficiency improvements

- Reduction in number of ship reports: 245,000
- Reduction in hours used to fill out ship reporting forms: 245,000*
  \[= 140 \text{ people working full-time}\]

* Estimated time for filling out reporting forms onboard and ashore: 60 minutes
Listekontroll av mannskap og passasjerer

Uten Safe Sea Net
Muligheter

- Arktis
- Satellitt teknologi og tjenester
- Smarte algoritmer og analyse verktøy
- Apper. skreddersydd
- 3 D
- Display teknologi
- Nytteverdi for rederiene
- S-100
Muligheter

• Arktis
• Satellitt teknologi og tjenester
• Smarte algoritmer og analyse verktøy
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• S-100
Muligheter

• «Smartboks» Kommunikasjon
• Kosteffektiv PNT
• Smart opplæring
• Knekke språkbarriere
• Drone
Konklusjon

• Næringsrettet utvikling
• Fokuser på nær dialog med bruker
• Lær av bil og fly sektor
• Lær av e-tjenester i andre sektorer
• Utnytt norske fortrinn (hele klyngen)
• Se mulighetene i landbaserte tjenester
• Tenk utover de 5 løsningene
  (det finnes flere løsninger og kombinasjoner)
Thank you