What we set out do to

- Validate the architecture of STM, usability of Maritime Connectivity Platform, Key Performance Objectives and the business cases
- Validate STM concept
- Demonstrate the STM concept in
  - Live test beds
  - European Maritime Simulator Network
What we set out to do

Port CDM
  • Analyze differences between different ports
  • Invite service developers to develop Port CDM Services

Voyage Management, live test bed
  • More efficient winter navigation
  • Application for Search and Rescue
What we set out to do:

**EMSN**
- Simulate and further test different traffic conditions

**SeaSWIM**
- Use the Maritime Connectivity Platform in the test beds
Defined output

The STM Validation Project is an important step in ensuring the successful deployment of STM.

• Validated target concept for STM
• Quantitative and qualitative support for the broader development of STM
• Live demonstrators for STM services
• Martime Connectivity Platform supporting SeaSWIM
• An enhanced European Maritime Simulator Network
Use of the results

The results of the Action will form the basis for
• policy making
• further research and development of STM
• pre-deployment of Sea Traffic Management service
• support for decision-making
The analysis

• Based on data from test beds: PortCDM, Voyage Management and EMSN.
• Using the KPAs, KPOs and KPIs from MonaLisa2.0
• Concept refinement, updated FSA and CBA
Efficiency KPOs

- Minimize administrative burden
- Increase situational awareness
- Reduce congestion
- Increase predictability during voyages and in ports
- Decrease integration complexity, improve interoperability
- Increase information transparency
- Increase information quality
- Facilitate just-in-time
Integration, interoperability, transparency

13 November ~200 ships including SAR units and icebreakers

Number of exchanged messages per payload type

- **65691140**
  - RTZ: 24765
  - TXT: 38174

Number of active Ships

- 2018 March: 10
- 2018 April: 20
- 2018 May: 30
- 2018 June: 40
- 2018 July: 50
- 2018 August: 60
- Total 2018: 160
Interoperable!

STM ports
Connected ships and ports

• "I can really see route exchange ship to ship being useful" Navigator on a tanker. **Situational Awareness**

• “Route suggestions pops up at the worst possible time and only serves as a distraction” 2:nd Officer. **Information Quality**

• “Navigational warnings are useful but delay in receiving service response is a problem” Master on Ro-Ro ship. **Minimize administrative burden, information transparency & quality**
Vessel Traffic Services

• “AIS is the biggest progress I have seen. STM will be the next.”
  VTS Manager, Tarifa. **Situational Awareness**

• ”Radar, AIS, STM. Those steps are equal in the history of VTS”
  VTS Training Officer, Gothenburg. Increase **Predictability and Situational Awareness**
Pilot route service

Minimize administrative burden, increase predictability

Number of Pilot Route requests, and number of proposed pilot routes returned

Co-financed by the European Union
Connecting Europe Facility
Navigational warning service

Decrease integration complexity, improve interoperability
Increase predictability, improve interoperability, facilitate just-in-time
Winter navigation in Finland and Sweden

Decrease administrative burden, reduce congestion
Search and Rescue

Decrease administrative burden, improve situational awareness
Port call synchronization

Increase predictability on ships and in ports, facilitate just-in-time
A focus month in Valencia

Valenciaport PCS

Pilots/Traffic Control System

Towage Company System

Mooring Company System

Port terminals (the solid bulk and two chemical terminals will test it on November 2017)

Bunkering provider

Middleware

Automated connections

Additional (administrative) data

Port Authority System

Port-to-port information exchange (it is still not available). Data from/to Barcelona, Limassol, etc.

AIS Data

Valenciaport CDM

Port-to-ship / Ship-to-port communication

Manual connectors (Portable CDM App)

Manual connectors (Portable CDM App)

PCDM Message Standard

Arrows legend

- Automated connector
- Manual connector
- To be developed

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Starting point

• Large volumes of paperwork.
• Redundancy of information
• No real-time data exchange.
• Numerous phone/radio calls.
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Desired situation

- High reliability and accuracy of the information shared (real-time information at the right time to the right agent).
- Minimizing information redundancy.
- Reduction of phone / radio calls.
- Simplifying administrative procedures.
A focus month in Valencia

The results

<table>
<thead>
<tr>
<th>Source</th>
<th>Number of messages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorers</td>
<td>4154</td>
</tr>
<tr>
<td>Tugboats</td>
<td>2160</td>
</tr>
<tr>
<td>Pilots</td>
<td>2221</td>
</tr>
<tr>
<td>PCS</td>
<td>12498</td>
</tr>
</tbody>
</table>
## A focus month in Valencia

### The results

<table>
<thead>
<tr>
<th>Kind of ship</th>
<th>Turnaround time (Traffic Area)</th>
<th>Tme At Berth Average</th>
<th>Operating Time Average</th>
<th>% at berth</th>
<th>% Operating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR CARRIER</td>
<td>26:59:00</td>
<td>18:05:00</td>
<td>13:51:24</td>
<td>57,0%</td>
<td>51,4%</td>
</tr>
<tr>
<td>CHEMICAL TANKER</td>
<td>11:43:00</td>
<td>10:00:00</td>
<td>9:22:30</td>
<td>85,3%</td>
<td>80,0%</td>
</tr>
<tr>
<td>CONTAINERSHIP</td>
<td>25:03:15</td>
<td>22:13:58</td>
<td>17:33:55</td>
<td>88,7%</td>
<td>70,1%</td>
</tr>
<tr>
<td>GENERAL CARGO</td>
<td>16:23:30</td>
<td>14:17:30</td>
<td>13:30:00</td>
<td>87,2%</td>
<td>82,4%</td>
</tr>
<tr>
<td>PAX</td>
<td>21:58:00</td>
<td>20:17:30</td>
<td>15:57:30</td>
<td>92,4%</td>
<td>72,6%</td>
</tr>
<tr>
<td>RO-PAX</td>
<td>7:40:05</td>
<td>7:03:26</td>
<td>6:30:37</td>
<td>92,0%</td>
<td>84,9%</td>
</tr>
<tr>
<td>RO-RO</td>
<td>15:01:36</td>
<td>13:31:36</td>
<td>12:11:00</td>
<td>90,0%</td>
<td>81,1%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>15:07:52</strong></td>
<td><strong>13:17:01</strong></td>
<td><strong>11:06:13</strong></td>
<td><strong>87,8%</strong></td>
<td><strong>73,4%</strong></td>
</tr>
</tbody>
</table>
Port call optimization

• Pilots, Mooring Companies and Towage Company enter same information twice – in their own systems and in the Port Authority’s. Connectors should be ready and stable by the end of 2018.

• Getting real time data and predictions will improve the overall port efficiency.

• Reliable predictions will allow terminals to plan their operations more efficiently.

• Limited number of tug boats, can be used in two ports. Real time information allows optimization of resources.

Gabriel Ferrús Clari, R&D Project Manager, Valenciaport Foundation