international e-Navigation underway 2016

The coordinated approach
MONALISA 2.0 - Some Basic Facts

- Budget: 24.3 M€
- 50% co-financing from EU; TEN-T
- Project period: Sept 2013 – Dec 2015
- Lead Partner: Swedish Maritime Administration
## Sea Traffic Management (STM)

### What is STM?

STM takes a holistic approach to distributed service related to the **berth-to-berth voyage** enabling the efficient, safe, and environmentally sustainable sea transport.

STM is a concept for sharing secure, relevant and timely maritime information with authorized service providers, by proposing a framework and standards for information management and interoperable services.

| Maximize the utilization of the facilities in ports | Minimize the use of energy to steam between two ports |

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Co-financed by the European Union
Trans-European Transport Network (TEN-T)

Safety – Efficiency – Environment
Information management in sea transport

Many competing autonomous actors with their own systems/solutions
Vendor specific solutions
Sub-optimized information sharing
High entry barriers for new service providers
Lack of standards for information sharing and service interaction

A common service distribution and information sharing environment promoting TRUSTED, NON-PROPRIATORY, AND FEDERATED COLLABORATION

Co-financed by the European Union Trans-European Transport Network (TEN-T)

Safety – Efficiency – Environment
Information sharing infrastructure in shipping

Co-financed by the European Union
Trans-European Transport Network (TEN-T)
The Maritime Cloud facilitating SWIM –
The coordinated approach!
Linking Strategic Voyage Management to Dynamic Voyage Management

Optimized Voyage Plans through the STM process

Operational fleet management

Voyage Order

STRATEGIC VOYAGE MANAGEMENT Planning
- Basic Voyage planning
- Route history bank
- Legal aspects
- Chart, Port
- Voyage specific ID
- Single Voyage specific ID

DYNAMIC VOYAGE MANAGEMENT Operation
- Detailed Voyage Planning
- Dynamic Info
- Static Info
- Needs

SEA VOYAGE

Optimization
- Updated ETA
- Validation
- STCC
- PORT

GREEN VOYAGE
- Assistance
- SRS
- VTS

SHIP-SHIP ROUTE EXCHANGE

SHORE BASED SERVICE PROVIDERS

INTERACTIONS

Safety – Efficiency – Environment

Co-financed by the European Union
Trans-European Transport Network (TEN-T)
The overall objective of the concept:

_to support the development of efficient operations so the actors involved in a port call process (arriving of the vessel, cargo operation and the departure of the vessel) are well informed and well prepared for their tasks, creating conditions for a smooth and seamless port call._

- Situational awareness for increased ability to predict state changes for optimized port calls
- A common measurement and information sharing framework for integration of processes with high efficiency resulting in just-in-time operations for involved actors in a port call.
- Increased collaboration between actors by information exchange for coordinated port calls – from dyadic interaction to shared situational awareness.
Integrating with existing systems as the source

- Approach Management System
- Single Window
- Port CDM Information Service System
- Shipping ERP
- Vessel Operating System
- Service Provider’s System

Port Community System

Safety – Efficiency – Environment
Why STM?

• Reducing sailed distance
• Green steaming
• Safety
• Intermodality
Why STM?

Reducing sailed distance

• Each % sailed distance in the Baltic costs 100 000 000 € per year.  
  *CBA report, MONALISA 1*

• The Sound: Potential 12% saving.  
  *SSPA study, MONALISA 2.0*
Why STM?

Green steaming

• In a Swedish port...
  12% of ships anchor for 18 hours (median)
• If they’d reduce speed by 3 kts for 20 hours...
• 34% save on energy and emissions!

*Green Steaming: A Methodology for Estimating Carbon Emissions Avoided*  
Watson, Holm, Lind, 2015.
Why STM?

**Safety**

- The maritime world suffers a 25 times higher rate of accidents than aviation.
- Sharing voyage plans will reduce accidents

*Target Concept report, MONALISA 2.0*
FSA – the safety case

Estimated reduction (%) of expected collisions and groundings by implementation of the Risk Control Measures.

<table>
<thead>
<tr>
<th>Risk reduction rate</th>
<th>Flow Management by flow optimisation</th>
<th>Flow Management by enhanced monitoring</th>
<th>Dynamic Voyage Management by route exchange</th>
<th>Weighted combined rate</th>
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</thead>
<tbody>
<tr>
<td>Collisions</td>
<td>58%</td>
<td>5%</td>
<td>52%</td>
<td>83%</td>
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<tr>
<td>Groundings</td>
<td>6%</td>
<td>64%</td>
<td>8%</td>
<td>73%</td>
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</table>

Depending on the number of ships adopting STM, total annual safety benefits in European waters may reach an order of 100 million € in terms of averted cost and loss of lives.
Were do we go from here?

• This far – conceptual development
• Improvement phases
  – Voluntary, business driven 2020
  – Regional (e.g. Baltic) 2025
  – Global? 2030

Legal Impacts report, MONALISA 1
Strategic Roadmap and Master Plan report, MONALISA 2.0

• Now: STM Validation, test-beds
Large STM test-beds

- **Multivendor** environment supporting STM functions
- Operational services adding value to users
- VTS centres, icebreakers, MRCCs making use of STM in existing services
- 5 Shore centres doing Voyage Management
- 13 Ports doing Port CDM
- 300 ships STM-ready!
Why...

Boost system development – Set the standard
Evaluate the concepts & services – Validate
Roll out STM – Demonstrate
Where...

Validating concepts at:
- 300 ships
- 10 ports
- 3 service centres

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Connecting Europe Facility
When...

<table>
<thead>
<tr>
<th>Task</th>
<th>Due date</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<td>Establish STM funct. spec.</td>
<td>2016-03-28</td>
<td>Q4</td>
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<td>Q2</td>
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<td>Procurement of prototypes</td>
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<td>Test bed</td>
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</table>
The coordinated approach
Safety, security, efficiency

Supply chain & business efficiency
A maritime digital infrastructure?
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