SEA TRAFFIC MANAGEMENT VALIDATION PROJECT

Co-financed by the European Union
Connecting Europe Facility
Sept 12 Session 2

- Management words
- Panel – STM & the Future
- Something fidgety
- STM for Efficiency & Environment
- Day 1 summary
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- **STM for Efficiency & Environment**
- Day 1 summary
ENHANCED EFFICIENCY AND REDUCED ENVIRONMENTAL IMPACT
EMPOWERED BY PORT COLLABORATIVE DECISION MAKING (PORTCDM)

Mikael Lind
RISE Viktoria
PortCDM activities – At a glance
Example of integrated service - RTA from PortCDM to ECDIS
SHIPS AND PORTS NEED TO BE CONNECTED!

Connected ports
(origin)

Port call optimization

Port call synchronization

Connected ships

Voyage optimization

Connected ports
(destination)

Port call optimization

Port call synchronization

Enabling connectivity to hinterland for sustainable transport systems

Enabling connectivity to hinterland for sustainable transport systems

Port-to-port collaboration (optimization and synchronization)

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Business incentives for PortCDM

Savings for a large shipping line (40,000 port calls per year) is between 65 MUSD and 130 MUSD for just-in-time arrival.

Assumption: The largest container vessel consumes 240 tons of fuel at full speed (23 knots) and 40 tons of fuel at 10 knots.

A reduction of 17% of TTT can take away one vessel (if not fully loaded) in a route of 5 legs, 5 ships, using 4 ports.

Very many times ships do not leave in time giving rise to additional port call costs, chasing of time window to next port, and delay for arriving vessels.

JUST-IN-TIME ARRIVAL and GREEN STEAMING

REduced total turn around time

Strong incentives for enhanced interaction between ships and ports

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OBJECTIVES OF PortCDM

- Optimal resource utilization
- High degree of predictability
- Precision in time of departure
- No unexpected waiting times
- Fast turn-around
- Just-in-time operations
- Optimal resource utilization
- Green Steaming
- Minimal waiting times
- Minimal chasing
- High degree of predictability
- Precision in time of departure
- No unexpected waiting times
- Fast turn-around
- Just-in-time operations
- Optimal resource utilization

Ports of origin

Port operator

Ports of destination

Port operator

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STM supports dynamic acting

• **Dynamic voyage optimization** supported by services of
  – Port call synchronization
  – Weather routing
  – Area management
  – Traffic Synchronization

• **Dynamic port call optimization** supported by services of
  – Port call synchronization
  – Traffic synchronization
  – Port flow optimization
  – Weather forecasting
Inter-operable platform for sharing time stamps

- Shipping ERP
- TOS
- PMS
- FOC
- PortCDM information service system
- Previous / next port
- Port Community Systems (PCS)
- AIS
- Ship ECDIS
- VTMIS
- NSW
- Service provider’s system
- Hinterland operator’s system

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International PortCDM council
The Internationalization of PortCDM

Ensuring STM and PortCDM implementation meets the needs of the international maritime community

<table>
<thead>
<tr>
<th>International governing body for generic PortCDM matters maintaining:</th>
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</thead>
<tbody>
<tr>
<td>• Port call message format (PCMF)</td>
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<tr>
<td>• PortCDM concept definition</td>
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<tr>
<td>• Generic guidelines for the PortCDM concept</td>
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<tr>
<td>• Port call structure ontology</td>
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<tr>
<td>• Criteria for accreditation of PortCDM application and data services</td>
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<tr>
<td>• Key Performance Indicators (KPIs)</td>
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<table>
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<tr>
<th>Confirmed / TBC members</th>
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<tbody>
<tr>
<td>BIMCO BMVI Germany BSA Bahamas CIRM Cyprus Shipping Chamber IALA ICS IHMA IMO IMPA</td>
</tr>
<tr>
<td>IMSO Intertanko Marshall Island Registry Member state Australia Member state Canada Member state Singapore MOF Korea Port of Freemantle Port of Singapore SMA Valencia port foundation</td>
</tr>
</tbody>
</table>

... and more to come
Cost drivers

Dependencies between time stamps

Increased costs for pilotage (P)

Departure berth delayed (ALL)

Cargo operations completed delayed (Y)

Arrival berth delayed (R)

Slof operations delayed (X)

Slof operations delayed (Z)

Vessel waiting by anchoring (S)

Arrival berth for next vessel delayed (O)

* Cause of delay: Cargo Operations delayed + ready to sail
* Cause of delay = berth availability. (SMERALDO was delayed, see separate sheet). These changes resulted in a penalty fee of 1990SEK. (Not a significant amount, but another vessel suffered from this delay, please see the sheet).

Departure: Arrival OK (Not presented in this sheet)

* Cause of delay: Bunker Operations and Sludge Operations took place after Cargo Operations finished 01:10).

Completed.

Late change resulted in a penalty fee of 2490SEK.

Definite Pilotage changed from 00:30 to 02:00 at 23:48

Departure: Arrival OK (Not presented in this sheet)

Pilotage (definite) ordered for 22:30 (SMERALDO 23:00) then changed to 23:30 (SMERALDO 00:00) and then changed to 23:59 as ordered. Because of the delay pilotage was billed for 3,5 hours instead of 2 hours which is an extra fee of: 7046SEK.

Interesting is that PortitSEGOT had at the time of the definite pilotage order ETD estimated to 17:00 instead of 15:30. These changes resulted in a penalty fee of 1990SEK.

35 minutes delayed). Pilotage usually take approximately 1 hour for this type of vessel for departure. But because of the delay pilotage was billed for 1,5 hours instead of 1 hour which is an extra fee of: 3049SEK.

Another vessel with 2 pilots and 2 tugboats inbound for that berth. Pilotage time 04:00-07:20 = 1hr extra pilotage time (Extra Pilotage cost approximately 8701SEK, this excludes the extra hour of pilotage and tugboat-time. (Extra Pilotage cost approximately 4697 SEK)

Vessel was at anchor waiting for available berth (511).

* Cause of delay = berth availability. (BONITO was delayed, see separate sheet).

Pilotage Commenced = 14:35 (35 minutes delayed). Pilotage usually take approximately 1 hour for this type of vessel for departure. But because of the delay pilotage was billed for 1,5 hours instead of 1 hour which is an extra fee of: 3049SEK.

* The pilot was idle for 1,5 hours in vain, waiting at pilot station to board the pilot vessel for departure. But because of the delay pilotage was billed for 1,5 hours instead of 1 hour which is an extra fee of: 3049SEK.

Interesting is that MSW-SMA got updated 07:06 to ETD 12:00, cargo was delayed. (Ready-to-sail operations were delayed). Another vessel with 2 pilots and 2 tugboats inbound for that berth. Pilotage time 04:00-07:20 = 1hr extra pilotage time (Extra Pilotage cost approximately 8701SEK, this excludes the extra hour of pilotage and tugboat-time. (Extra Pilotage cost approximately 4697 SEK)

ETD 07:00 and Pilotage ordered for 07:00. ATA was 07:37.

* No ETA from MSW-SMA after 2017-05-02 10:47 because RAMONA was an indication that there could be a delay.

With a front-end this would have been visible for all the actors and action could have been taken already at 07:06 when there was an indication of delay, but nothing was done. Later it was found that it was not the MSW-SMA that sent the update and hence ETD is different in MSW-SMA/PortitSEGOT?

Dependence between
cargo was delayed. (Ready-to-sail operations were delayed).

* Cause of delay: Bunker Operations and Sludge Operations took place after Cargo Operations finished 01:10).

Completed.

Late change resulted in a penalty fee of 2490SEK.

Definite Pilotage changed from 00:30 to 02:00 at 23:48
THINK DIFFERENT
MAKE THINGS HAPPEN
MAKE A DIFFERENCE

For questions do not hesitate to contact:
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EFFICIENCY & ENVIRONMENT
GAINS FROM BETTER INFORMATION SHARING AND
STANDARDIZED INFORMATION SERVICES

BJÖRN ANDREASSON, SMA
Co-financed by the European Union
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What is it

STM is an integration project

Shoreside services
- Service provider
- Shore Centre/VTS
- Ports
- Fleet operations
- Ice breaking services
- SAR
- MSW
- Route catalogue services
What kind of benefits

• More effective work onboard and ashore → better services
• Generalisability → new services
• More information, accurate and up to date, available → better services
Achievements
The cogwheel metaphor
How to describe and specify it?
Is the specification enough?
Achieved!

SeaSWIM

Application services, e.g. route optimization

STM ship system e.g. ECDIS

SeaSWIM

Information services

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Goals in this project

From goals to validated effects!
Next steps in project
STM next steps

• Maintenance and refinement of architecture
• Services that provide cost savings
• Regional pilot implementations
STM FOR EFFICIENCY & ENVIRONMENT
José Andrés Giménez

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2017 is so far the second-hottest year on record thanks to global warming

2017 is behind only El Niño-amplified 2016.

Weather

Temperatures in Iranian city of Ahvaz hit 129.2F (54C), near hottest on Earth in modern measurements

For the reading Ahvaz posted on Weather Underground to stand and match the highest modern global temperature, it will require review by the World Meteorological Organisation

James Anstee | Friday 30 June 2017 06:00 BST | 116 comments

Hurricane Irma: French St Martin '95% destroyed' as Florida orders evacuations - live updates

Most powerful hurricane ever recorded over Atlantic Ocean batters Barbuda, St Martin and Puerto Rico as it moves west with category 5 winds and rains

Source: The Guardian

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Global Temperature, 1880 - 2014

Land - Ocean Index: 1951-1980 Base

Source: Goddard Institute for Space Studies (GISS) and Climate Research Unit (CRU), prepared by ProcessTrends.com, updated by globalissues.org

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Maritime transport emits around 1,000 million tonnes of CO₂ annually and is responsible for about 2.5% of global greenhouse gas emissions (3rd IMO GHG study).

Shipping emissions are predicted to increase between 50% and 250% by 2050 – depending on future economic and energy developments.
STM Goals

STM DRIVER FOR TRANSFORMATION

SHIP – TO – PORT
- Enabling just-in-time operations
- Improving port efficiency
- Reducing turnaround times

SHIP – TO – SHIP/SHORE
- Optimising route navigation
- Reducing navigation times
- Reducing fuel consumption

Efficiency (€)
Emissions (CO2)
STM for Efficiency & Environment

STM Test Bed Selected Ships

No. Of ships per type of Service (Total 275 ships)

- TRAMP SERVICES: 128 ships
- REGULAR SERVICES: 128 ships
- CRUISE SERVICES: 13 ships
- OTHER SERVICES: 6 ships

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STM for Efficiency & Environment

STM Monitoring Routes

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Deep-sea service

California Express service


Frequency: Weekly
10 ships operating the service
STM for Efficiency & Environment

ANALYSIS AND EVALUATION

13 EU Ports

PortCDM Test Beds

Validated Results

Macro Analysis

Use cases:
- Regular Services
- Tramp Services
- Cruise Services
- Berth-to-berth

VESSL© DataBase
- +1,000 Maritime Services
- +200 EU Ports
- +2,500 Ships

300 Ships
5 Shore Centers

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STM Expected Benefits

Benefits for Shipping Companies (M€)
- Nautical Miles Saved
- Fuel Consumption Saved
- Optimised Navigation
- Waiting Time Saved
- Safety Increase

Benefits for EU Ports (M€)
- Just-in-Time Operations
- Improved Predictability and Planning
- Resource Optimisation
- Safety Increase

Benefits for all
- Reduced GHG Emissions
- Improved Air Quality
- Improved Social Perception
- Efficient and Sustainable Maritime Transport

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What is PortCDM - cruise
Goals in PortCDM cruise

- Punctuality
- Predictability
- Berth productivity
Achievements

Better understanding of situations.
Time-related information reaches actors.
Better cooperation and understanding of roles.
Next steps in project

• Port-to-port/Ship-to-port collaboration
• All ships, not just cruise
• More connectors
Vision
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Demos

• Italian STM solutions
• PortCDM applications
• Transas STM ship & shore centre solutions
• Carmenta SAR solution for Rescue Centres
• Analysis tools