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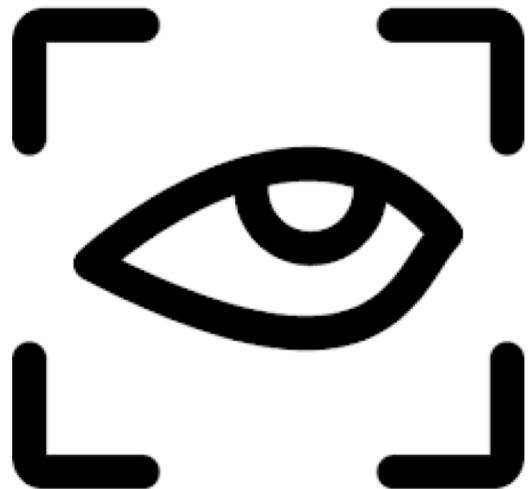


A large cargo ship, viewed from the stern, sailing across a bright blue sea under a clear sky with scattered white clouds. The ship's deck is filled with numerous shipping containers stacked in multiple layers. In the distance, another smaller ship is visible on the horizon. The overall scene conveys a sense of global trade and maritime transport. The text is overlaid on the lower portion of the image.

**PORTCDM 2.0, ASSIGNEMENT
RISE VIKTORIA 2018-03-28**



Agenda for today



- About STM and PortCDM?
- The assignment, basis and expected deliverables?
- Support and Contact persons?



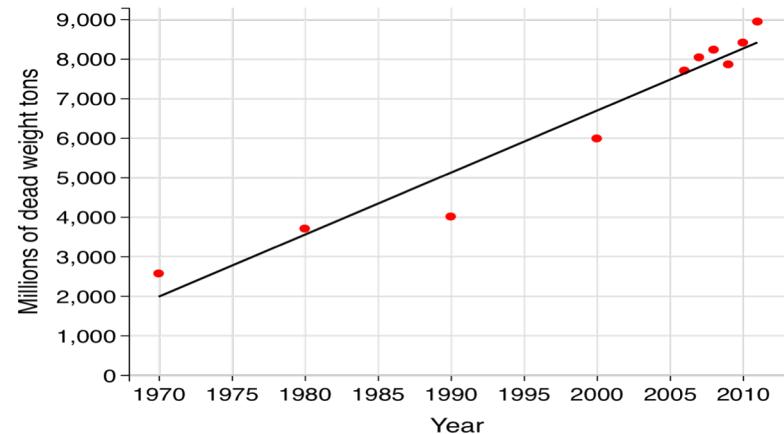
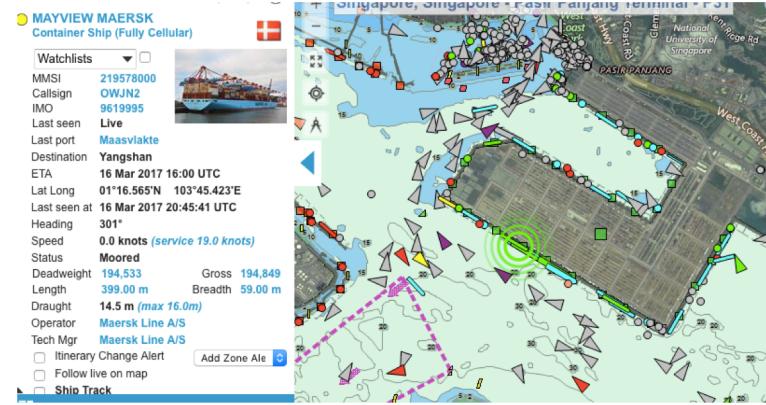
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Importance of shipping

- Maritime transport is essential for the world economy
 - Approximately 90% of the world's trade carried by sea
 - Economic impact of USD 436 billion
 - 4.3% growth rate in 2012
 - 2.7% of estimated global CO₂ emissions in 2007
 - Will grow 2-3 times by 2050



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The shipping market

- Self-organized ecosystem with autonomous competing actors
- Many actors are looking for new opportunities in digitizing the maritime sector
- Many proprietary solutions being developed creating sub-optimization

Facts / assumptions

- ~90 000 merchantize ships
- ~6 000 ports
- ~3 800 port calls per port and year
- Long-tail distribution of port calls among ports
- Largest container vessels carry >18 000 units
- Largest ports manages more than 200 000 port calls per year
- ~25 actors involved in every port call



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Business Drivers...

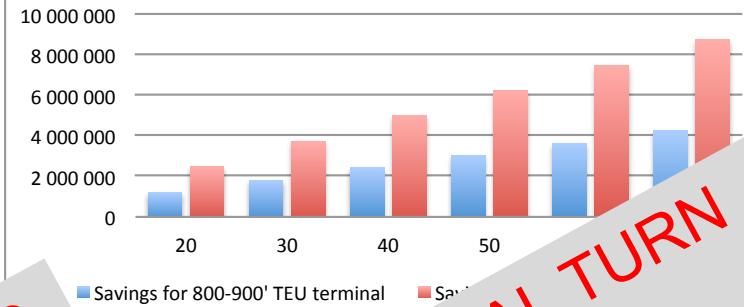
*Savings for a large shipping company
(40 000 port calls per year)
between 65 MUSD and 90 MUSD
for just-in-time arrival*

Assuming:
consumption of 100000 liters vessel
kr. 1000 per liter
full speed (23 knots)
fuel at 10 knots)

Very many times ships do not leave in time, leading to additional costs, chartering windows, port, and delays for waiting vessels

*JUST-IN-TIME ARRIVAL
and GREEN STEAMING*

Annual savings by reduced TTT
(by minutes)



*reducing TTT can take away up to 5% of a route's time
REDUCED TOTAL TURNAROUND TIME*

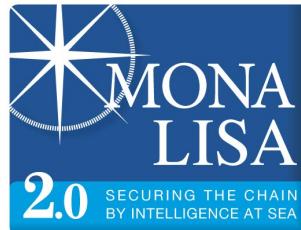
LONG INCENTIVES FOR ENHANCED INTERACTION BETWEEN SHIPS AND PORTS



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FACTS IN FIGURES



MONALISA 2.0 (2013-2015)

- **Definition** of the Sea Traffic Management concept
- 39 Partners
- 24 MEuro



STM validation project (2015-2018)

- **Validation** of the Sea Traffic Management concept
- 57 partners
- 43 MEuro



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Project Beneficiaries

Public sector	Private sector	Academia
<p>Swedish Maritime Administration (SE)</p> <p>Swedish Meteorological and Hydrological Institute (SE)</p> <p>Danish Maritime Authority (DK), Ministry of Infrastructure and Transport (IT)</p> <p>Ministry of Transport and Communications (FI)</p> <p>SASEMAR (ES)</p> <p>Norwegian Coastal Administration (NO)</p> <p>Port Authority of Valencia (ES)</p> <p>Port Authority of Barcelona (ES)</p>	<p>Valencia Port Foundation (ES)</p> <p>Carnival Corporation (UK)</p> <p>Costa Crociere (IT)</p> <p>CIMNE (ES)</p> <p>GS1 (SE)</p> <p>HiQ (SE)</p> <p>TRANSAS (IE)</p> <p>Furuno (FI)</p> <p>SAAB (SE)</p> <p>Jeppesen (DE)</p> <p>Navicon (DK)</p> <p>Signalis (DE)</p> <p>Frequentis (AT)</p> <p>SAM-Electronics (DE)</p> <p>Svitzer (SE)</p> <p>Magellan (PT)</p>	<p>Chalmers University of Technology (SE)</p> <p>Novia University of Applied Sciences (FI)</p> <p>Southampton Solent University (UK)</p> <p>University of Southampton (UK)</p> <p>University of Flensburg (DE)</p> <p>Maritiem Instituut Willem Barentsz (NL)</p> <p>Cyprus University of Technology CY</p> <p>OFFIS (DE)</p> <p>University of Oldenburg (DE)</p> <p>SSPA (SE)</p> <p>Polytechnical University of Catalonia (ES)</p> <p>Fraunhofer CML (DE)</p> <p>Rörvik Maritime Safety Center (NO)</p> <p>Viktoria Swedish ICT (SE)</p>

Associated partners: Port of Gothenburg, Kvarken Ports (Umeå/Vasa), IBM, Ericsson, Cygate, Raytheon, Kongsberg UK Hydrographic Office, BIMCO, STENA



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PortCDM movie

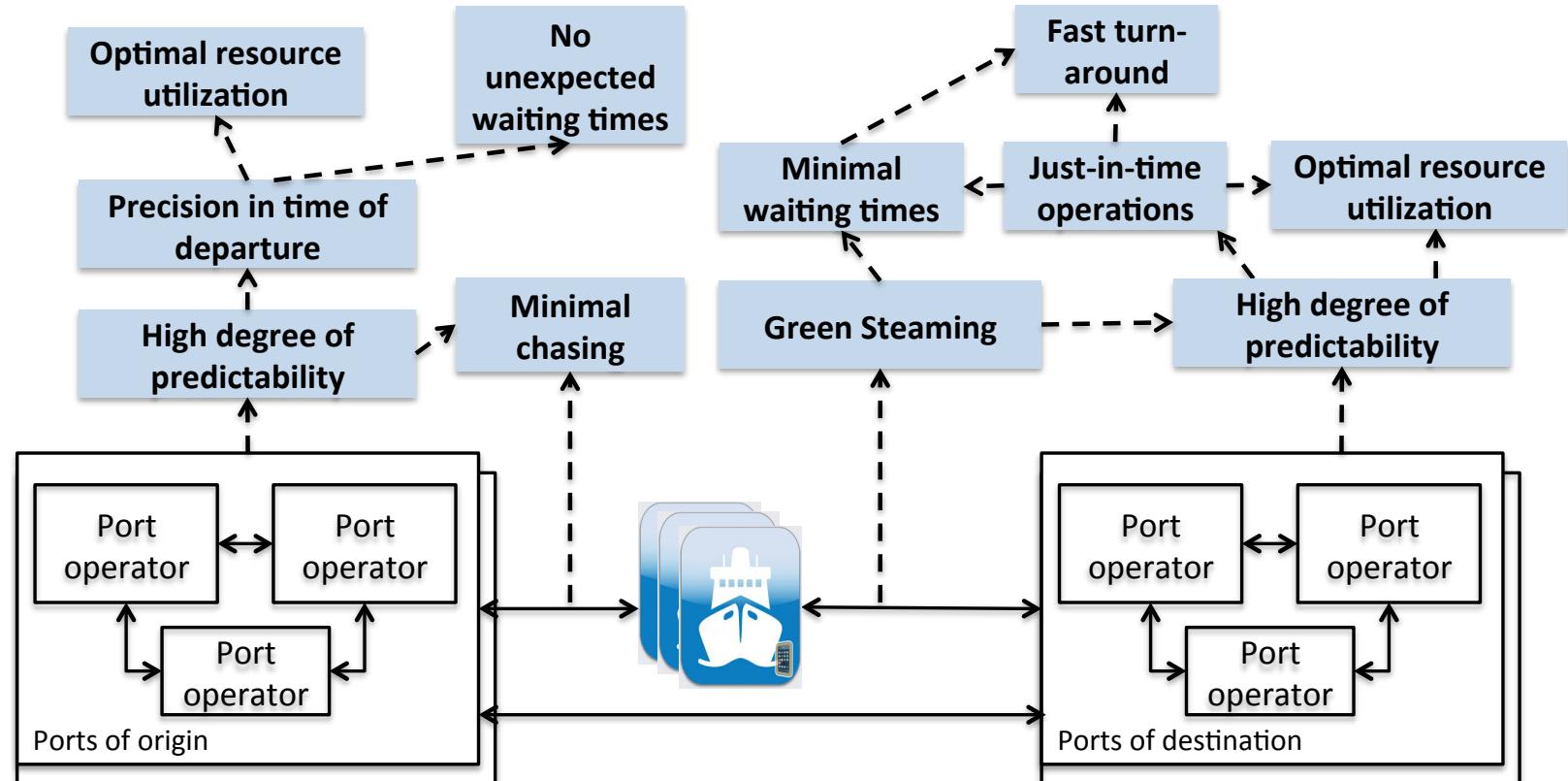
<https://www.youtube.com/watch?v=ZS5SjDAoI90>



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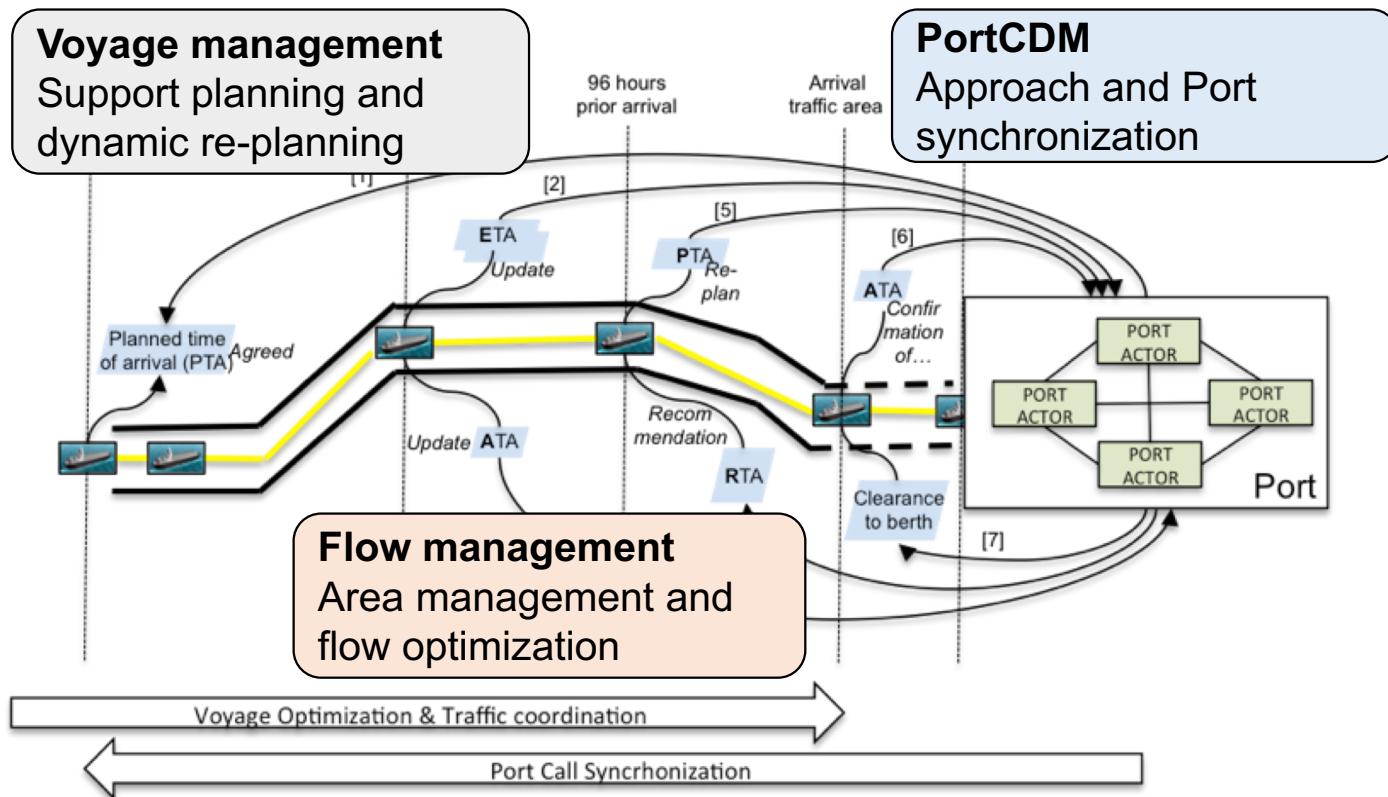
Objectives of PortCDM



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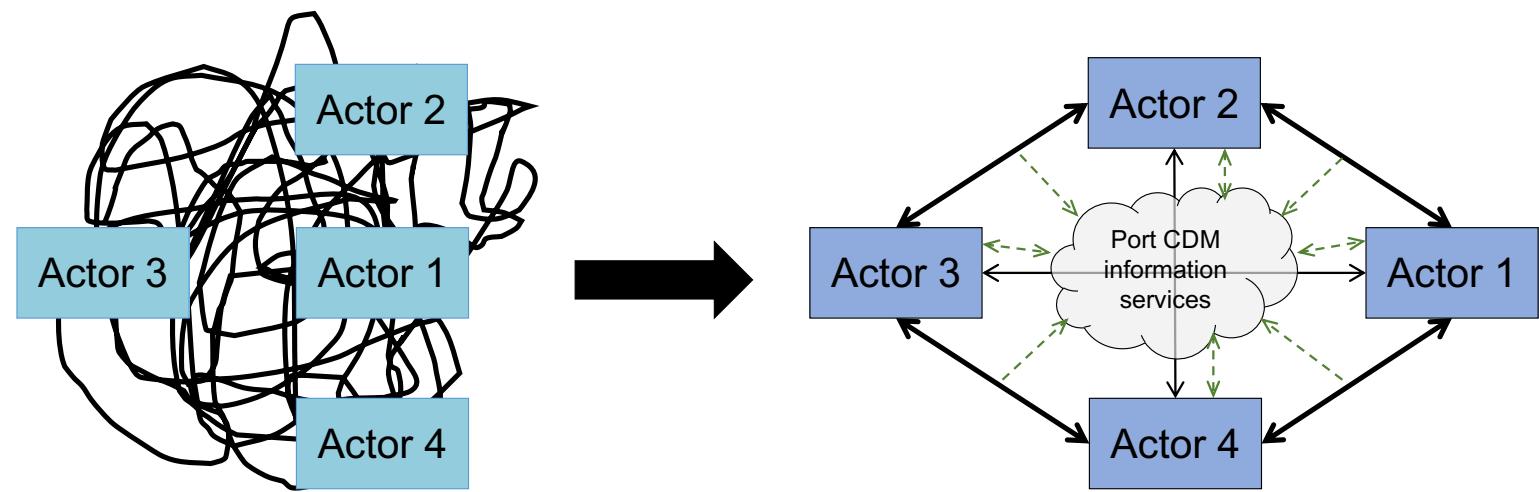
STM Strategic Concepts



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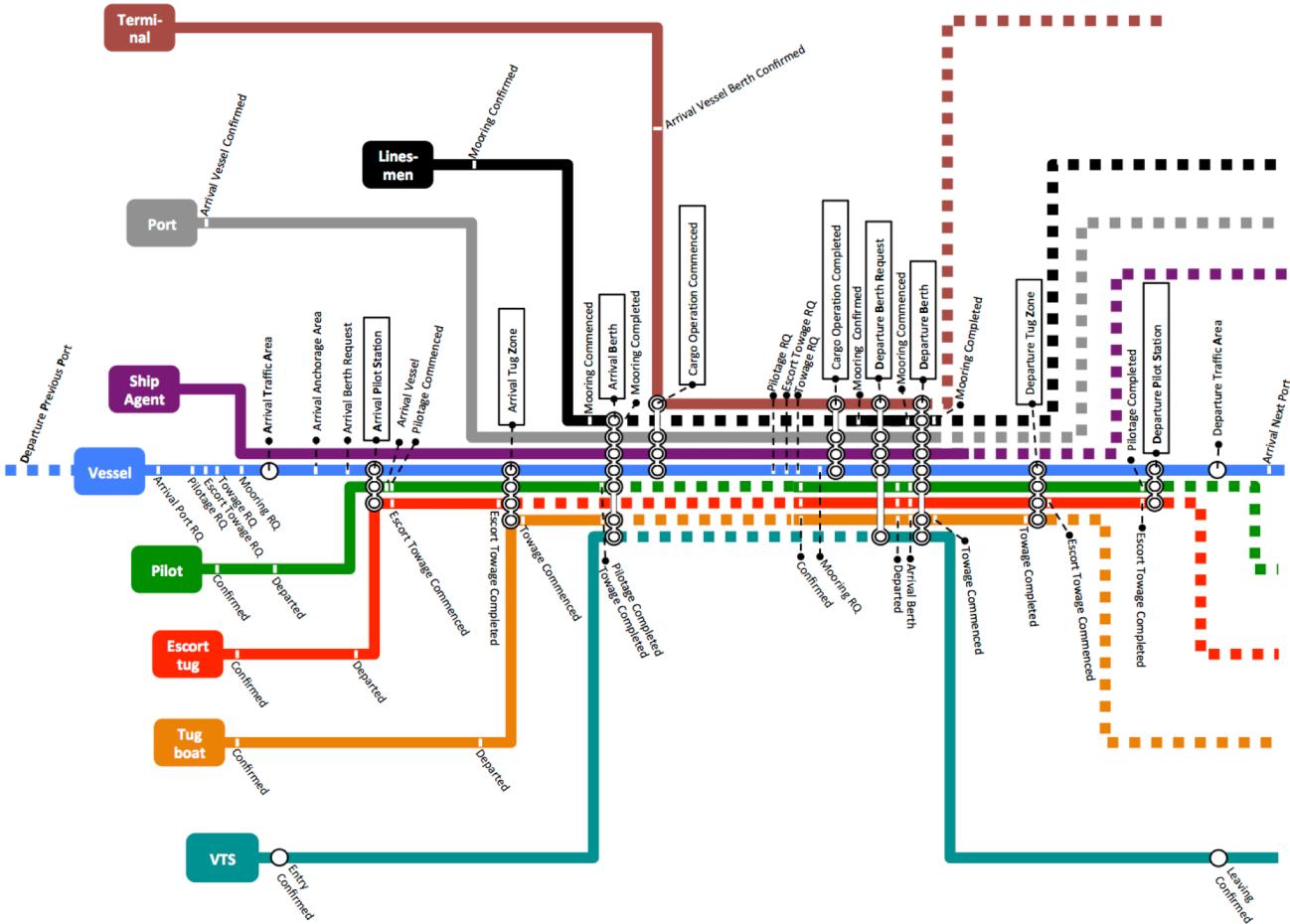
Towards common instant information sharing



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The Metro map an event driven approach



Lind M., Haraldson S., Karlsson M., Watson R.T. (2016) Overcoming the inability to predict - a PortCDM future, 10th IHMA Congress – Global Port & Marine Operations, 30th May – 2nd May 2016, Vancouver, Canada



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At the core of the port call process

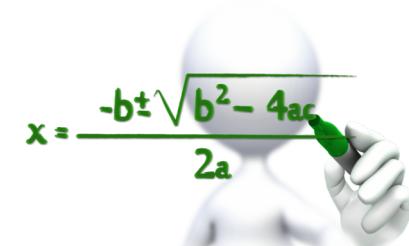
- **The vessel making** a visit for a particular **purpose**
- **PortCDM** is based on three foundations to **enhance precision** of time stamps
- Synchronizing involved actor's conception of different time stamps



- Combining multiple data sources



- Evaluating the likelihood that an action will occur according to plan



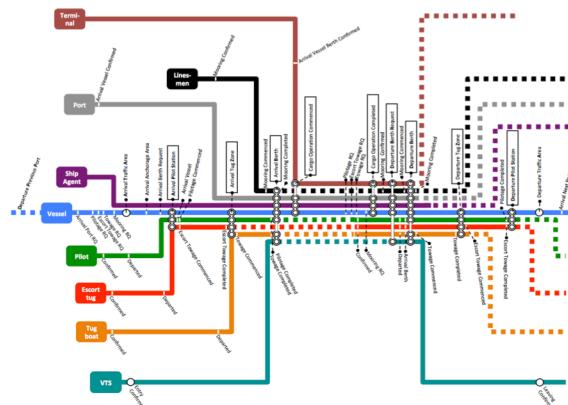


PortCDM: 3 foundations

- Multiple data sources for same state
 - Alignment of actor's conception of time stamps
 - Evaluation of the reliability that events will occur according to plan

Is based on

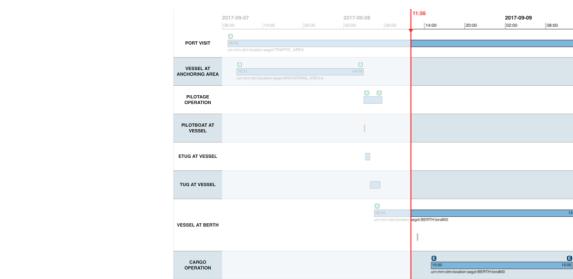
- Situational awareness among port call actors
 - Shared time stamps by different port call actors associated to the same port call





PortCDM: 3 foundations

- The common situational awareness of the port call process
- Shared time stamps between port call actors related to port calls
- **Is expected to result in**
 - Basis for shipping lines to make JIT arrivals and JIT departures to facilitate planning inbound- and outbound sea voyages
 - Basis for enhanced JIT operations and efficient capacity utilization
 - Basis for port-to-port collaboration independent of a shipping line or terminal



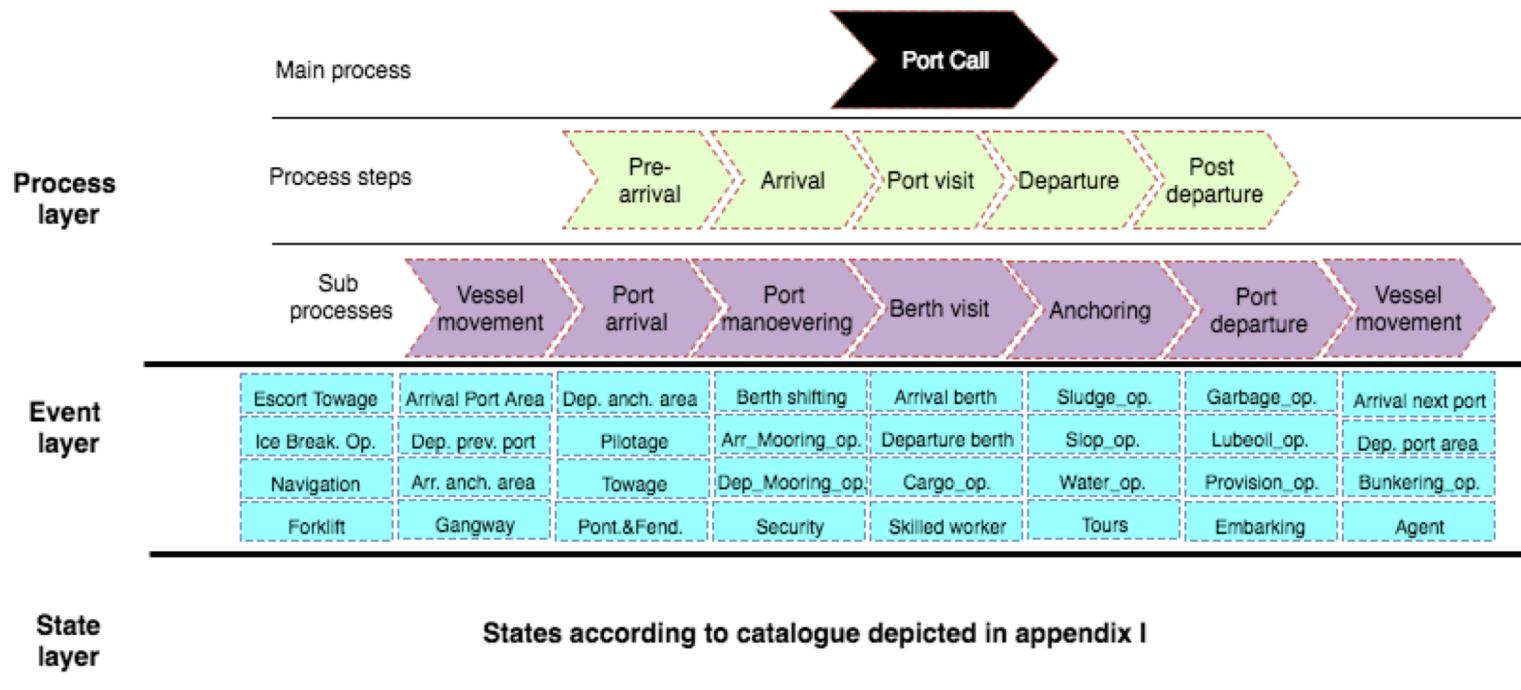
- Basis for port-to-port collaboration independent of a shipping line or terminal



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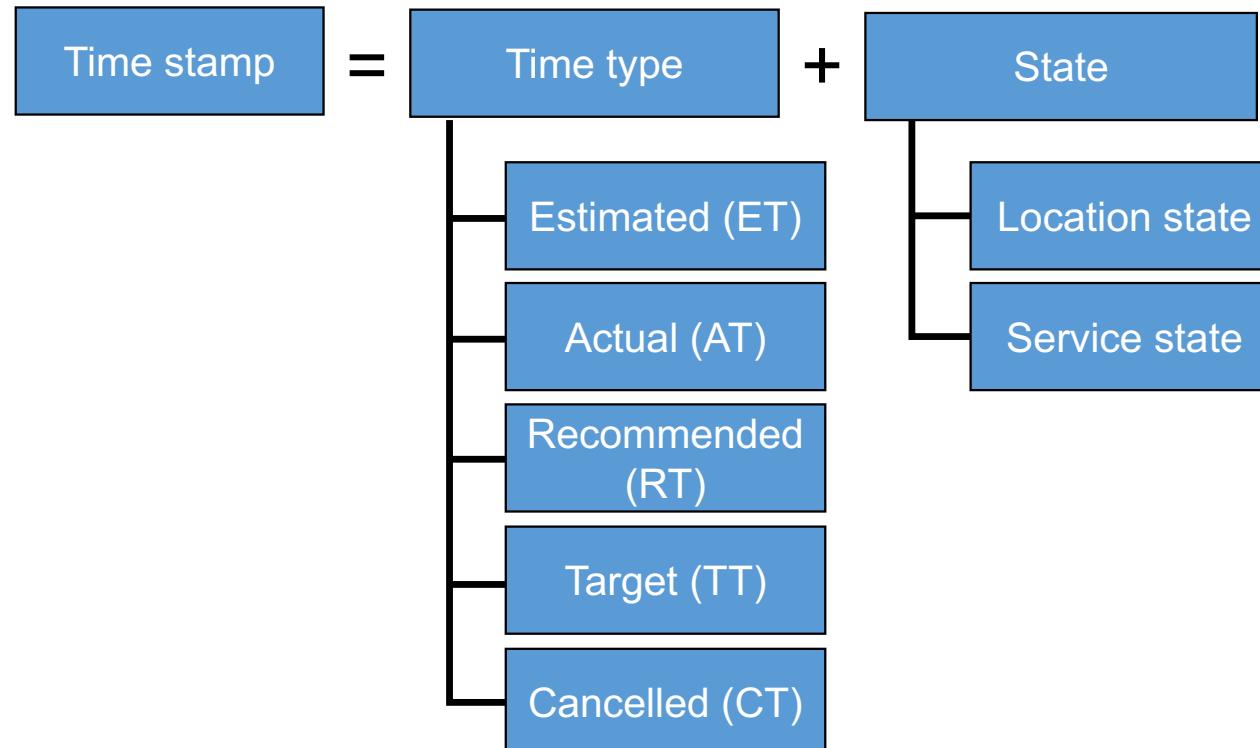
Port Call layered model



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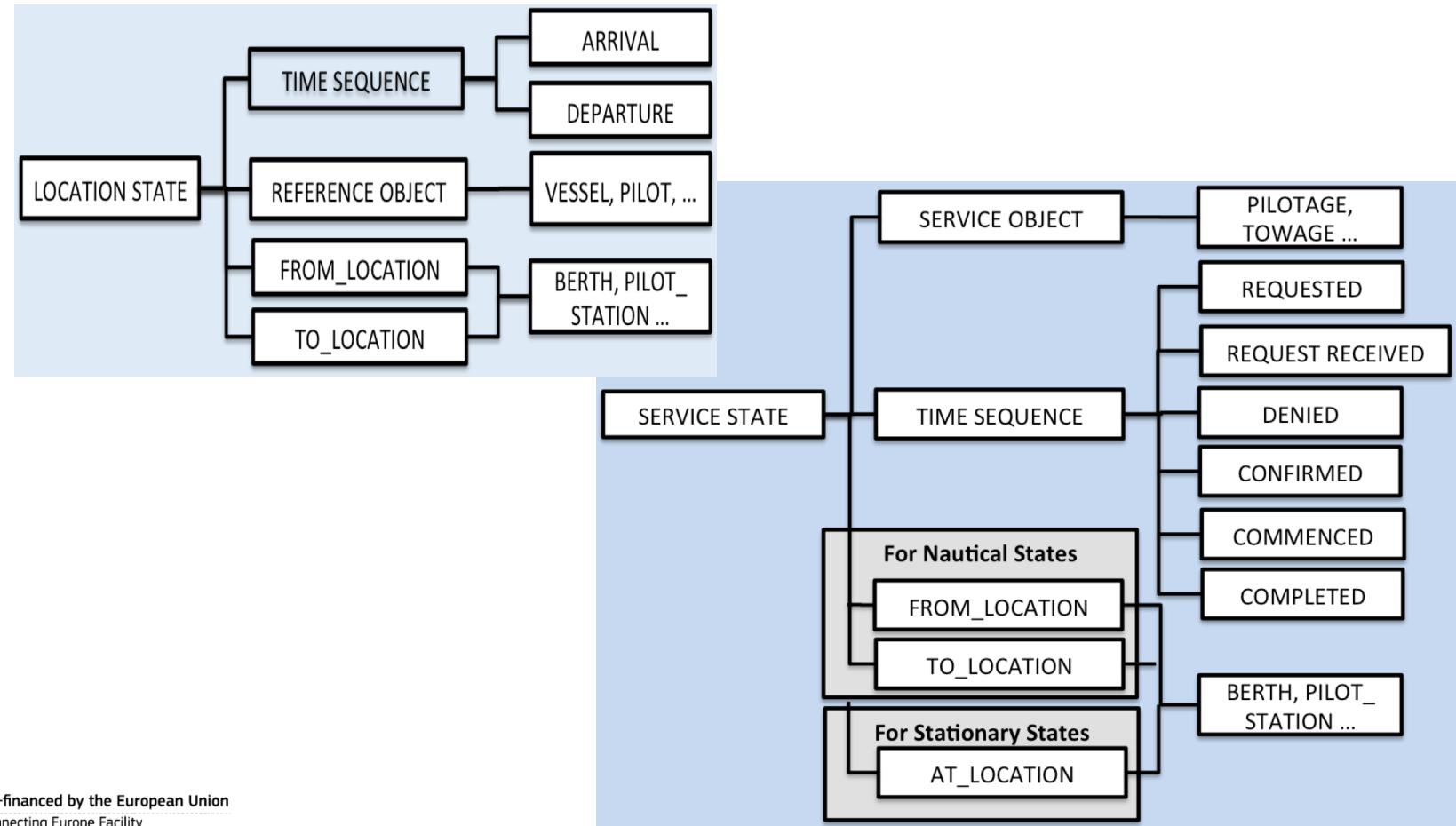
Structure of a time stamp



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Location State and Service State



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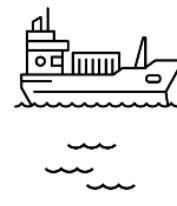
PortCDM is being validated in the STM validation project

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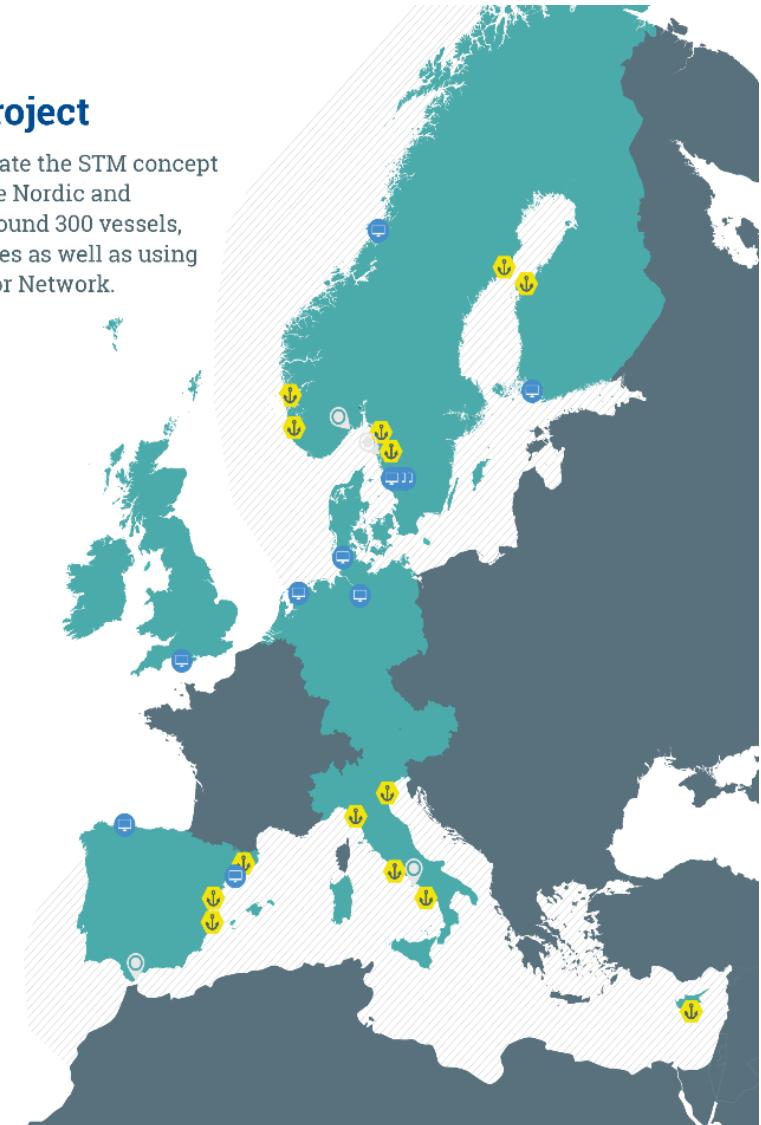
STM Validation Project

The STM Validation Project will demonstrate the STM concept in large-scale test beds in both the Nordic and Mediterranean Seas, encompassing around 300 vessels, 14 ports and 4 shore based service centres as well as using the European Maritime Simulator Network.

- Simulation centre in European simulation network (EMSN)
- Port CDM Port
- Shore centre
- Test bed for STM-services
- Country with project partner(s)

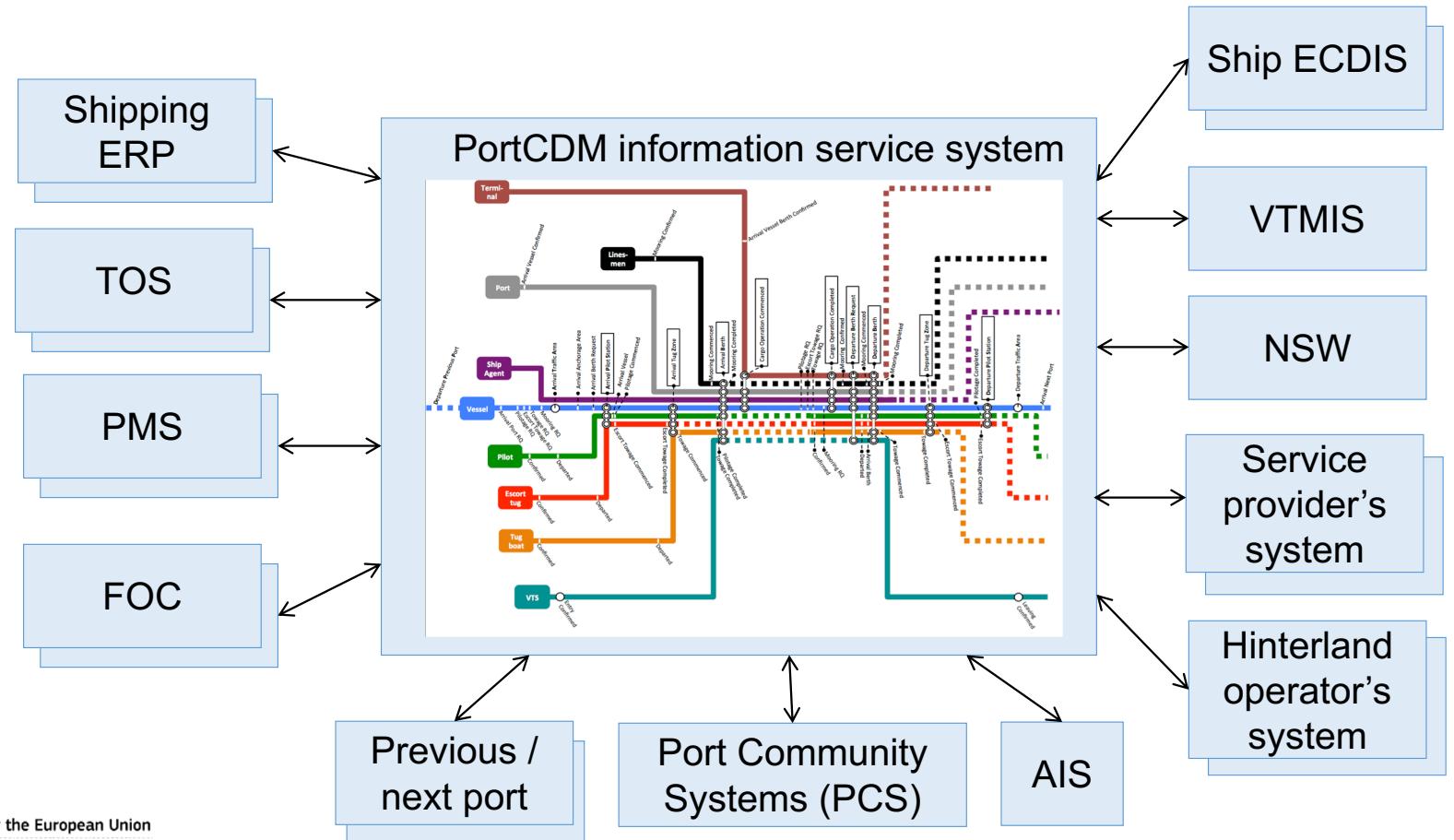


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Inter-operable platform for sharing time stamps





The Assignment

This screenshot shows the Timeline screen for the vessel "Thun Goliath". The timeline lists several events:

- PORT VISIT** (09/25/2017 2:30): AT Port of Gothenburg's traffic area.
- Arrival Vessel Traffic Area** (14:30 E): AT: Port of Gothenburg's traffic area. REPORTED BY: PortitSEGOT 70h ago.
- Arrival Vessel Port Confirmed** (16:00): AT: Port of Gothenburg's traffic area. REPORTED BY: PortitSEGOT 70h ago.
- VESSEL AT_ANCHORING_AREA** (N/A): AT Anchoring Area "B" (Bravo).
- VESSEL AT_BERTH** (09/25/2017 4:00): AT Skarvik Harbour 511.
 - Arrival Vessel Berth** (07:00 E): AT: Skarvik Harbour 510. REPORTED BY: PortitSEGOT 29h ago.
 - Departure Vessel Berth** (19:00 E): AT: Skarvik Harbour 510. REPORTED BY: PortitSEGOT 24h ago.
- PILOTBOAT AT_VESSEL** (09/26/2017 7:00): AT: Skarvik Harbour 511.
- PILOTAGE** (09/26/2017 12:26): FROM Pilot Boarding Position 1.

This screenshot shows the Report screen for the "Departure Vessel Berth" event at Skarvik Harbour 511. It displays a "Pick Time Type" section with "Actual" and "Estimated" options, followed by a timestamp of "09/26/2017 16:04" and a "Select Time" button. Below this is a location input field "At: Skarvik Harbour 511" with a pin icon, and a green "SendTimeStamp" button.

This screenshot shows the Details screen for the "Departure Vessel Berth" event. It lists four entries, each with a timestamp, location, reporter, and reliability percentage. The first entry is highlighted in blue.

TIME	AT	REPORTED BY	REPORTED AT	RELIABILITY
09/26/2017 17:00 E	Skarvik Harbour 511	urn:mrn:stm:user:legacy:MSW-SMA	09/26/2017 11:01	%
09/26/2017 17:00 E	Skarvik Harbour 511	urn:mrn:stm:user:legacy:PortitSEGOT	09/26/2017 09:45	%
09/26/2017 17:00 E	Skarvik Harbour 511	urn:mrn:stm:user:legacy:MSW-SMA	09/26/2017 09:07	%
09/26/2017 16:00 E	Skarvik Harbour 511	urn:mrn:stm:user:legacy:PortitSEGOT	09/26/2017 08:22	%



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Assignment

- 10 Groups → 10 Actors
- Develop connectivity to PortCDM by using PortableCDM (APP), developed within the PortCDM concept, to further developed to suit a specific operator with the functionality to submit and subscribe on PortCDM-information and to create a tool that will fit the specific actors environment.



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Basis

- A scenario taking the vessels turn around process as point of departure.
 - States (information) to be exchanged throughout the port call process
- Custom made PortableCDM for a defined actor to be used for:
 - Submitting time stamps to PortCDM
 - Subscribing on PortCDM time stamps



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Expected Deliverables

- PortableCDM, adapted to suit different port call actor in their organisational environment
- Connectivity to PortCDM as an assigned actor role – provision of, and subscription to, time stamps
- Identify essential time stamps to subscribe to (in real-time) to maximize the value for the port call actors value proposition



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10 Business Operators

- Vessel
- Lots
- Port Control
- Sludge Operator
- Ship Agent 1
- Ship Agent 2
- Towage operator
- Terminal 1
- Terminal 2
- Mooring Organisation



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PortCDM in Press

The case where less optimal operations lead to better efficiency

Sunday, 4th February, 2018 at 1:00 pm
Posted in DIGITAL LATEST NEWS

DEMAND for greater efficiency in the global logistics chain is increasing, putting pressure on different links in that chain to share information and seek incremental benefits. But with the commercial logistics chain dominated by private actors, each with focused internal efficiency and profit motives, finding what is best for the whole logistics chain is difficult. New thinking also suggests that individual optimisation could lead to less optimal overall performance.

One fundamental part of this global chain is the port. Its operations are a hub where shippers and other

Sunday, February 4th, 2018

Is it too late for shipping to collaborate to improve?

Saturday, 10th February, 2018 at 9:41 am
Posted in LATEST NEWS

In a second concept note for Fathom World, Mikael Lind and others ask if the benefits of digital collaboration seen in so many other industries have passed by actors in the shipping and port sector which have been slow to adapt to change, instead holding on to competitive siloed attitudes.

Lind et al are supporters of the Port Collaborative Decision Making (Port CDM) model, which has been adapted from a similar CDM model already in use in the aviation sector where various business entities engaged in optimising the port call and turnaround of a vessel share critical information in a standardised way to improve efficiency.

Saturday, February 10th, 2018

Who controls the optimisation button?

Sunday, 18th February, 2018 at 1:29 pm
Posted in LATEST NEWS

In a third STM concept note by Mikael Lind and others, involved in developing improved processes for port operations, an argument is put forward for looking at the whole port environment over a period rather than at just one port call and then looking for the points of improvement.

Port CDM is a fairly new concept being developed from the aviation sector that aims to create improvements in cargo flows in ports and in port vessels.

The challenges identified in the second concept note published in Fathom-News last week, were that in order to make a significant improvement in port efficiency it is necessary to involve as many actors as possible. Some of the

Sunday, February 18th, 2018

Proving that port-to-port communication can save shipowners money

Sunday, 11th March, 2018 at 9:07 am
Posted in DISRUPTIVE INNOVATION LATEST NEWS

Limassol, the main port of Cyprus, has been highlighted as an example of how improved port to port communications can financially benefit shipowners and terminals that are keen to drive up efficiency.

In a fifth concept note published in conjunction with Fathom.World, a group of authors from STM Validation, have rounded on ports, terminals and vessel operators involved in short sea shipping. They argue that standardised messaging of key informant, notably a near real time relay of a vessel's departure can create significant benefits.

Sunday, 11th March, 2018 at 9:07 am

Ports, Walmart and the Tragedy of the Commons

Sunday, 4th March, 2018 at 7:49 pm
Posted in DIGITAL DISRUPTIVE INNOVATION LATEST NEWS

International ports and terminals can benefit by learning from companies such as Walmart, Ford and Emirates, the UAE airline, argues a group of port efficiency experts and not falling foul to the "Tragedy of the Commons."

In a fourth Concept Note written for Fathom World the authors, representing The EU funded Sea Traffic Management, argue that many ports and terminals remain so fearful of sharing what they consider competitive data that they are losing out from the benefits of streamlined just in time operations.

"Collaboration requires a willingness to share data.1 Maritime transport has a strong legacy based on autonomous, often competing, actors in a self-organizing ecosystem. This has meant that shipping's actors

Sunday, 4th March, 2018 at 7:49 pm

Global port operations can save up to \$12bn annually with better communication

Sunday, 18th March, 2018 at 5:58 pm
Posted in STRATEGIES NEWS

TERMINAL operators and other companies involved in port operations can save millions of dollars if even simple information such as a vessel's real arrival and departure times can be more accurate and other time saving information disseminated better.

Soon to be published research into port operations in a number of Norwegian ports has revealed that the savings from using better data to coordinate the various activities in a more "just-in-time" fashion can create huge benefits to a wide range of companies.

Sunday, 18th March, 2018 at 5:58 pm



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THINK DIFFERENT
MAKE THINGS HAPPEN
MAKE A DIFFERENCE



For questions do not hesitate to contact:
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Sandra.Haraldson@ri.se / Mathias.karlsson@ri.se



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