MONA LISA SECURING THE CHAIN BY INTELLIGENCE AT SEA 2.0

Activity 2 – Defining Sea Traffic Management

Strategic Roadmap Approach and Method

MONALISA 2.0 D2.4.1

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

DOCUMENT STATUS

Authors

Name	Organisation
Per-Erik Holmberg	Viktoria
Beata Myhrer	LFV
Mikael Olofsson	LFV

Review

Name	Organisation
M. Hägg	Chalmers
C. Stålstad	Viktoria
A.Dalén	Viktoria

Approval

Name	Organisation	Signature	Date

Document History

Version	Date	Initials	Description
1.0	2015-12-31	MO,BM,PH	Accepted for delivery

TEN-T PROJECT NO: 2012-EU-21007-S

DISCLAIMER: THIS INFORMATION REFLECTS THE VIEW OF THE AUTHOR(S) AND THE EUROPEAN COMMISSION IS NOT LIABLE FOR ANY USE THAT MAY BE MADE OF THE INFORMATION CONTAINED THEREIN.

List of content

1 General information 4

2 Executive summary 5

3 Introduction 6

3.1 Scope and Purpose 6

3.2 Structure of the report 6

4 Terms and definition 6

5 Development approach and method 7

5.1 Introduction 7

5.2 Step 1: Identify needed changes 7

5.2.1 Identify Enablers 8

5.3 Step 2: Identify change steps 9

5.3.1 Identify Operational Improvement Steps 9

5.4 Step 3: Elaborate transition path 9

5.4.1 Basic elements for an Improvement Phase 9

5.5 Step 4: Assess STM Strategic Roadmap and Master Plan 10

5.6 Step 5: Finalise STM Strategic Roadmap and Master Plan 10

5.7 Step 6: Publish STM Master Plan 11

6 References 11

1 General information

This report is a deliverable from Activity 2 of the MONALISA 2.0 project. MONALISA 2.0 is a project gathering 39 private, public and academic partners from 10 different countries. The overall objective of MONALISA 2.0 is to strengthen efficiency, safety and environmental performance of maritime transportation. Coordinator of the project is the Swedish Maritime Administration. The project is co-financed by TEN-T under the Motorways of the Sea Programme and is part of the EU´s e-Maritime initiative. MONALISA 2.0 has taken its point of departure in the results and experiences from the MONALISA project (2010-EU-21109-S) and also re-uses results and experiences from the development within the aviation sector and its SESAR (Air Traffic Management) programme.

MONALISA 2.0 is constituted by four Activities; Activity 1 - STM Operations and Tools, Activity 2 - STM Definition Phase Study, Activity 3 - Safer Ships, and Activity 4 - Operational Safety. The objective of Activity 2 is to outline the framework for Sea Traffic Management (STM), elaborate the target concept, and develop a plan for further development and deployment. Activity 2 is divided into 7 different sub-activities (work packages);

SA 2.1 - Current Situation Analysis – describes a snapshot of today's maritime transport industry, focusing on information sharing. It highlights strengths, weaknesses, current development as well as needs and recommendations. The main results of this analysis are presented in report D2.1.1 STM The Current Situation.

SA 2.2 - STM Performance Targets Development – includes analysis and elaboration of a performance framework including e.g. performance targets, key performances areas and vision and goals based on the performance framework. The main results of this work are presented in the report D2.2.1 STM Performance Framework.

SA 2.3 - STM Target Analysis – develops the target concept(s) of Sea Traffic Management based on the analysis of the current situation and driven by the performance targets. Different aspects are taken into account, such as, legislations and regulations, and business models. The results of this work are summarized in the report D2.3.1 STM - The Target Concept.

SA 2.4, 2.5 & 2.6 - STM Strategic Roadmap and Master Plan Development and Work Programme for Development Phase – a combination of three sub activities that together establish a shared vision of the overall transition sequence for implementation of the STM Target Concept. The results of these three sub-activities are described in the report D2.4.2/D2.5.1/2.6.1 STM Master Plan. The STM Master Plan is also available in an electronic version: http://stmmasterplan.com

SA 2.7 - Development of a Port CDM Demonstrator – develops and demonstrates in two ports the first versions of some of the information sharing services that are a part of the Port CDM (Collaborative Decision Making) concept. The results of this sub-activity are presented in the report D2.7.1 Port CDM Technical Description and D2.7.2 Port CDM Validation Report.

This report summarizes the development approach and method for D2.4.2 STM Strategic Roadmap and D2.5.1 STM Master Plan.

2 Executive summary

The development approach aimed at describing and establishing a shared vision of the overall transition sequence to implement the STM Target Concept defined to deliver the STM Performance Targets.

The development involved analysis of the STM Current Situation and STM Target Concept identifying when changes needs to be put in place in order to achieve the STM Target Concept. The needed major operational changes have been further detailed into operational improvement steps which have been identified as required to transition from current situation to an estimated start of operation (year). For each operational improvement step enablers have been identified and described.

A path of transition has been elaborated by developing suitable Improvement Phases into which the operational improvements steps related enablers are bundled.

The operational improvement steps have been grouped and placed into four Lines of Changes;

- Information sharing environment
- Planning the voyage
- Voyage execution
- Integrated port operations

3 Introduction

3.1 Scope and Purpose

This document describes the working approaches and methods used developing STM Strategic Roadmap and STM Master Plan.

3.2 Structure of the report

The structure is as follows.

Chapter 1.	General information
Chapter 2.	Executive summary
Chapter 3.	Introduction (this chapter)
Chapter 4.	Terms and definition
Chapter 5.	Development approach and method Main section in the document describing the approach to develop the STM Strategic Roadmap and the STM Master Plan
Chapter 6.	References

4 Terms and definition

Below is a table including the key terms - and their definitions – which are used in this document.

Name of term	Abbreviation	Definition
Enabler	EN	An Enabler is a change to the supporting infrastructure – these changes are actions proposed to be performed by various Stakeholders – i.e. an identification where Stakeholders may contribute to the evolution of the maritime domain. Enablers are what need to be done when implementing OI Step.
Improvement Phase	IP	The transition from today's situation to the STM Target Concept is formulated through a sequence of Improvement Phases describing the evolution of the STM environment. The yearly division of IPs are set according to the years in the STM Performance Target
Line of Change	LoC	A grouping of related OI Groups to Line of Change that affects different operational areas. The Line of Changes is a support to ensure that the planning of the evolution to the STM Target Concept will meet the required performance over time.
Major Operational Change	MOC	A major operational change is what is needed to be changed operationally based on the gap between the current situation and STM Target Concept. Each identified major operational change is reflecting a specific Operational Service within the STM Target Concept.
Operational Improvement Group	OI Group	A grouping of Operational Improvement Steps that is related or contributing to the same benefit or process
Operational Improvement Step	OI Step	An Operational Improvement Step describes a specific operational change which can be implemented in a given period of time, and results in a performance enhancement.

5 Development approach and method

This section describes the approach and methods used for the description of the STM Strategic Roadmap and STM Master Plan.

5.1 Introduction

The development aimed at describing and establishing a shared vision of the overall transition sequence to implement the STM Target Concept defined to deliver the STM Performance Targets. The content of this section has been inspired by the SESAR definition phase and experiences.

The development involved analysis of the STM Current Situation and STM Target Concept identifying when changes needs to be put in place in order to achieve the STM Target Concept. The needed major operational changes have been further detailed into operational improvement steps which have been identified as required to transition from current situation to an estimated start of operation (year). For each operational improvement step have so called enablers been identified and described.

A path of transition have been elaborated by developing suitable Improvement Phases (IPs) into which the operational improvements steps related enablers are bundled - see section 1.3 for description of these terms.

In the following sections is an overview and description of used method and generic steps for the development. [1]

5.2 Step 1: Identify needed changes

The Current Situation and STM Target Concept descriptions were the basis for identifying the needed changes to be undergone in order to meet the declared performance objectives and achieve the STM Target Concept.

By conducting a gap analysis, gaps and differences between the current situation and target concept have been identified and listed. Based on these findings a set of main operational changes (MOC) was identified, agreed upon and documented. These were arranged in so called line of changes which constitutes the sequence in which the MOC needs to be implemented in a specific operational area. A line of change (LoC) describes what is needed to be changed based on the delta between the current situation and target concept.

[1] *The numbering of the steps is merely for unique identification; some steps have been conducted in parallel and/or re-iterated when necessary.*

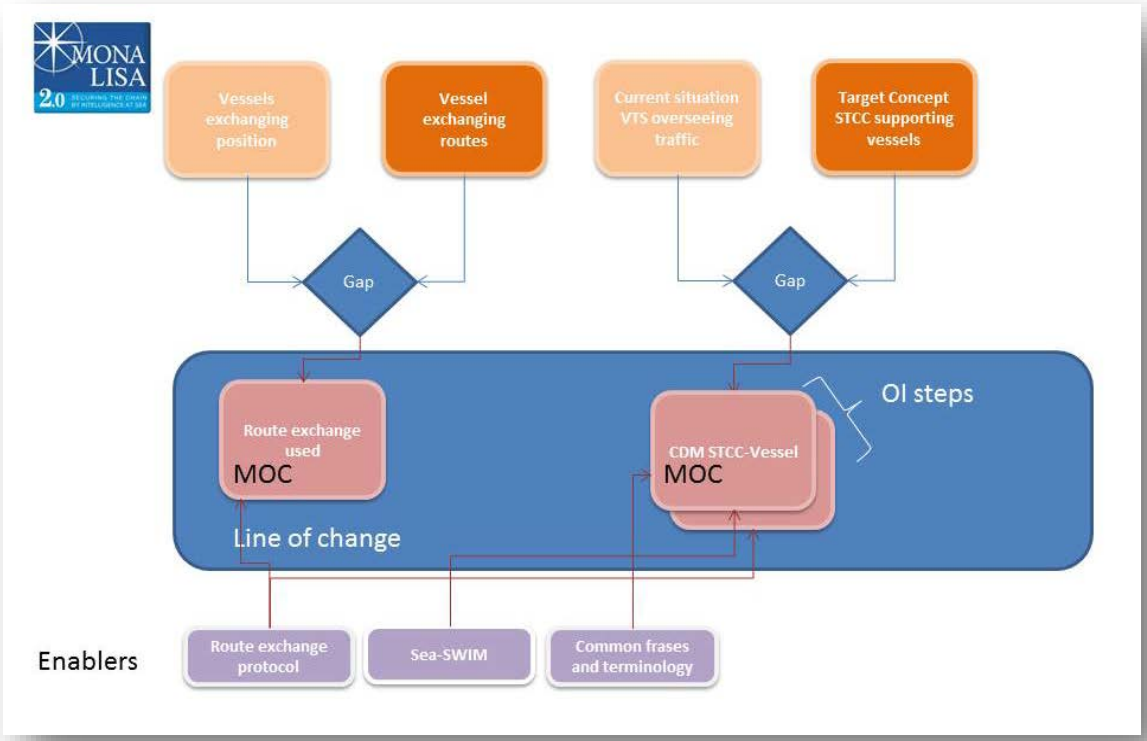

Figure 1 Example of MOC , LoC and enablers relations

5.2.1 Identify Enablers

Enablers are - in terms of systems, procedures, institutional, human aspects and enabling services – needed to facilitate the desired Operational Improvement (OI) Step – their implementation and deployment. An Enabler is not necessarily specific to a given OI Step; an enabler may enable a range of OI Steps. Each OI Step must have at least one Enabler.

The enablers can be characterised from four different perspectives:

- Procedural : Procedures to be defined for support new operations and sea space management
- Human : Actions required to ensure conformity with human factors requirements including the need for recruitment, training and the management of change;
- System : Evolution of the technical system architecture (changes in functionality and infrastructure) and technology to be developed and deployed; and
- Institutional, including: regulation to be put in place, e.g. Interoperability, Implementing Rules, Incentive mechanisms or Safety regulation and standards to be developed, and adopted, either and regional and global level.
- Services : STM-services that are prerequisite for other services

The timely introduction of the enablers will be essential to obtain the needed performance.

5.3 Step 2: Identify change steps

5.3.1 Identify Operational Improvement Steps

The results of the gap analysis and the documented lines of changes have been used as a basis for identifying the needed changes – operational improvements. The operational improvements are described as OI Step which can be implemented in a given period of time, and results in a direct performance enhancement, a benefit.

OI are not necessarily related exclusively to the effect of a change in technology, they can relate to procedures, working methods or routines and human factor aspects. An operational improvement could also mean the improvement of an existing operations and/or the introduction of a new operations.

5.4 Step 3: Elaborate transition path

The transition from current situation to the STM Target Concept has been formulated through a sequence of IPs. The IPs periods follow the periods set up in D.2.2.1 – therefore three distinct Improvement Phases have been included in the roadmap.

An IP consists of a set of OI Steps and their Enablers which are related to the performance target time frame. The OI Steps have been allocated to one of the three IPs depending on their start operations; when the benefits are realized.

5.4.1 Basic elements for an Improvement Phase

The following basic elements have been considered and included in an IP:

- Performance Targets (required performance)
- Grouping of OI Steps - Set of OI Steps
- Grouping of related Enablers - Set of Enablers
- Time Line Diagrams (various diagrams : for example main changes, grouped by Line of change)

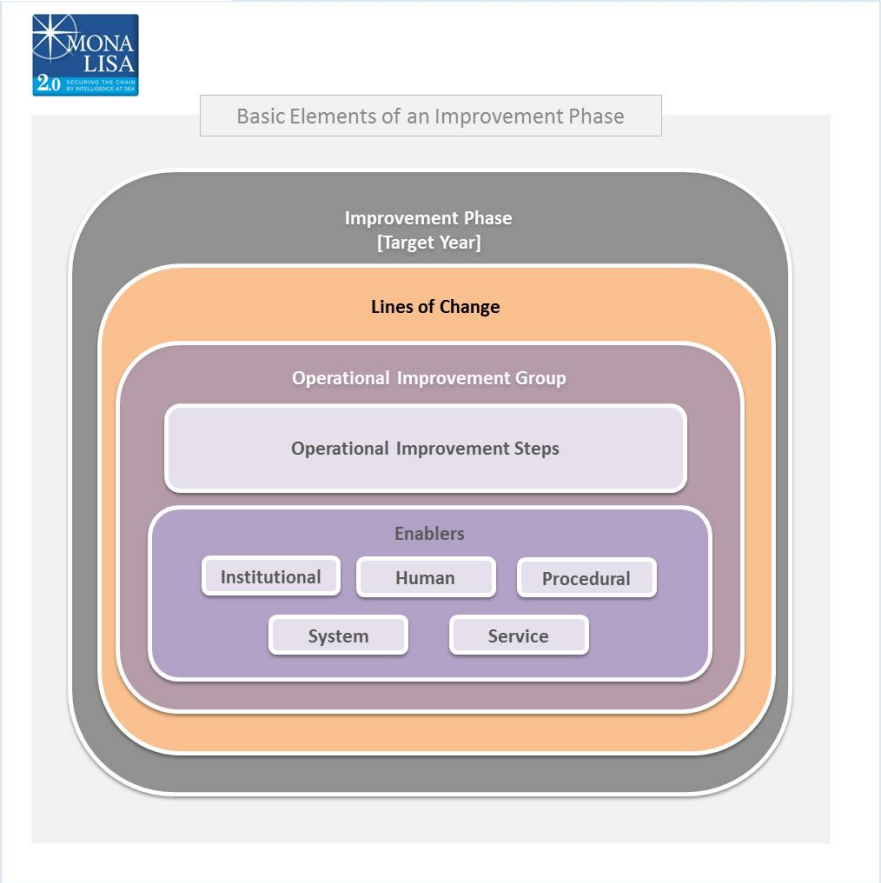

Figure 1 Improvement phase - Basic constituents

IPs have been planned for target dates of 2020 (IP1), 2025 (IP2) and 2030 (IP3).

5.5 Step 4: Assess STM Strategic Roadmap and Master Plan

The assessment covers the following:

- Assessment to the extent possible in the definition phase, whether targets in terms of KPAs could be met over time;
- Identification of benefits, gaps and potential effect on the overall Performance Areas to allow mitigations to be developed.

5.6 Step 5: Finalise STM Strategic Roadmap and Master Plan

The previous sections have covered, starting from the OI Steps and per IP, what have been analysed and described for the implementation of the STM Target Concept.

The basic constituents were an input for the STM Master Plan for further detailing and elaboration. A decision was taken to merge the STM Strategic Roadmap and STM Master Plan into one single document; i.e. STM Master Plan.

5.7 Step 6: Publish STM Master Plan

The STM Master Plan is published on a website for communication and availability purposes. For the improvement and further elaboration on the STM Master Plan, feedback can be given through the website. The published STM Master Plan is referred to as the e-Master Plan.

The content in the e-Master Plan is updated partly manual and partly semi-automatic. The manual updating is done through the content management tool for the website, while the semi-automatic update is export from the modelling tool and import to the publishing tool.

The following information is transferred from the modelling tool to the publishing tool:

- Lines of Change
- Improvement Phases
- Operational Improvement Groups
- Operational Improvement Steps
- Enablers
- Stakeholder Groups

The export is done in two files:

- Data
- Keys (relations)

For detailed description on the generation of these files from the modelling tool see ref [3].

6 References

#	Reference
1.	D2.0.3 STM Architecture Framework
2.	D2.4.2 STM Master Plan
3.	D2.4.1-1 Hands on description for export to e-Master Plan https://service.projectplace.com/pp/pp.cgi/r1147168840

39 partners from 10 countries taking maritime transport into the digital age

By designing and demonstrating innovative use of ICT solutions MONALISA 2.0 will provide the route to improved

SAFETY - ENVIRONMENT - EFFICIENCY

Swedish Maritime Administration ◦ LFV - Air Navigation Services of Sweden ◦ SSPA ◦ Viktoria Swedish ICT ◦ Transas ◦ Carmenta ◦ Chalmers University of Technology ◦ World Maritime University ◦ The Swedish Meteorological and Hydrological Institute ◦ Danish Maritime Authority ◦ Danish Meteorological Institute ◦ GateHouse ◦ Navicon ◦ Novia University of Applied Sciences ◦ DLR ◦ Fraunhofer ◦ Jeppesen ◦ Rheinmetall ◦ Carnival Corp. ◦ Italian Ministry of Transport ◦ RINA Services ◦ D'Appolonia ◦ Port of Livorno ◦ IB SRL ◦ Martec SPA ◦ Ergoproject ◦ University of Genua ◦ VEMARS ◦ SASEMAR ◦ Ferri Industries ◦ Valencia Port Authority ◦ Valencia Port Foundation ◦ CIMNE ◦ Corporacion Maritima ◦ Technical University of Madrid ◦ University of Catalonia ◦ Technical University of Athens ◦ MARSEC-XL ◦ Norwegian Coastal Administration

www.monalisaproject.eu

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