

Integration Model of Management Systems in Sea Transport

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ABSTRACT: Dynamically implemented mandatory management systems resulting from legal requirements in maritime transport since 2006 [1-3], very often (especially in the first years of implementing the requirements) functioned independently by the optional procedural approach - ISO [4-5]. It is now common practice to integrate requirements in both - the mandatory and voluntary areas. Legal requirements and recommendations do not define and recommend a specific form of extending existing management systems. The publication describes the relationship between the requirements for the management systems currently applicable in maritime transport resulting from legal requirements (Safety Management System - SMS) and voluntary implementations (Quality Management and Environmental Management System). The common areas identified for the analysis of system requirements (for obligatory and optional systems) will facilitate the integration and broadening of the management culture in maritime transport organizations.

1 INTRODUCTION

Dynamically implemented mandatory management systems resulting from legal requirements in maritime transport since 2006 [1-3], very often (especially in the first years of implementing the requirements) functioned independently by the optional procedural approach - ISO [4-5]. The genesis of the International Code for the Management of Safe Ship Operation and Pollution Prevention and the revised guidelines for the administration of the ISM Code by Administrations [6-7] - the first formal mandatory standard for safety management and prevention of pollution - goes back to the early 1980s. For communities interested in improving maritime safety prepared at the IMO and implemented Resolutions A.596 (15) forcing the organization to improve its functioning and maintenance of the safety operation passenger ferries. Through resolution A.647 (16) implemented in 1989, and later amended

guidelines, adopted by resolutions A.680 (17) to the present form of the International Management Code for the Safe Operation of the Ships and for Pollution Prevention - International Safety Management code - (ISM CODE), It was adopted in 1993 as resolution A.741 (18), supplemented by the resolution MSC. 104 (73), the MSC. 179 (79), MSC.195 (80), expanded in December 2008 by resolutions MSC. 273 (85) and adopted on 1 January 2010. The amendments have come applicable in the Code of 1 July 2010. The shipowner's and ship's certification procedure for the Safety Management System (SMS) is in line with Regulation (EC) No 336/2006 [2] of the European Parliament and the Council of Europe of 15 February 2006 on the implementation of the ISM Code in the Community, together with the Commission's amendment Of June 16, 2008 amending Annex No. 2 to the EC Regulation (No. 336/2006) on the implementation of the ISM Code in the Community in relation to model forms. This regulation takes into

account the provisions of Chapter IX. Management of safe operation of ships of the International Convention on the Safety of Life at Sea, 1974 SOLAS 2009, as amended. In the present form, the provisions of the MSC - MEPC.7/Circ.5 (the operational guidelines for the introduction of the ISM Code), MEPC.7/Circ.6 (guidelines on qualifications, training, professional experience for the designated persons - designated persons) and MSC - MEPC.7 / Circ.7 (Guidance on near - miss reporting). Documents related to the Owner and Ship Certification procedures in the scope of SMS are also the Regulation of the Minister of Transport, Construction and Maritime Economy of November 13, 2012 on inspections and audits and certificates of a marine vessel [8] and useful information on relevant individual SMS elements and their preparation by shipowners included in the ICS / ISF guidelines (International Chamber of Shipping - ICS and International Shipping Federation) regarding the application of the International Code of Safety Management.

It is now common practice to integrate requirements in both the mandatory and voluntary areas. Legal requirements and recommendations do not define and recommend a specific form of extending existing management systems. The publication describes the relationship between the requirements for the management systems currently applicable in maritime transport resulting from legal requirements (Safety Management System - SMS) and voluntary implementations (Quality Management and Environmental Management System).

2 THE CRITERIA OF INTEGRATION

One of the basic criteria for integration is, of course, the similarity in the way of building, implementing and certifying systems. In Poland, for the optional and mandatory systems, the system supervision unit is an organization recognized by the administration to issue compliance documents and safety management certificates on its behalf. There is therefore the possibility of an integrated system certification process.

The basic requirement of the process approach - omitted in the industry requirements and legal recommendations - is the independence of supervision over the system in terms of its substance, organization and finances. In the case of a Designated Person Ashore (DPA):

- ISO - should be dependent directly on the Management Board and independent in the scope of the main process,
- SMS - it should be independent of the area of vessel operation,

Despite the lack of legal requirements in terms of substantive, organizational and financial independence, this should be one of the basic criteria for the construction and implementation of systems in the transport industry.

Table 1. Relations of areas of the integrated system - own elaboration

Description	Regulation EC nr 336/2006, Annex 1, part A	ISO 9001 §	ISO 14001 §
Book of IMS	All	4.4	4.4
Process map	All	4.3, 4.4	4.3, 6.1.1
Safety and environmental protection policy	2	5.1, 5.2	5.1, 5.2
safety culture	2	7.3	7.3
Management overview	2, 5.1.5, 12.2	5.1, 6, 9.1, 9.3, 10	5.1, 6, 9.3, 10
Job Safety Analysis	4, 10.3	6.2, 9.1	6.2
Operational risk management	4, 10.3	4.1, 6.1, 6.3, 9.1	4.1, 6.1, 9.1
Operation of the ship	3.2, 6.3, 7	7.1, 8.1, 8.2, 8.3, 8.5, 8.6	6.1.4, 7.1, 8.1
Maintaining efficiency	3.3, 10	6.3, 7.1	7.1
Access, exchange and management of information	3.1, 6.7, 12.5	6.3, 7.4	7.4
Competence management	3,4,5,6	5.3, 7.1, 7.2, 7.3	5.3, 7.2, 7.3
Suppliers evaluation	10, 6.5,	8.4	9.1.2
Supervision of documents and records	3.2, 6.3, 7, 10.2.4, 11	7.5	6.1.3, 7.5
Inspections	10.2.1, 10.4	8.6, 8.7, 9.1, 9.1	
Implementation of audits	12	8.6, 8.7, 9.1, 9.2	9.1, 9.2
Corrective and preventive actions and supervision of nonconformities	9, 10.2.2, 12.6	10.2	10.2
Monitoring	9.1	4.1, 6, 9.1, 10, Deming's wheel	4.1, 6, 9.1, 10, Deming's wheel
Proceedings after the occurrence of a threat or an event	8	-	6.1.2, 8.2
Preparation of emergency plans in case of crisis	8	-	6.1.2, 8.2
Review of inquiries, offers, contracts and orders	-	4.2, 5.1.2, 8.2	4.2
Customer orientation	-	4.2, 5.1.2, 8.2	4.2
Settlement of a service	-	4.2, 5.1.2, 8.2	4.2
Environmental monitoring and measurements	8	4.1, 6.1, 6.3, 9.1	4.1, 6.1, 9.1

3 SYSTEM INTEGRATION

System integration involves the combination of systems so that they can use each other's resources. They are then subject to joint certification. Analysing the processes required in the Safety Management System and Quality Management Systems and Environmental Management it is hard not to get the impression that the lack of integration may make the operation of maritime operators difficult. Experience

in the field of system management nowadays allows for efficient integration or extension of system requirements. Table 1 presents suggestions for description of processes in the Integrated Management System (SMS, 9001, 14001) in relation to the criteria of individual groups of requirements also illustrated on the process map - Figure 1. In the case of Safety Management Systems, they must be extended in the scope of other legal requirements [4 - 5, 9].

Considering the convergence of the construction of requirements resulting from ISO standards, it is very easy to extend this analysis with further requirements, e.g. resulting from information security management [9].

Referring to the areas of the integrated management system (ISO, SMS) it is needed to talk about the elements of one system, not individual systems, connected in some places. This is because the elements of the integrated system interact with each other. When building processes and documentation of an integrated management system, an analysis should be performed from the perspective of the quality of services and products, adapting processes not only to the expectations of customers but, above all, to safety requirements or the impact of the process on the environment.

For the needs of the Integrated Management System, "safety" is therefore a synonym of quality, professionalism, high security in the operational and environmental area and continuous improvement of services in the main process. It means ensuring that the services performed are carried out to the highest quality standards, meeting legal requirements and preventing operational and environmental risks. The implemented Integrated Management System should guarantee not only high quality of services and highly qualified staff, but above all an acceptable level of safety of services performed by the maritime operator,

as illustrated by the Declaration on the development of safety culture, Safety Policy and current JSA, containing criteria included in ISO 9001 standards, 14001 and legal requirements SMS (Safety Management System).

The analysis of mandatory criteria and voluntary management systems in maritime transport reveals the convergence of many requirements. The implementation of voluntary systems is primarily related to the given criterion (e.g. quality) in input data analyses and streams and minor modifications to the description of processes. The already existing, legally-derived management systems can be easily extended by increasing the quality of their services and, hence, the competitiveness of transport operators on the market.

The implemented integrated management system contributes to:

- increasing prestige,
- increasing the competitiveness and customer confidence in the services provided.

In addition, it leads to:

- clearly defined division of responsibilities and competences of individual employees, and thus facilitating the management of the organization,
- facilitating communication between individual departments and employees inside the enterprise,
- continuous and comprehensive improvement of the processes carried out,
- simplifying documentation describing the system and, consequently, its suitability in managing the organization,
- reduction of costs related to lack of quality of services,
- reduction of costs related to the use of the environment and possible penalties.

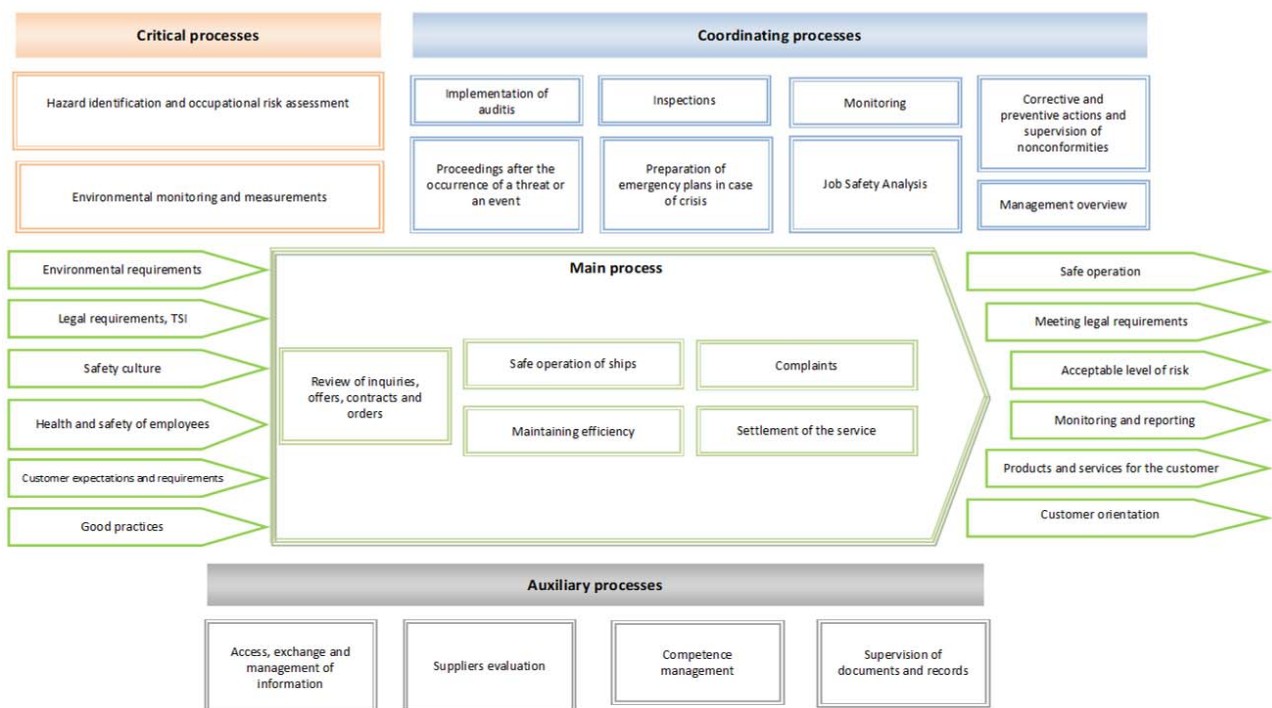


Figure 1. Model of processes of the Integrated Management System - own elaboration

4 SUMMARY

As of today, there are various models of integration of management systems in maritime transport. From full independence of systems resulting from legal requirements, to full integration with voluntary systems (e.g. ISO 9001, 14001, 18001 or 27001). In addition to the costs associated with integration, this process brings many benefits resulting from the lack of duplication of convergent activities, documentation or the duplication / limitation of employee involvement. The weakest and most sensitive element of integration is the Plenipotentiary of the Safety Management System, which now must have full industry knowledge in the field of the main process in addition to the process requirements.

REFERENCES

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- Management Code within the Community and repealing Council Regulation (EC) No 3051/95
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- [4] EN ISO 9001:2015 Quality Management Systems - Requirements (ISO 9001:2015)
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