“Security features for marine objects and International Standard ISO 28000”.

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In a general view the transport security (TS) is provided by the integrated system of arrangements to counter various threats to the State, society, the person, material, information, financial and social resources of the country taking into account the national interests, ensuring the sovereignty, territorial integrity, ongoing progress of the economy, improvement of living standards and comfortable living conditions, preservation of national cultural values and cultural heritage. TS affects almost all spheres of the economy of any country, as the transport industry is the link between all segments of production and consumption, moreover in a broad sense TS is determined by reliable technical means of transport, infrastructure (IP), reliability of the human operator as a part of the system, the quality of their functioning, management and information systems level, as well as external and internal conditions, including criminal and terrorist, in which the system operates.

In general, the transport safety and quality of services in a formalized form is determined as

$M = \{M_h\}$, $h = \overline{1,7}$, i.e. safety and quality of services maintenance in the following items:

– cargo (not accompanied luggage);

– container (packing);

– passengers and the attendants;

– means of transport (TM);

– transport infrastructure;

– information;

– transport environment.

The Transport system (TSS) is complex man-machine system, which concerns to a class of the greater distributed systems and is characterized by dynamism of processes, stability in the certain limits, ability to self-regulation. At the same time behavior TSS is weakly predictable and is characterized by some uncertainty. Owing to various weather conditions at movement of the TM, a condition of the transport environment (roads, bridges, tunnels, tracks, marine and river ways, intensity of the movement, constrained conditions, congestion in separate directions, etc.) practically for all types of transport is not obviously possible to specify an arrival time to destination precisely; during transportation due to various internal and external threats adverse incidents, accidents may arise including damage to cargo or container loss of cargo or its destruction or capture by criminal or terrorist groups, personal injury to passengers and transport

staff, loss of life, environmental harm due to accidents and emergency situations involving explosions, fires, hazardous air emissions, discharges into water, soil pollution.

Threats to the transport process are detrimental to people, material, financial, information resources, ecology, as well as to state-political interests of the country. Of particular importance are terrorist acts, damage from which are commensurate with the damage from military conflict and is manifested in public-political, economic, environmental and social spheres.

The international community particularly in the maritime transport industry has taken a number of important documents in support of counter-terrorism security of objects – SOLAS 74 chapter 11-2, the International Ship and Port Facility Security Code (ISPS Code), International Standard ISO 20858 in terms of maritime safety facilities.

However, the maritime industry is working in close conjunction with other modes of transport - rail, automobile.This implies the problem of creating an integrated system of TS covering all aspects of transport-technological complex.

In turn, this requires a systemic approach both conceptually and in implementation of the whole complex of activities, taking into account anthropogenic, technological, environmental and criminal and terrorist threats.

In general, the security scheme in part, for example, terrorist and criminal threats can be represented as a set of nearly 30 blocks, **Figure 1.**

Technical implementation can be accomplished by, for example, the platform "Intellect", developed by ITV (Russia, St. Petersburg).

This platform is a software product that allows you to create an integrated system to monitor and control any object, combining together the life support subsystem (water supply, sewerage, heating, electric power supply) with alarm of perimeters and internal parts of objects, access control, TV surveillance, control of lighting objects, fire alarm, etc.).

Monitoring and management is exercised through the collection, processing and storing data from various sensors, television cameras, analog and digital, with data output at workstations and the central point of monitoring and management.
That is, for the seaport, it is possible to fully control all the processes of production and providing activities, including assessment of quality, safety, stability and reliability of transport-technological operations and vessel traffic management system.

Similar schemes can be used to implement security, reliability, sustainability and quality of operations from other threats to the transport industry.
Transport and technological process is realized, usually in the form of chain of supply-transportation by different modes of transport, manufacturing operations in warehouses and TM.

The set of such operations is represented as follows:

O={Oi), i = 1,.. n:

Ac - acceptance of cargo, Wh- warehousing, St- storage, Del - delivery of a cargo, Ct- complete set, Pc- packing, Unpc- unpacking, Cw- cargo works (loading-unloading), Ts- transportation, In - information, Com - communication, Cl - clean a mean of transport (preparation for reception of a cargo).

The totality of these operations based on different modes of transport is nothing but a chain of freight traffic, (the shipment) from the supplier to consumer and can be graphically represented as follows:

a constitution of the supplier – a type of transport, intermediate warehouses (bases) – a warehouse of the consumer.

Analysis of various combinations of transport modes, the sequence of their performance says about the set of possible options for the chain of supply - the movement of cargo.

The analysis of various combinations on types of transport, speaks sequence of their performance speaks about multitude of possible versions of the organization of a circuit of deliveries – movements of a cargo. It is expedient to provide options of supply chains in the form of combinations of transport: Au - Rw - Au, Au - Rv - Au, Au - Mn - Au, Au - Mn - Rv - Au, Au - Rw - Rv - Mn - Au etc. (Au-automobile, Rw-railway, Rv-river, Mn-marine; one type of the transport can be used), where in between, at the start and end points of the circuit there can be warehouses and bases. The total number of possible combinations - tens and hundreds (including changes in the transport sequences in the chain and the availability of warehouses, berths).

When selecting the supply chain optimal (rational) in terms of provider and the recipient is the one that allows us to obtain transportation services at a specified time at a certain length of goods in transit, the correct nomenclature, with due quality and safety, rhythm and an acceptable cost.

Accordingly, the efficiency of the supply chain:

E=F (Pd, Qd, Vd, Nd, Rs, Dd, Thr), where: Pd-precise timeframe of delivery, Qd-quality of service, Vd-volume of delivery, Nd-the nomenclature of cargoes, Rs-resources (Rs =f (Lab, Mr, Fn, In, Pr), Lab-labour, Mr-material, Fn-financial, In-information, Pr-power resources, Dd-duration, Thr-threats: Thr ext - external, Thr int - internal.

Version of the supply chain, for example, on 4 transshipments a cargo and 9 elements Au- Au - Mt- Au will look as follows:

Sender Receiver

warehouse	Au	port 1	Au	port 1	Mn	port 2	Au	port 2
		warehouse		berth		berth		warehouse
Dam1	Dam 2	Dam 3	Dam 4	Dam 5	Dam 6	Dam 7	Dam 8	Dam 9
○	►	○	►	○	►	○	►	○ …..
Vul1,Thr1	Vul2,Thr2	Vul3,Thr3	Vul4,Thr 4	Vul5, Thr5	Vul 6, Thr 6	Vul7,Thr7	Vul8, Thr 8	Vul9, Thr9

Symbols: ○ – a warehouse final or intermediate, ►- movement on the mean of transport, Dam – damage, Vul – vulnerability.

Subjects of the supply chain are: shippers, consignees, owners of infrastructure and vehicles engaged in transportation and manufacturing operations, government agencies.

Under the conditions, for example, of Finland various types of enterprises whose activities are linked in the supply chain both domestically and abroad (wood processing, paper production, food processing, processing of different types of raw materials, product innovation technology to wind electric turbines) are added in the supply chain.

The most important seaports in Finland are: Helsinki, Kotka, Hanko, Hamina, Rauma, Turku, Pori, Kukkola etc.

Only on seaports in Finland Scales of movement of cargoes are significant: at a minimum - a few million tons annually for each port.

For example, only 10 months of 2010 turnover in the port of Helsinki was more than 9, Kotka - about 8 (turnover of the port, particularly for 2008 amounted to about 36.7, in 2009 -27,5 million euros), Hamina - almost 3 million tons with a tendency to increase compared to 2009 - at 12 - 25% or more (according to the Association of Sea Ports of Finland). These data are caused by economic recovery after the crisis, as well as manufacturing capabilities of ports.

Some characteristics of the sea ports in the sample ports of Kotka and Hamina are presented in Table 1. Supply chains are of particular importance for major international projects.

For Finland These include the "Nord Stream" project - a gas pipeline stretching about 1200 km under the Baltic Sea from Vyborg to Germany, suggesting the participation of Finnish organizations in the concreting laid on the seabed pipe (only in Kotka, there will be 80,000 pieces), storage and distribution them on the pipe layer vessels.

For this project the implementation of the above basic principles of logistics is a prerequisite for achieving high efficiency E.

Port	Goods turnover for 10 months of 2010, mln. t.	Number of berths	Warehouses area, th. sq.m.	Quayage, km	Capacity for liquid cargo, th. cub.m.	Number of companies	Personell of port, man
Kotka	7,64	30	417	4,9	240	100	2300
Hamina	3	15	470	3	830	70	2000

Note: The depth at the berths lie within 7 -13.5 m, the fairway for Hamina -12.5 meters, Kotka - about 15 m. For the Mussalo area in port of Kotka the bulk cargo terminal depth - up to 13,5 - 15,3 m .

ISPS Code and SOLAS chapter 74 02/11 treat the problem of security of marine facilities in the anti-terrorist security limits.

A similar campaign is also used in the international standard ISO 20858 (Ships and marine technology).

However, according to statistics the share of illegal acts of this nature is within 5%, except for incidents of pirate character in the Gulf of Aden and the Strait of Malacca.

In this regard, it seems urgent to implement a new international standard ISO 28000 (supply chain security), which covers the operation and interaction of ports (including dry), its equipment, various technical systems, infrastructure, personnel, types of vehicles from the standpoint of sustainability, safety and quality in a man-made and natural threats, the percentage of these situations occurring is 95%.

ISO 28000 is universal and can be distributed not only in the chain of marine facilities and transport modes.

Any production - also a chain of movement of materials through the steps of the technological process from raw materials to finished products.

Meeting the requirements of ISO 28000 will provide safety and quality of supply chains “from door to door” in the logistic structure and interlinking of transport safety and quality on all elements of the chain, taking into account the well-known standard for quality management ISO 9001/2008, which corresponded to the above standards.
Among the first ports that have implemented ISO 28000, it should be noted Houston (USA), Le Havre (France), Singapore.

In general, these standards reflect the following: an organization policy in the field of current production, services and strategies for the future, planning and implementation activities, measures introduction management structure, analysis of whether the organization has threatened, training and staff training, internal and external auditing, management's commitment to improving and dissemination of information to all personnel of the organization, as well as for the adjacent interacting structures.

The above international standards consider the cargo transportation as a single process that can involve any type of transport, the cargo transportation, the implementation of cargo handling, warehousing, storage, equipment and other operations are subject to continuous monitoring, documenting, analysis and improvement.

In case of emergency situations adequate response must be provided.

Standards compliance of management systems for any organization means doing business at the level of internationally recognized principles of business and adds credibility to the organization from partners, guarantee the reliability and increases competitiveness, improves reliability and increases the efficiency of the organization as a whole, makes it easier for trade and transport facilitation in conditions globalization of production, information and financial resources based on standards in the customs area, demonstrates and documentary confirms to the related organizations and business partners the level of safety and quality, strengthen its own confidence that all operations of the process are performed properly, are continuously monitored, adjusted if necessary, and improved, the cost of providing quality and safety are minimal, the staff works in more favorable conditions of a clear regulation of the activities, national and international prestige of the organization is increased, participation in various tenders for international and national levels is facilitated, the harmony with national and international regulations documents is achieved.

In the context of globalization and the universal dependence of the economy, financial institutions in different countries, harmonization of expediting the movement of information flows and their reliability, improvement of management and implementation of quality management and security systems provide improved security management and operations of organizations in general, competitiveness and investment attractiveness and ultimately leads to increased stability of operation, increased speed of delivery of goods and, consequently, reduction of delivery times, inventories in warehouses and transport costs.
Certification according to international standards of management systems has a positive effect on organizational operations, penetrating deeply with thought-out quality and safety operation assessment procedures and services at all stages of production processes, enabling to optimize operations, reduce costs, organically fit into the global transport process, the World Trade organization, where the priority is given to alignment of quality and safety, and confirmation of the level of compliance with international standards is a prerequisite for participation in international trade and movement of material, informational and financial resources.

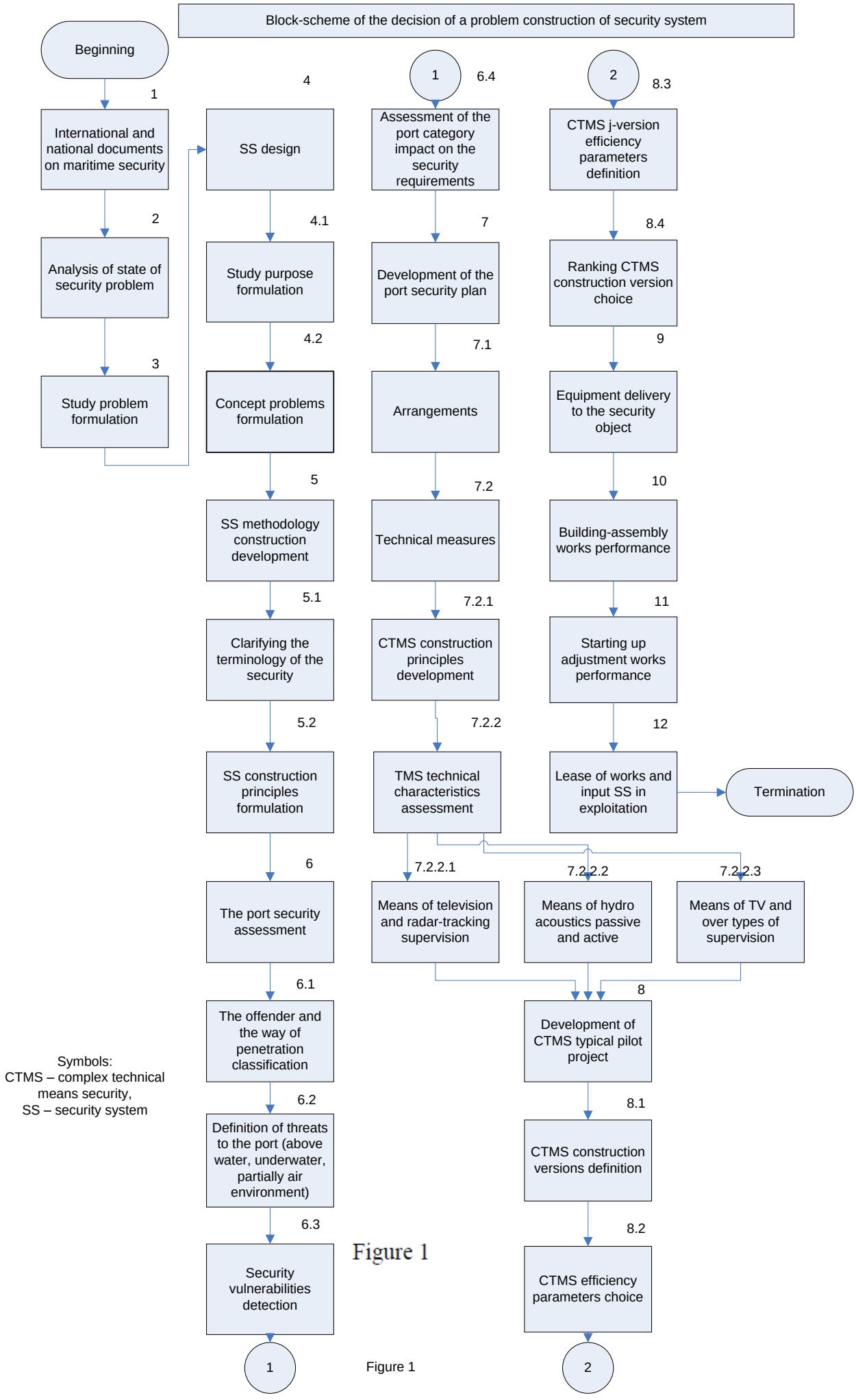

Figure 1

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