WHEN MARITIME MOVES BEYOND THE SEA

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Everything connects, that's the state of the world we live in today. Previously, maritime control centres operated with a singular focus: protecting civilian or military vessels traversing the waters within their areas of responsibility. These worlds are now coming together where shared resources are utilised to ensure safe passage. Now it is time to take this a step further with the integration of public safety agencies.

Let's consider why this is happening and the key problems that need to be solved. The first is information sharing and the ability to do so in a real-time fashion. In order for the global maritime network organisations to keep all vessels, passengers and freight safe, the ability to share information, intelligence and communications needs to be supported by mission-critical control centres.

A mission-critical control centre should address concerns related to vessel traffic services, joint rescue coordination centres (JRCC), port authorities, search and rescue (SAR) coordination centres and maritime rescue coordination centres (MRCC). These

services are utilised by many players and in order to achieve this goal need to be supported by technologies that enable the sharing of information, intelligence and communications, such as system-wide information management (SWIM). Maritime authorities like vessel traffic services (VTS), ports, inland waterways (IWW), rescue coordination and incident management in maritime rescue co-ordination centers (MRCC) including joint rescue centres are all examples of users.

EARLY PROOF POINTS

Examples of integration on a smaller scale can already be seen today. Some proof points include:

1. The Icelandic Coast Guard, (ICG) is responsible for coordination and execution of all maritime and aeronautical Search and Rescue (SAR) operations in the Icelandic SRR. They operate the Joint Rescue Coordination Centre (JRCC) Iceland from its operations centre in Reykjavik. The ICG also undertakes

particular tasks ashore in co-operation with police and other authorities
2. MRCC Tórshavn is an MRCC that initiates and co-ordinates search and rescue (SAR) on Faroes sea territory under responsibility of the Ministry of Fisheries. Co-operation agreements have been made with different parties such as atlantic helicopters, joint arctic command and also with neighbouring countries for co-operation.
3. The Joint Rescue Co-Ordination Centre in Victoria, Canada: The Victoria Search and Rescue Region consists of approximately 920,000 square kilometers of mainly mountainous terrain in Yukon and British Columbia and 560,000 square kilometers of the Pacific Ocean extending to approximately 600 nautical miles offshore including over 27,000 kilometers of rugged British Columbia coastline. This is an example of co-working between the Canadian Coast Guard and the Royal Canadian Air Force

TOMORROW'S SOLUTION

When envisioning what is required for the interaction of how the different organisations and systems could work, there are a few categories which need to be addressed:

- Common operational picture (COP): One COP with visibility across all organisations and the ability to make decisions cross-functionally
- Voice communication system: One voice communication system to enable consistency of contact medium across all organisations
- Incident management: One system providing customised workflow support and incident management adoptable anytime

Let's consider the implications of being able to provide a common situational awareness across many cooperating organisations with solutions tailored to their specific domains - civilian aviation authorities, maritime agencies, public transportation authorities and emergency services organisations. The sharing of information gathered from different systems and harmonised for faster decisions will impact life-saving timelines.

When a situation ultimately arises, the ability to communicate the situation and make the appropriate decisions is only the first step along the way to a resolution. An incident management workflow mechanism allows for the assignment and tracking of tasks across the military and civilization organisations involved. Additionally, the information that is transferred might require encryption and recording for future training or potential legal actions to be supported.

Cooperation and collaboration can allow for exponential improvements in emergency scenarios both civilian and military. Faster decision making and integrated incident management will expedite resolution of these situations when seconds count for a safer world.

HOW IT ALL WORKS

As control centres and teams from interacting organisations follow different procedures, they have special requirements and even use optimised wording for their individual tasks, especially within a joint operation. This holds the potential for misunderstandings. The generation of a common operational picture needs the equivalent of a real time translation between the interconnected systems to be a sufficient decision support tool.

A simple example can highlight how simple tasks quickly become complex. If an SAR operation maritime vessel operating on water needs to meet emergency ambulances on the coast to handover injured people, several coordinating centres will arrange a rendezvous point together. This simple task can become quite complex if done across organisations.

Traditional maritime systems contain sea charts for safe navigation, emergency systems need road information for safe transportation otherwise we have to consider air traffic implications if a rescue helicopter is involved in the operation. The helicopter could be operated by a civilian or military organisation adding more layers of complexity.

Just sharing the same information will not lead to a common situational awareness and good cross agency decision support. The involved assets need individually optimised views with validated and trustful information of common attributes like the amount of people involved, degree of injuries, etcetera, in order to produce a harmonised result.

The first step in order to achieve this goal is to understand the cooperating organisations individual workflows and respect their diverging views for their situational awareness needs. Being able to provide a solution that focuses on domain specific procedures to optimise individual workflows while solving the common technical challenges and ensuring the quality and availability of the information for system-wide communication and information management is the target for a successful application.

This begins by empowering efficient operational and emergency response while respecting the ability to establish command and control structures by moving from an initial reactive mode to strategy oriented response actions. Predefined roles, clear responsibilities and reporting lines are a critical component of successful workflow collaboration across agencies. This enables the right staffing (leaders, response-teams and resources) to cultivate and activate interdisciplinary relationships with other agencies while keeping a scalable organisation.

IS THIS THE FUTURE?

Frequentis is supporting the Maritime Safety and Security Centre in Cuxhaven, Germany to do just this today. Earlier this year, the official opening took place in the presence of Federal Minister Alexander Dobrindt, MdB, Federal Ministry of Transport and Digital Infrastructure in Germany. In July, 2016 the go-live took place, enabling the Maritime Safety and Security Centre to utilise a common communication and information solution to work together with all other authorities that have been integrated into this centre.

The Maritime Safety and Security Centre had been acting as the communication and cooperation network for the operational forces of the Federal Government and the German coastal states to ensure maritime safety and security since 2007. Different specialist capabilities have been grouped together in the Joint Emergency Reporting and Assessment Centre Sea (GLZ-See) for this period of time and operations are coordinated on the basis of common situational awareness. About 100 employees, including shift workers, are working in this newly built facility within the area of the Waterways and Shipping Department Cuxhaven.

The Maritime Safety and Security Centre is responsible for the entire German coast and all water access routes. This is a unique case study of how these different agencies can work together. It comes to life with the integration of the Federal Office for Agriculture and Food, Federal Police Department, Central Customs Authority, German Navy, Central Command for Maritime Emergencies, Federal Waterways and Shipping Administration, and the Waterways Police forces of the German federal and coastal states are operating together through this center. The responsibility includes all waterways within and the coast surrounding Germany.

ABOUT THE AUTHOR

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Khashy Saravandi-Rad leads the Maritime Business Unit and is responsible for all Maritime activities in Frequentis. During his tenure, the company's Maritime footprint has expanded to be present in all Frequentis sales regions and major product launches have been brought to market in order to evolve to an IP-based platform and information management system.

ABOUT THE ORGANISATION

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Frequentis is an international supplier of communication and information systems for control centers with safety-critical tasks. These control center solutions are developed and distributed in the business segments of Air Traffic Management for civilian and military air traffic control and Public Safety and Transport including police, fire and rescue services, vessel traffic and railways. Its products are deployed in over 130 countries.

ENQUIRIES

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