

Procurement of a new VTS: Some essential factors

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Vessel Traffic Service (VTS) – a service designed to improve vessel traffic safety and efficiency and to protect the environment – offers the potential to respond appropriately to traffic situations emerging in an area.

Recent years have seen a dramatic increase in the focus on vessel traffic safety in EU member states and various regions worldwide. The primary purpose of the original port VTS was to prevent vessel collisions and groundings in the port and entrance areas. The attitude towards the scope of a VTS has been widened to give it a key role in environmental protection in the event of maritime accidents. VTS coverage is expanding to include coastal areas, shipping channels and sensitive offshore areas. Implementation of the Automatic Identification System (AIS) and the EU vessel information system 'SafeSeaNet' will supply the VTS with detailed data on vessels, such as their identification, movements and any dangerous cargoes. A notable trend among some VTS authorities is the desire to include port security and offshore surveillance in VTS duties.

Factors to consider

The development of a new VTS must build on past experience, prevailing rules and recommendations, available technology and insight into ongoing studies and projects to prepare the VTS infrastructure to meet tomorrow's demands.

The total concept represents the major challenge in projecting a new VTS. The complexity involved in coordinating the various activities is frequently underestimated.

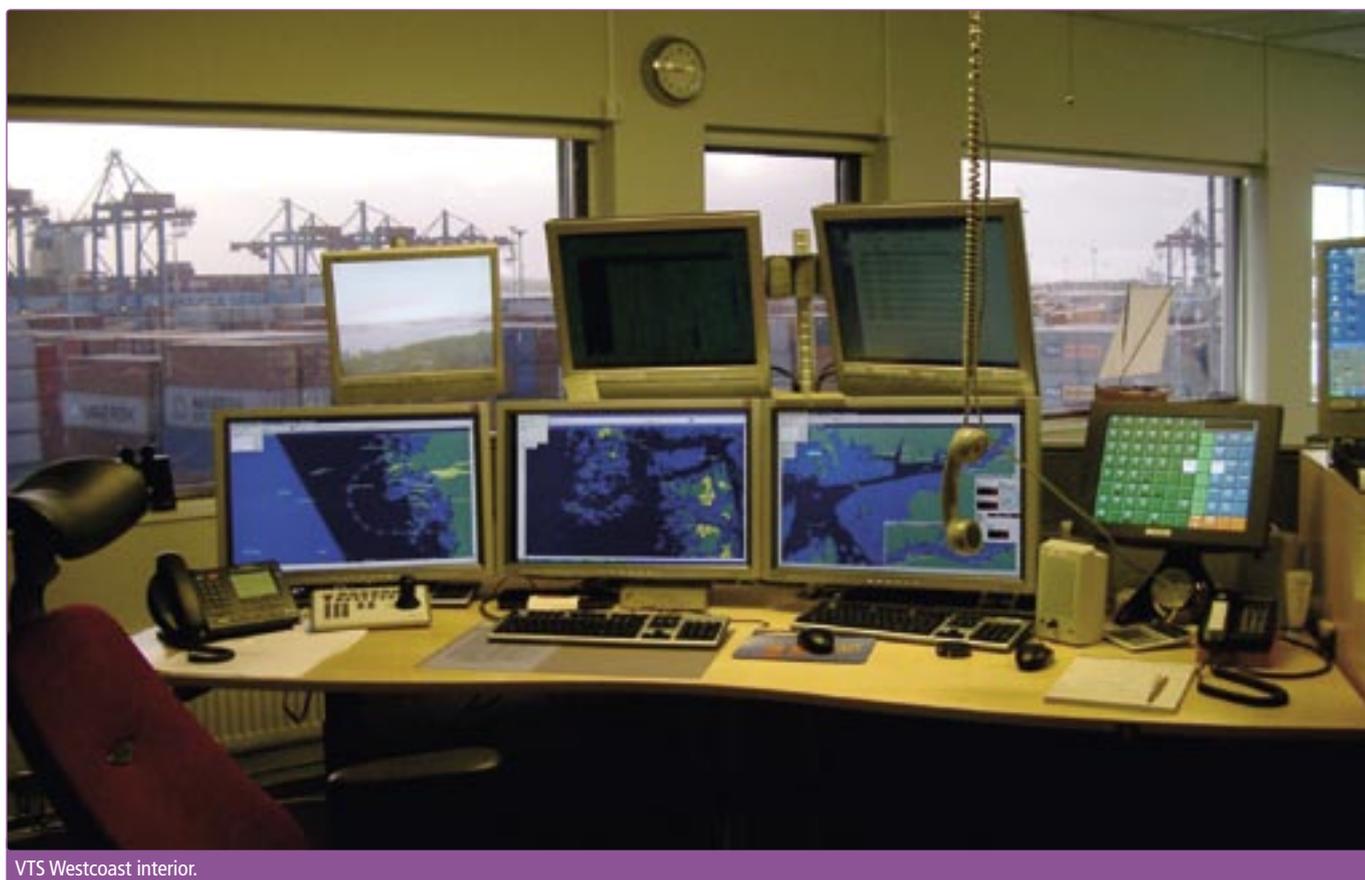
- What are the customer's demands and expectations (which often vary within an organisation)?
- How can they be met in terms of the legal framework and international recommendations?
- Should the VTS centre handle vessel traffic only or should related activities be incorporated, with the centre becoming a Vessel Traffic Management and Information Services (VTMIS)? Or should the centre be a combined VTS and Maritime Rescue Coordination Centre (MRCC)?

Prior to any final decision to project a new VTS, analyses and assessments must be completed to identify whether traffic volume or risks justify these services.

Depending on available expertise, the VTS project team would be wise to use – fully or selectively – the IALA recommendations as guidelines.

Creating nautical specifications

The next step is to create a nautical specification in consultation with the agency in charge and operators in the area, such as ports, pilots and ship operators. Delineate the geographical target



VTS Westcoast interior.



Equipment VTS Gothenburg.

area and define the areas in which intensive traffic monitoring is required. Consider whether a ship routing system or ship reporting points have to be established. Decide what kind of monitoring equipment will best meet the demands. The location and size of the VTS centre has to be agreed upon. How many VTS operators are needed to perform daily operations? The nautical specification must also present basic cost estimates.

Subsequently, a number of activities will gradually commence and sometimes progress simultaneously in accordance with a set time schedule.

Design and construct the VTS centre to offer effective and healthy working conditions. A sensible measure is to build an extra working station for training and replay purposes. Separate equipment facilities are essential in ensuring a low noise level in the VTS centre, with minimum interruptions during service and repair periods. Emergency power sources, such as UPS and a diesel generator, are essential.

Technical specifications

The technical specification represents the most comprehensive part of the documentation. There are several competitive suppliers of VTS equipment offering proprietary software design and performance. In addition to general requirements, the emphasis on the technical specifications must be in line with the specific requirements for a particular VTS in a bid to provide the purchaser with guidelines in choosing the optimal supplier with the best price.

A specific and important feature of the specification is the communication equipment: telephones, VHF radios and IT. As the VTS will not function without communication, full redundancy is essential. It is also necessary to assess the VHF coverage of the VTS area and, if required, build new VHF stations.

It is crucial to commence a VTS project with the installation of AIS shore stations, as vessels above BRT 300 must be equipped with a transponder. To monitor traffic in large geographic areas, an AIS net must be in place. Radars should be used in areas where constant, intensive monitoring is required. Full traffic image security requires radar redundancy, which means overlapping coverage of two radars for the same area. Cameras are sometimes the best traffic-monitoring tools in narrow channels or inner port areas.

The data-processing equipment consists of computers with vessel tracking facilities that combine radar images, transponder information, camera images, and radio direction-finder bearings that are merged to form an overall traffic scenario presented on the VTS operator workstation monitors in an electronic chart format.

The VTS must also provide vessels with information about current weather forecasts. Depending on local conditions, information on water levels and currents may also be of major significance. Providing this information for local areas may require the setting up of weather stations.

All verbal communications and traffic movements must be recorded and saved to allow reconstruction of historical traffic situations.

Operating procedures must be established based on the VTS level – information, navigation assistance or traffic organisation. Detailed manuals and checklists are key resources in round-the-clock operations. Similar routines must be observed by all VTS operators, and service users must always gain the same type of response.

Personnel

The VTS organisation must have a technician on call at all times. Technicians must have a solid background in radar/telecom/electronics/computers. Technicians are preferably recruited from within the organisation or from an external company or in the form of support from the supplier of the VTS processing equipment. In the learning process it is essential that the technicians are part of the installation team. The contract with the equipment supplier should include a paragraph covering at least two weeks training for the equipment technicians, plus 24-hour telephone support during the first year of operation.



Radarsite Galterö 18 foot antenna Terma.



Radarsite installation Tân.

In addition to VTS operators, the organisation should have a dedicated VTS manager with in-depth expertise in VTS operations. Depending on the VTS size and number of operators, shift supervisors may also be required.

Using radio communication, the VTS operators must be able to create a reassuring relationship with the service users. The theoretical background and training level for operators vary among VTS units, ranging from pilots to operators without any nautical background. IALA has issued a manual on VTS personnel training that should be used in the training process.

Since 2004, for example, Sweden has adopted new recruiting and training criteria for VTS operators, which are gradually coming into force. A new employee must have completed a master mariner academic programme, but no further experience is required. As part-time students at a maritime academy, existing operators without a master's education are offered an educational programme that consists of 60 per cent of a master's programme, but which specialises in subjects that could prove vital for a VTS operator. In addition, all operators have to pass a two-week in-

house training course, with both internal and external lecturers, to receive a VTS operator's certificate in line with IALA standards. This course is followed by one-week of simulator training with the highest international supervision. A four-to-six week on-the-job-training course at the local VTS is also a part of the programme. In conjunction with the installation of new VTS processing equipment, operators must at least attend a one-week specific training course in handling the equipment.

The installation of a new VTS represents a change in operating procedures and involves a major long-term investment. To achieve optimal results, funds must be available from the start of the project. Continual economic revision must be performed during the project process to ensure that the project progresses within the budget limits.

A VTS is an official approach to improving vessel traffic safety and efficiency and protecting the environment, but during the planning of a new VTS, it has to be kept in mind that it must provide a service to the maritime industry.

ABOUT THE AUTHOR

Björn Lager, Master Mariner, with legal and economic qualifications from the University of Gothenburg. He is former captain of passenger ships, and owners' representative at shipyards during vessel and offshore rig building, in addition to having had various management positions in the offshore industry worldwide. Between 1996 and 2001, Björn Lager was Head of Maritime Traffic Area West Coast of Sweden and in that capacity was also head of VTS Gothenburg. He is responsible for the development of new VTS and coordination of VTS operations nationwide in Sweden and has performed VTS feasibility studies for foreign governments.

ABOUT THE ORGANISATION

The **Swedish Maritime Administration** is the agency in charge and operator of VTS in Sweden. A survey of VTS in Sweden was completed in the spring of 2004. Based on the recommendations of the survey, the Swedish Maritime Administration will change the number of VTS units from nine small to four major, enhanced VTS/VTMIS units. The first new VTS/VTMIS unit commenced operations in January 2005 and the project for the second unit is in progress. The VTS programme for all of Sweden will be completed by the end of 2008. Swedish experts have also assisted a number of foreign governments in establishing VTS networks.

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