# VTMIS General Description

This Technical Description has been developed by Wartsila for ABP Southampton Port Vessel Traffic Management and Information System Project. It includes technical and functional description of the subsystems, their purpose and interaction.

## Brief description of VTMIS

VTMIS is up-to-date high-tech automatic system aimed at enhancing the safety and efficiency of navigation, safety of human life at sea and environmental protection from the possible adverse effects of shipping.

The VTMIS provides the user with various navigational information in the way of the decision-making support. The VTMIS enables the ships and other navigational objects in the off-coast areas to be identified and tracked, vessel traffic to be planned.

VTMIS is integrated networked computer system based on the following principles:

* open architecture;
* modular system structure;
* use, predominantly, of the widely employed standard hard- and software;
* minimum use of the dedicated equipment;
* favouring of software solutions over the hardware methods;
* digital processing of data from all the system sensors, including analogue sensors;
* use of the most recently developed mathematical methods for the processing of the radar data; use of unique algorithms for the target extraction and tracking;
* use of remote VTMIS sensor sites;
* use of standard digital systems, data transmission protocols;
* centralized processing and correction of the target data from many sources;
* automatic identification of most of the possible dangerous situation and generation of appropriate alarms;
* display of various data to operators in the most user-friendly computer form with an intuitively clear interface;
* use of computer marine cartography facilities for a better presentation of navigational and other data;
* recording, storage, archiving of most of the data (targets' motion, transmitted messages, radar image of the area, exchange between the operators, etc.) for the further full playback of the situation dynamics within the selected period;
* several levels of access rights and VTMIS controls for the operators.

## VTMIS Operating Principles

The VTMIS operating principle consists in:

* reception of information on the navigational situation from the external sources referred to as SENSORS;
* generalizing of the target data;
* presentation of the target data in the Target Table;
* presentation of graphic target data in combination with the multi-layer electronic charts of the area;
* analysis of the navigational situation and generation of alarms and warnings according to the criteria set by the operator;
* output of various auxiliary navigational and other information;
* digital recording of the navigational situation data for the further playback.

## VTMIS Flexibility and Expansion

Proposed System is of modular design and therefore has significant degree of flexibility allowing building small and national scale VTMISs using same components. The VTMIS will be developed using modular solutions to provide a single common open platform by integrating equipment with different functions and operational requirements seamlessly into one complete operational unit. Wherever possible, the system will be made of marine grade equipment and devices that are nonproprietary, open architecture, popular standard in the local market; to create a high level of flexibility, functionality, interoperability and to allow the Owner with the options to customize or extend it capabilities to meet the future requirements. Other that the functional listed in this document, the system will be maintainable, upgradable and expandable to subsequent future development of the Project, as well as the capability to link up with the adjacent system in the future. So, there are following capacities of its expansion:

* Number of radars attached to Radar Processors in their turn connected directly to VTS Server may be increased up to x30;
* Number of AIS connected directly to VTS Server may be increased up to x32;
* Number of Meteorological Station to VTS Server may be increased up to x16;
* CCTV systems may be connected directly to VTS Server may be increased up to x32;
* The number of Operator Stations connected directly to VTS Server can be increased to 20;
* Wartsila VTMIS software is modular and interact between each other using protocol on basis of TCP/IP it is possible to transfer some of these components to other computers in the VTS LAN in order to decrease computer’s load (for instance due to system expansion);