



Self-contained Vessel Traffic Surveillance System

Version 5.4





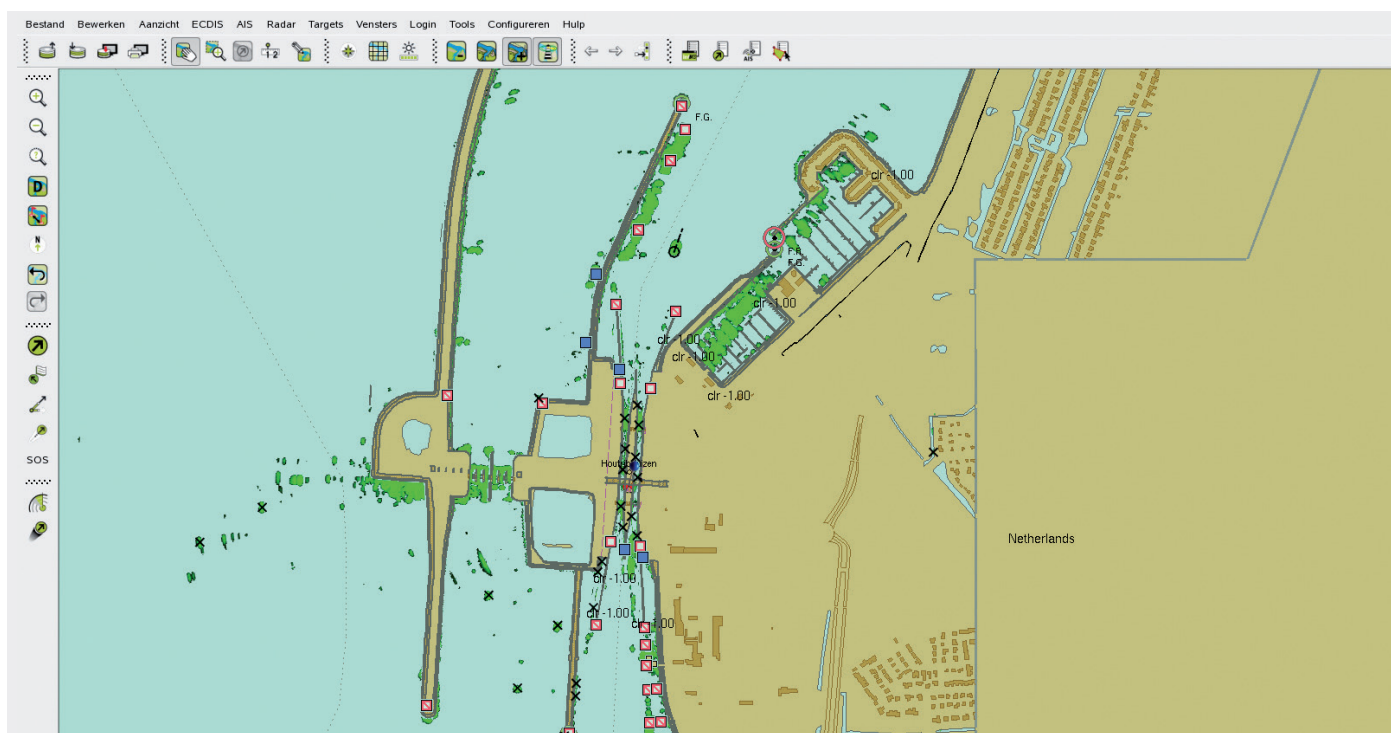
The traffic in ports and on inland waterways in most parts of the world is increasing, accompanied by an increase of ship size. This development leads to higher demands on the infrastructure, wherever ships operate: waterways, locks and harbors. inVTS provides various system solutions that perfectly cope with these tasks. Besides the inVTSbox, the product line offers further extension to inVTScompact, when integrating more functions and sensors as well as inVTSflex with additional flexible features.

Different box sizes for different requirements

A prompt and perfect fit:
COMPACT Solutions – FLEX Solutions.
The inVTSbox is suited for local monitoring of traffic at one workstation, as it necessary at locks, waterway or small VTS systems or offshore installations.

The COMPACT and FLEX version of inVTS are successfully in operation in larger surveillance areas and for offshore monitoring.





▲ Traffic monitoring at the Houtribsluizen

Concept and configuration of inVTSbox

Locks and bascule bridges can be operated more efficiently if the upcoming traffic situation is known precisely, especially when the lock or the bridge is managed from remote.

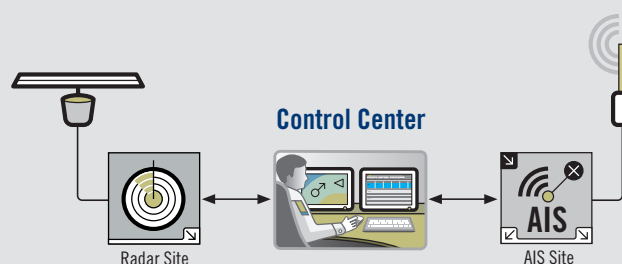
In harbors, a detailed picture of the traffic can be provided to the authorities for traffic coordination. For security reasons, however, specific areas of a harbor need to be observed in order to signal unauthorized access or dangerous situations to the control center.

inVTSbox is a modern, highly automated monitoring and surveillance system that enables the operators to fulfil these requirements. Travelling a river with bigger ships might require additional traffic coordination around curves or narrow stretches.

For these purposes, inVTSbox is already installed in various applications throughout Europe.

Configuration

inVTSbox is a self-contained, comprehensive and reliable VTS system for waterways, bridges and locks. All necessary functions for a local surveillance task are combined in one system:



- Radar data acquisition, processing and transmission
- AIS data processing and display
- Target tracking
- Visualization of all data on a chart display
- Powerful, reactive and configurable user interface
- Extra surveillance of specific areas
- Monitoring of traffic and automatic alarm generation



Radar

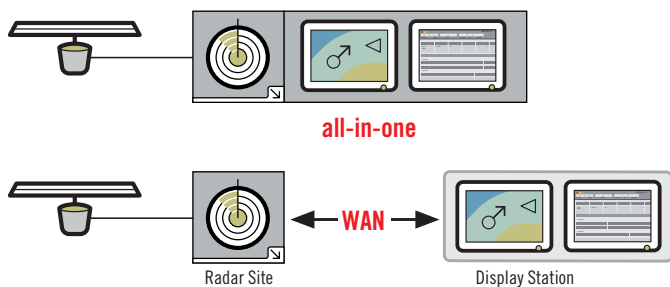


Radar provides an image of the traffic situation on waterways that is nearly independent from light and weather conditions. It requires no special installations on vessels, thus, all traffic on the waterway, including pleasure boats, is detected by radar.

When locks are operated from remote, the radar image of the traffic situation has to be transmitted up to a several kilometers over WAN.

Setup Options

- Radar acquisition and display on the same computer or on two different computers with data transmission over network



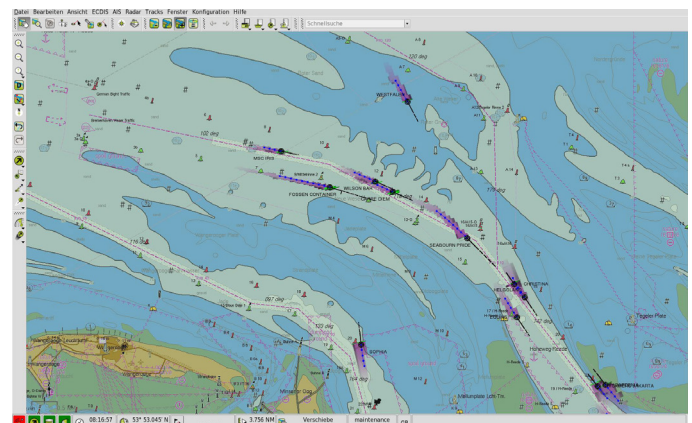
- Different cost effective radar sensors are available according to customer requirements (4 to 25 kW, 6.5 to 18 feet antenna, solid state)

Acquisition and Transmission

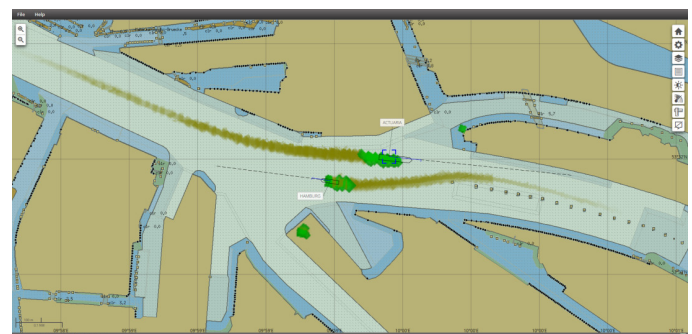
- High resolution image due to max. 250 MHz sampling frequency, resulting in 0.6 m radial sampling interval and max range of 9600 m
- Max. 1500 pixel per radar ray (upgrade to 16000 pixel per ray if required)
- Advanced image processing and filtering by scan to scan correlation, blanking maps and automatic sensitivity control
- Full remote control of radar sensor
- Distance of transmission only limited by WAN facilities (min capacity 256 kbit/s)
- Adaptive compression if necessary

Display

- Colors for radar presentation fully configurable
- OpenGL standard enable comfortable zooming and panning
- Simultaneous presentation of multiple radar videos at one operator station is possible
- Available as touch screen display



▲ Radar display with inDTS



▲ Radar display with inWebDTS

AIS



Traffic surveillance and traffic management is, nowadays, unconceivable without AIS (Automatic Identification System).

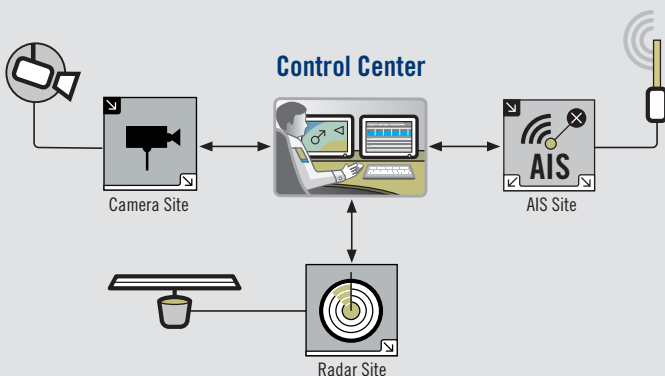
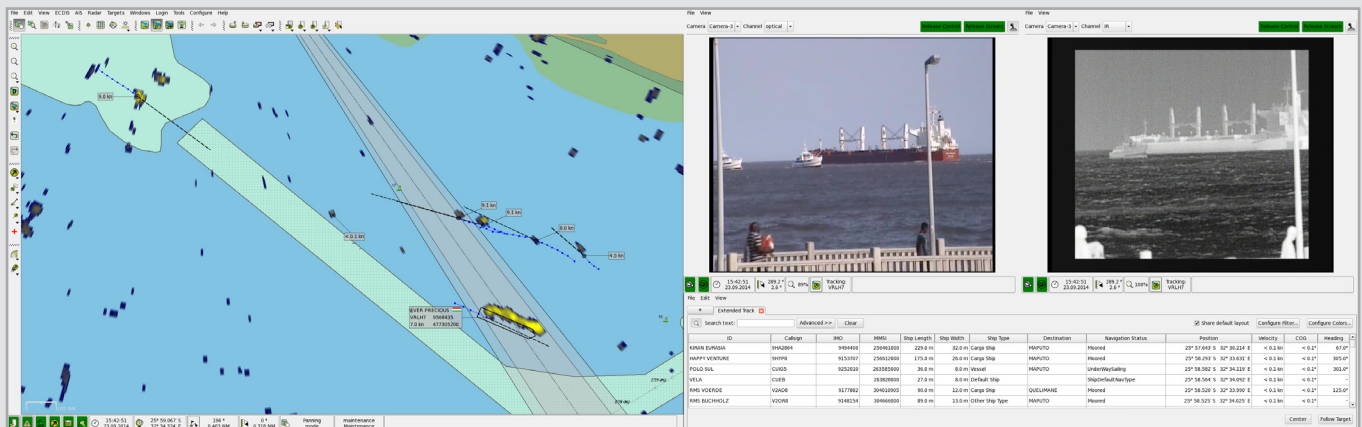
AIS processing with in VTSbox guarantees an efficient transmission of all static and dynamic AIS information for reliable traffic management.

Virtual AtoNs (Aids to Navigation), SART (Search and Rescue Transmitter), water level measurements and others can expand the capabilities of the AIS network.

Processing and Display Features

- Full featured AIS base stations as well as cost efficient pure AIS receivers can be connected to in VTSbox
- Realtime presentation of AIS targets on (Inland)-ECDIS chart
- Powerful Graphical User Interface for handling AIS information
- Simultaneous supervision of several thousand targets
- Input over serial communication line or Ethernet
- Transmission of AIS data over WAN network connection possible
- Full compatibility with AIS standard for seagoing vessels as well as with Inland AIS standard

Embedding of CCTV



A useful supplement when observing a specific defined area is the CameraControlServer function. in VTScompact is capable to fit the needs of the customer and implements a slew-to-cue interface to a surveillance camera systems, Closed Circuit TV or infrared. Different standard data streaming and other formats can be realized.

Traffic monitoring along waterways

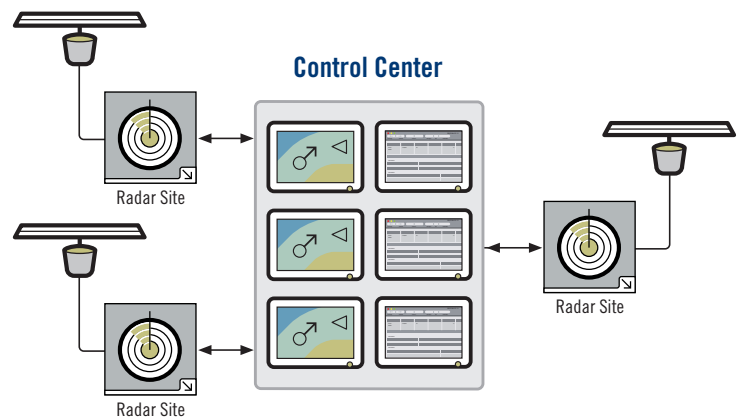


▲ VTS at Maastricht

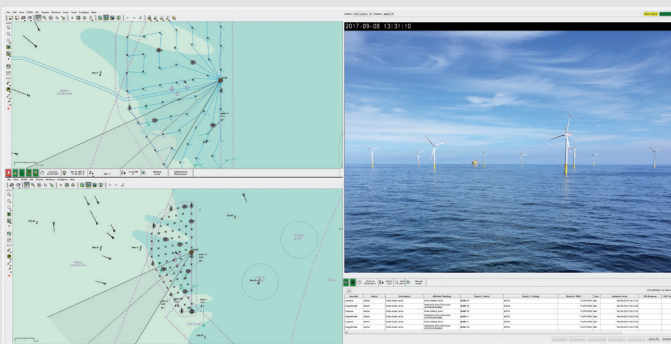
River reaches with sharp curves or narrow fairways are bottlenecks for waterborne transport. inVTScapact is extended for multiple radars and comprises seamless integration of all sensor information together with AIS. This setup allows for example monitoring a longer section of a river. Redundancy is possible to be set up and data are available at more than one workstation. On the other hand, remote control of a lock is enabled.

Easy extension with further functions:

- Up to five radar scanners can be integrated
- Multiple workstations
- Fusion of AIS targets with radar data in local tracking component
- CCTV integration
- Recording & Replay
- Extension with web front end
- Inclusion of data base in *OMD* and Traffic Analysis System TAS



Offshore Monitoring of wind parks



▲ inVTSoffshore for the wind farm Butendiek

Many offshore wind parks like Global Tech I, Butendiek, Riffgat, Meerwind, Borkum West or Nordergründe rely on surveillance and safety solutions of in-innovative navigation GmbH. The inVTSsystems in operation are designed for easy and active protection, minimizing risks of collision and collateral damage

inVTScapact provides full remote monitoring by seamless integration of all sensor information (Radar, AIS, CCTV), controlling radar and video camera, and highly reliable tracking with MultiSensorTracker MST detecting all air and sea targets around the offshore wind farm.

Customized display functions are available with the proven and powerful GUI inDTS. Automatic traffic analysis and alarm generation can be configured for the specific requirements of the environment.

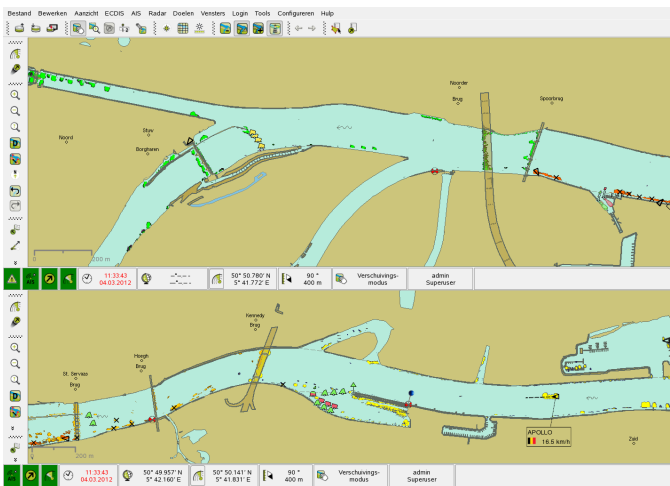
Each system is customized to the specific task

Additional modules can be implemented to the inVTS system

- Recording and replay function provide court-presentable data.
- The possibility of full virtual AtoN support and people tracking (TETRA, RFID) rounds up the specific demands in offshore monitoring.
- Integration of CCTV into the system is configurable, and the control of the external devices, like cameras and radar calibration, is offered at a workstation, if needed.
- All system modules may be set up in hot standby that provides high stability and availability. If one instance fails, missed data shall be synchronized automatically after restart.
- Integration of a data base allows the configuration of a customized user interface providing the according data
- System surveillance using inTMS for quick access to status of all components involved

Display options:

- Display can be divided in several windows (overview and details) or presented on a split screen to show a longer waterway section in one screen
- Rule based presentation of track labels
- Track lists with rule based selection criteria
- Warning areas or lines can be defined on the user interface. If the according modules are implemented, the system generates automatically an alarm in case of a traffic event
- Fat client (inDTS) or web application (inWebDTS)



▲ Setup of split screen for surveillance at a longer river section





Further information about recent developments on:
www.innovative-navigation.de

in-innovative navigation GmbH
 Leibnizstraße 11, D-70806 Kornwestheim (Germany)
 phone: +49 71 54 807-150
 fax: +49 71 54 807-154
 email: info@innovative-navigation.de
www.innovative-navigation.de

