WMS – Waterway Management System

Product Summary

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WMS – Waterway Management System

The WMS is a high performance nautical tool, which supports users in terms of economic as well as traffic management.

It is a multifunctional navigation-, communication- and monitoring system that has been developed to meet the high demands of inland waterway as well as maritime navigation. The system is based on the integration of GPS, ECDIS, Radar, GSM/GPRS, WLAN, UMTS and AIS transponder technology.

WMS combines the use of radar technology, ECDIS and positioning via GPS and guarantees the user full traffic and local information, on known as well as on unknown terrain and under all weather conditions.

The WMS contains shipborne (Vessel Commander) and land based (Monitoring- und Basestation Commander) system components as well as mobile units (Mobile Commander / Notebook), which can be configured on customers demand for e.g. navigation-, communication- and/or monitoring purposes.

All relevant vessel traffic data are permanent recorded on board (Vessel Commander) and on the land based WMS Server of the Vessel Traffic Control Center, where the recording intervall (e.g. every 5 minutes) can be chosen by the operator.

The high performance Vessel Traffic Database, developed by Command & Control Technologies GmbH for this special purposes, is the key for replaying all recorded data by different selection criteria which can be defined by the operator.
One of many more features is the integrated logbook that guarantees exact recording of the voyages carried out including radar images and it is as easy to use as an video recorder. The replay of the recorded voyage can be done by a user friendly dialog (as known from video recorder) in real time, fast forward and backward up to 120-times speed (fast motion) by every within the WMS-VPN activ WMS Commander System. This could be a Monitoring Commander that is connected locally via a LAN with the WMS Control Center Server or it could be also a Mobile Commander somewhere in the transmission range of a GSM/GPTS network.

The vessel data transfer (vessel report) within the WMS (transmission of position data, static data and vessel properties like vessel identity, call sign, vessel dimensions etc.) is based on the CCT-AIS-over-GPRS technology, which was developed by Command & Control Technologies GmbH.

The data transfer via CCT-AIS-over-GPRS technology is encrypted within the WMS-VPN and can’t be read by third parties without a valid permission for system access. The CCT-AIS-over-GPRS system uses the normal GSM/GPRS infrastructure for data transfer.

In contrast to the CCT-AIS-over-GPRS technology, conventional AIS based vessel traffic data transmission via AIS transponders is bound to special frequencies and transmission techniques and requires a complex land based communication infrastructure (so-called AIS – Basestations).

Currently in Austria and in some Danube neighbouring countries to the east a construction of AIS communication infrastructure is laboured within the scope of authority controlled so-called RIS (River Information Services) projects.

Austria was the first country that started such a RIS project. The start for the development of the Austrian RIS, called DoRIS (Donau River Information Service) was at the beginning of the year 2002. It is expected that the finishing of the RIS along the Danube will be in this decade.

With the WMS all benefits of a RIS (permanent actual fleet overview, disposal support, exact estimated time of arrival at trans-shipment centers, navigational support by GPS and electronic river charts) can be used in the whole European river net without having the disadvantages of an authority controlled RIS.
Furthermore the WMS contains already a lot of additional features like communication via WMS-Phone & Fax, WMS-RemotePrint, WMS-E-Mail, Logbook, Motor Data Transmission etc., that are fare beyond the possibilities of a convential RIS.

Every Waterway Management System is 100% compatible with the AIS transponder technology and is equiped with an AIS Plug&Play interface. So if one day the use of AIS transponders should be obligatory, the AIS transponder can be plugged into already installed WMS Vessel Commander System. The functionalities of the WMS will not be affected in any way. In addition every WMS Commander System has a GUI (graphical user interface) for the transponders so the adjustment and configuration of the Kongsberg/Seatex, Saab or Nauticast AIS transponders can easily be done via the WMS Commander (shipborne system).

The uniqueness and superiority of the WMS Commander products compared to simple ECDIS display devices (so-called ECDIS Viewer or Radarpilots) is well founded in the CCT-AIS-over-GPRS technology that enables a reliable vessel traffic data transmission along the complete European Waterway net as well as in the multiple communication options which are already standard feautures in all WMS Commander Systems.

Transfer of e-mail and fax on to the mariner’s information screen provides permanent, bidirectional information exchange from ship to ship, as well as to the main land. The integrated cellular phone including a hands free set can be operated direct via touch screen and also remote configured by the operator/dispatcher in the associated WMS Vessel Traffic Control Center.

The WMS-Remote-Print function allows direct printing of documents, sent by the operator/dispatcher in WMS Vessel Traffic Control Center to all ships equipped with a Vessel Commander System within the WMS-VPN.

Further essential WMS features are:

- insert and management of private chart data (man over board, collision, etc.) into the electronic nautical charts and the optional transmission to other Commander Systems within the WMS-VPN
• route constructions, fast search in charts by river kilometer database and self expandable location database
• record and print of arbitrary chart parts and traffic scenes
• easy adjustment of ship unit dimensions with graphical lighter tool
• fleet/lighter management for position overview of all lighters that are not currently fixed on a pushing unit
• and much more
Secure Long-Term Investment

High performance navigation-, communication- and monitoring system.
Unique functionality by competitive edge and added value.
Anytime system adaption and/or enhancement on customers request.

System Architecture

The modular system architecture is the key for system adoptions upon operator´s requests, so that each WMS user can easily cope with his special tasks of the daily business in inland waterway transportation.
WMS Components - Overview

- WMS Vessel Commander
  shipborne navigation- and communication system
- WMS Mobile Commander (Notebook)
  mobile system; Vessel and/or Monitoring Commander
- WMS Monitoring Commander
  system for communication and fleet monitoring (land based and/or mobile);
  e.g. fixed system for vessel traffic control used by authorities (Montenegro –
  Adriatic Coastline)
- WMS Control Center Server
  central WMS server

Each Commander System can be delivered as a mobile unit (notebook)!

Fig.: WMS components
The WMS Commander Group

The Commander is characterised by the huge amount of interfaces to external systems. The connection to the wanted system can be set, either automatically by a mouse click, or a finger touch.

![Commander interfaces](image)

The Commander group contains the following systems:

**Vessel Commander**
shipborne navigation- and communication system

**Monitoring Commander**
fixed system for vessel traffic control, fleet monitoring and communication

**AIS Basestation Commander**
fixed system for vessel traffic control used by authorities (e.g. Montenegro – Adriatic Coastline)

**WMS Commander Control Center Server**
central server for ship-, lighter- and voyage data management and for management of the communication system

**WMS Commander Radarserver**
integrated radar server on ship (radar overlay) and in vessel traffic control center for recording, replaying and management of the complete fleet radar data

**Mobile Commander (Notebook)**
Each Commander System can be delivered as a mobile unit!
WMS Traffic Control Center Workstation

Fig.: Monitoring Commander Workstation

Fig.: Monitoring Commander (fleet monitoring)
Fig.: fleet monitoring in real time mode – MSS Linz on Danube km 1746

Fig.: fleet monitoring in real time mode – MSS Linz on Danube km 1706
The Monitoring Commander and the AIS Basestation Commander are fixed systems for fleet monitoring, vessel traffic control and communication between the vessels and the traffic control center as well as between each ship. Carried out voyages including generated radar images are recorded at the same time on the Vessel Commander computer and on the Control Center Server. The voyages can be replayed and analyzed anytime on board and in the Control Center.

The Vessel Commander, a shipborne system designed for the mission on board, is able to perform the same tasks like the Monitoring Commander or the AIS Basestation Commander if the operator has an access authorisation to this functionalities. Local (ship) recorded data are permanent synchronised with the data in the Vessel Traffic Control Center.
Vessel Commander

Professionell navigation is also possible with the mobile version of the Vessel Commander. The captain can take „his personal bridge – the Mobile Commander“ where ever he goes.

Fig.: Mobile Commander
fleet monitoring, communication via GSM 900/1800/1900/GPRS-10 modem PCMCIA
navigation with external GPS (wireless Blue Tooth connection, GPS battery operation approx. 8 hrs) and radar overlay with radar interfacebox
Fig.: Vessel Commander in use – radar overlay

Fig.: MSS Linz and MSS Greifenstein during manoeuvres in Novi Sad
Fig.: MS Marbach – Vessel Commander with radar overlay for JFC JMA 606 SE
**VCC - Vessel Commander Computer**

Intel Pentium 4 based system, 60 GB HD
dimensions 27,5 x 35,5 x 10 cm

1 integrated GPS module
2 integrated GSM modems 900/1800/GPRS:
- 1 modem for uninterrupted vessel traffic data transmission
- 1 modem for voice-, fax- and e-mail communication

**Fig.: VCC – Vessel Commander Computer**

**Fig.: Vessel Commander TFT 19” touch screen, water resistant and foldable keyboard**

**Fig.: Mobile Commander, screen shot – radar overlay**
ENCs – Electronic Navigational Charts

The charts according (Inland-)ECDIS standard are provided and distributed by the national authorities or i.e. Chartworld (www.chartworld.com). The WMS supports the standardized S-57 ENC (Electronic Navigational Charts), the SENC format and the CCT ENC-MAP format and offers everyone with the WMS MAP module a user friendly tool for editing and generating of one’s own chart packages. Additional charts in S-57 and SENC formats can be loaded anytime, also via GPRS data link from the WMS vessel traffic control center to each ship.
Performance of the Commander Systems

Monitoring System in the Vessel Traffic Control Center

This group contains the **Monitoring Commander** and the **AIS Basestation Commander**.

Performance:

- fleet overview (on different monitors at the same time with up to 1000 active ships)
- lighter management
- optimizing freight loading (optional)
- motor data monitoring (optional)
- freight status monitoring (optional)
- alert management / position marker and administration of special events including information transfer to connected traffic centers
- tracking & tracing
- recording of voyage data in the traffic control center
- remote adjustment of all Vessel Commander Systems within the WMS-VPN
- voyage recorder (replay of voyages carried out) – is as easy to use as an video recorder. The replay of the recorded voyage can be done by a user friendly dialog (as known from video recorder) in real time, fast forward and backward up to 120-times speed (fast motion) by different selection criteria out of the local or remote vessel traffic database.
- fax, email and voice communication with the captain
- tele piloting including a radar image transmission to vessel traffic control center
- ENC management (create, enhance and distribute)
- WMS RemotePrint, print out of documents on the vessel by print command that was set in the vessel traffic control center
- easy integration into existing systems due to modular system architecture
- AIS compatibility / AIS Transponder Plug & Play
- AIS Vessel Traffic Simulator for crew/operator training and planning purposes
- radar picture display of fixed radarstations (coastal radar, radar at harbour inlets and locks)
- radarserver for record and replay of radar data (optional)
Shipborne Navigation & Communication System

**Vessel Commander** fixed or mobile (notebook).

**Performance:**
- easy navigation under all meteorological conditions and unknown terrain
- easy communication with traffic center
- fax, e-mail and voice communication with one system and via touch screen
- encrypted bidirectional data link within the WMS-VPN
- by the operator configurable and encrypted vessel traffic data transmission via CCT-AIS-over-GPRS technology to one or more vessel traffic control centers
- radar overlay with ENC (Electronic Navigational Charts)
- ENC electronic navigational charts including InlandECDIS with river depths and navigation informations like notice marks
- insert and management of private chart data, display of video images and pictures by a click on the appropriate symbol in the ENC, video files and pictures in all established formats can be loaded easily into the electronic navigational charts by the operator himself
- multiple, by the operator configurable navigational aids like distance rings, heading line, prediction vector, speed- and course vector, river kilometer etc.
- route constructions (optional)
- measuring lines & bearing helps (optional)
- fast search in charts by river kilometer database and self expandable location database
- replay of past voyages including radar images
- voyage recorder (replay of voyages carried out) – is as easy to use as an video recorder. The replay of the recorded voyage including the radar image can be done by a user friendly dialog (as known from video recorder) in real time, fast forward and backward up to 120-times speed (fast motion) by different selection criteria out of the local or remote vessel traffic database.
- print of arbitrary chart parts and traffic scenes
- easy adjustment of ship unit dimensions with graphical lighter tool
- position and speed indication via GPS
- indication of:
  - heading, rate of turn
  - course over ground, speed, river kilometer
  - navigational status
- AIS transponder data
  - alert management / position marker and administration of special events including information transfer to connected traffic centers
  - easy control and adjustment of connected AIS transponders by a graphical user interface and via touch screen

Fig.: position marking and journalization of a special event
Examples of Use

Fleet Monitoring and Fleet Management

Fig.: vessel selection and position determination

WMS Player

For replay of past traffic data with fast forward and backward motion (up to 120x speed) from local or remote vessel traffic data base.

Fig.: player dialog
**WMS PICREP(ort) – Video Player**

For replay of video files in all known formats like avi, wmv, mpg, mov (quicktime) etc. Details see chapter „Detailed System Informations“ in „Vessel Commander Software Modules“. 

![WMS Video Viewer – replay of videos by click on PICREP(ort)](image)

Fig.: WMS Video Viewer – replay of videos by click on PICREP(ort)

**WMS PICREP(ort) – Image Viewer**

A single touch on the appropriate symbol in the chart opens a pic, the so called PICREP(ort) of the object. For navigational support or other purposes the user can load his own pictures of bridges, harbour entries, special river sectors etc.
Communication via WMS

The Commander Systems are equipped with a high performance communication module. The operator is able to use the integrated phone, fax and e-mail and he has the possibility to send AIS messages via the Commander GUI if an AIS-transponder is connected.

Telephone

A touch on the WMS-Phone symbol within the tool bar opens the WMS-Phone program with all it’s features. The recipient can be selected out of the phone directory or by entering the phone number via touch screen.
For using the WMS-Phone, each VCC is equipped with an integrated GSM 900/1800/GPRS modem.
**Fax**

A touch on the WMS-FAX symbol within the tool bar opens the WMS-FAX program with all its features. The recipient can be selected out of the phone directory or by entering the FAX number via touch screen.

![WMS-FAX (contact selection and entering FAX numbers via touch screen)](image)

**E-Mail**

A touch on the e-mail box symbol within the tool bar opens the WMS-Mail program. Your incoming mails are signalized in the tool bar, so you will never miss one.
Heading-Line, Speed & Course Vector

Fig.: MS Marbach – display of the heading line (black line), course (red line) and speed vector plus prediction (edge of the red line)

The Commander displays the captain the heading-line as well as the speed- & course vector. Whereas the heading-linie (black line) displays the current position of the keel, the course vector displays the current course of the vessel. The edge of the speed- & course (red line) vector indicates the point that will be reached in $x$ seconds if the current course and current speed of the vessel does not change. The prediction time ($x$ seconds) can be adjusted by the user.

The difference between heading and course is especially drastic when the vessel goes backwards – see next picture!
Fig.: MS Marbach going backwards – keel line (heading; black line) and course vector (red line) are opposite

**River Kilometer RKM Display**

The captain can see clearly on the WMS Commander’s display his current river kilometers including the hektometers, his speed (km/h or knots) and his COG (course over ground).

Fig.: ship info box – display of RKM (river kilometer incl. hektometer), speed, COG (course over ground)
Fig.: CCT Monitoring Commander – screen shot of OSB-Wildungsmauer on the Danube at RKM 1926,6, speed 25,56 km/h and COG 317°
**AIS Plug & Play Modul**

For connection (Plug & Play) to AIS transponder (ITU-R-M.1371-1 Class A) via NMEA interface.

Communication with the transponder via Vessel Commander GUI.

- reception of position reports (message type 1, 2, 3)
- reception of baseestation reports (message 4)
- reception of static and voyage related data reports (message type 5)
- reception and transmitting of safety related messages (message type 12, 13, 14)
- reception and transmitting of binary messages (message type 6, 7, 8)

**Fig.:** dialog for vessel properties adjustment etc.,
data transmitting via GUI (graphical user interface) to the AIS transponder
Lighter Management Module

Easy adjustment of ship unit dimensions with graphical lighter tool. The dimensions of the pushing unit are automatically changed after adding new barges or the removal of one.

Fig.: lighter (barge) arrangement and automatically adjustment of the pushing unit dimension
Radar-Tuning

Radar configuration and radar tuning can easily be done by the captain/operator himself with the radar configuration dialog on the display of the Vessel Commander. The configuration/setting of already known radar types is recorded by the system. In case of changing the radar type on a vessel or mounting the Vessel Commander on another vessel with a different radartype, the operator has to select only the new radar within the radar list of the dialog, load up the configuration and he will have again full radar overlay functionality.

Fig.: radar configuration dialog
WMS – AIS Vessel Traffic Simulator

Simulation of thousands of ships including the simulcasts of real AIS data traffic is realized with WMS standard hardware.

Purpose:
- presentation of WMS features/functionalities
- vessel traffic simulation with various data (various amount of ships and basestations) and application areas (various waterways)
- crew training and training of WMS operators
- stress tests of the existing systems
- simulation of AIS-Ship transponders and AIS-Basestations

Available Traffic Simulations:
- Danube, Rhein, Main, Gulf of Thailand, Street of Malacca
- other options on request

Fig.: screen shot – AIS vessel traffic simulation at Schlögener Schlinge (Danube, Austria)

Further informations to the WMS Vessel Traffic Simulator – see chapter „Detailed System Informations“. 
Detailed System Informations

Vessel Commander

Is a shipborne system consisting of the following hardware & software modules:

**System hardware**

- Ship computer
- 19" TFT monitor (optional touch screen)
- Radar interface box (for connection to digital and analog ship radar) for display of radar pictures (in overlay mode) on ECDIS-Display
- Heading sensor (keel line, COG)

**System software**

- 1 Vessel Commander Licence
- 7Cs ECDIS-kernel with/without S57 option incl. dongle for licence

**Vessel Commander software modules**

+ ECDIS-Chart display with indication of:
  - current traffic data
  - past traffic data (with Player-Module from Vessel Traffic Database local and remote)
  - simulation data (with AIS Vessel Traffic Simulator Module)
  - ship oriented view (one’s own ship or other ships via "Follow Ship Mode")
  - surveillance view
  - information mode for ENCs display
  - each indication in separate window possible
+ GPS module:
  - for connection to GPS receiver with NMEA interface

+ AIS module:
  - for connection (Plug & Play) to AIS Transponder (ITU-R-M.1371-1 Class A) via NMEA interface
  - communication with the transponder with Vessel Commander GUI
  - reception of position reports (message type 1, 2, 3)
  - reception of basestation reports (message 4)
  - reception of static and voyage related data reports (message type 5)
  - reception and transmitting of safety related messages (message type 12, 13, 14)
  - reception and transmitting of binary messages (message type 6, 7, 8)
+ VPN communication module with GSM/GPRS, UMTS or WLAN:
  - for optional transmission of traffic data to traffic control center
  - for recall of past data from traffic control center
  - for reception and transmitting of emails via traffic control center
  - for reception and transmitting of FAX messages
  - for communication with phone (handsfree set, head set, hand set etc.)
  - complete data transfer is authenticated and encoded and not readable for other parties

+ WMS-Phone module:
  - integrated telephone system in the computer
  - for communication with phone (hand set and/or handsfree set)
  - SMS feature
  - direct entering of phone numbers and text for SMS via touch screen

+ MAP-Management module:
  - for generation (from S57 raw data) and administration of user defined ENCs optional with and without S57 Option (import of S57 data)

+ WMS-Player module:
  - for replay of past traffic data with fast forward and backward motion (up to 120x speed) from local or remote vessel traffic data base
+ Vessel Traffic Database:
  - for local storage of one’s own and received traffic data

  Fig.: dialog for fleet management, vessel property adjustment etc.

+ Location Database:
  - for storage and management of user defined locations (LAT/LON area with adjustable resolution)
  - river kilometer database

  Fig.: dialog for saving and loading special locations related to the river kilometers RKM etc.

+ Private Data module:
  - for insert and management of private data in the electronic navigational chart; e.g. pictures, PDF, Chart Infolines etc.

  Fig.: dialog for insert and management of private data
+ PICREP(ort) module:
  - display of image files (S57 PICREP attributes)
  - display of PDF files by CCT PICREP objects
  - replay of video files by CCT PICREP objects (all known formats like avi, wmv, mpg, mov (quicktime) etc.)

Fig.: enhanced PICREP(ort) display module

Fig.: WMS Video Viewer – replay of videos by click on PICREP(ort)

+ Marker module: ⚠️ ⚠️
  - for setting marks at special positions (accidents, Man over Board, etc.) with time stamp and short text notice
+ Language module:
  - GUI, dialog and help text in specific national language
  - currently: English
  - in process: German
  - planned: Slowak, Hungarian, Serb/Kroat., Bulgarian, Romanian, Russian
  - further languages on request

+ Heading-Line, Speed & Course Vector module:
  - connection of heading sensor possible

+ Radar module:
  - radar configuration and radar tuning with the radar configuration dialog on the display of the Vessel Commander

Fig.: radar configuration dialog
+ CCT-AIS-over-GPRS module:

The vessel data transfer (vessel report) within the WMS (transmission of position data, static data and vessel properties like vessel identity, call sign, vessel dimensions etc.) is based on the **CCT-AIS-over-GPRS** technology, which was developed by Command & Control Technologies GmbH.

The data transfer via CCT-AIS-over-GPRS technology is encrypted within the WMS-VPN and can’t be read by third parties without a valid permission for system access. The CCT-AIS-over-GPRS system uses the normal GSM/GPRS infrastructure for data transfer.
+ Lighter Management module:

- easy adjustment of ship unit dimensions with graphical lighter tool.

Fig.: lighter arrangement (step 1)

Fig.: automatically pushing unit dimension adjustment (step 2)
Monitoring Commander and AIS Basestation Commander

System for vessel traffic control and fleet monitoring consisting of monitoring workstation(s) and WMS Control Center Server.

Fig.: fleet monitoring in real time – MSS Linz in Danube channel (Constantza)

Fig.: fleet- and/or section monitoring on inland waterways
System hardware
- WMS Control Center Server
- workstation monitor(s) for traffic and fleet monitoring
- Monitoring Commander computer

System software
- 1 Monitoring Commander Workstation Licence (extension up to unlimited Monitoring Commander Workstations possible)
- 1 WMS Control Center Server Licence (for operating a WMS Control Center Server with a Vessel Traffic Database and a WMS Communication Center)

WMS Control Center Server software modules
+ Vessel Traffic Database module:
  - central storage of vessel traffic data in WMS (recall of past data from connected workstations via Player Modul)

+ E-Mail module:
  - for internal e-mail correspondence within WMS (within vessels and land stations as well as mobile units)
  - e-mail correspondence with/from internet

+ FAXserver module:
  - central FAXserver function with distribution within WMS-VPN to vessels and mobile/fixed workstations

+ WMS-Phone module:
  - integrated telephone system in the computer
  - for communication with phone (hand set and/or handsfree set)
  - SMS feature
  - direct entering of phone numbers and text for SMS via touch screen

+ Interface module to external systems:
  - option Partner WMS
  - option Internet
  - option RIS
+ Monitoring module:
- path-time diagram for vessels within WMS
- fleet overview (vessel and lighter positions) in total river overview or region overview
- indication of special markers (Man over Board Positions, derelict positions, accident positions, etc.)

+ Option:
- central radar image database
- motor data monitoring
- freight status monitoring

Mobile Commander (Notebook)

Each Commander System can be delivered as a mobile unit!

System hardware
- Notebook ACER Travelmate 801LMi
- equipment: port replicator (for serial port)
- radar interface box

System software
- 1 Mobile Commander Licence
- 7Cs ECDIS-kernel with/without S57 option incl. dongle for licence

Fig.: Mobile Commander
WMS – AIS Vessel Traffic Simulator

The specific feature of this high performance tool is the simulation of the vessel traffic on various waterways including the complete AIS data traffic that would result by the use of AIS compliant WMS – Vessel Commander Systems and/or standalone AIS ship transponders and/or AIS Basestations.

The AIS Vessel Traffic Simulator is fully compliant to AIS ITU-R-M.1371.1 regulations. Simulation of thousands of ships including the simulcasts of real AIS data traffic is realized with WMS standard hardware.

The simulator creates dynamic and static vessel traffic data by standard compliant AIS messages which are transmitted from a various amount of AIS ship transponders and AIS Basestations.

A simulation of pure GPS position data in standardized NMEA format is possible as well.

All various parameters like the amount of the simulated vessels and AIS ship transponders, the amount of AIS basestations as well as the application areas can easily be set by the operator.

Purpose of the system:
- vessel traffic simulation on inland waterways
- simulation of AIS ship transponders and AIS-Basestations
- presentation of WMS features/functionalities
- vessel traffic simulation with various data (various numbers of ships and basestations) and application areas (various waterways)
- crew training and training of WMS operators
- stress tests of the existing systems
Available traffic simulations:
- Danube, Rhein, Main, Gulf of Thailand, Street of Malacca
- other options on request

This powerful traffic simulation and training tool allows the operator to get familiar with the WMS applications without having an implemented Waterway Management System. The traffic simulator provides to the user the opportunity to create in an easy way future traffic scenarios and to react in time to the expected traffic’s consequences.

Further applications of this tool are stress tests of the existing systems due to interconnection with them and support for organization and infrastructure planning purposes.
An
CCT-AUSTRIA
Command & Control Technologies Gesellschaft mbH
Sechskrugelgasse 1/8
1030 Wien

CERTIFICATE

CCT’s WMS – Waterway Management System, consisting of:
- a Vessel Commander Systems including the CCT-AIS-over-GPRS option
- a Monitoring Commander System
- a Mobile Commander System
- and a Control Center Server

passed successfully all tests performed by Donau-Betriebs-AG’s Surveying Division during the period of January, 1st 2004 to December, 1st 2004.

During the tests two Kongsberg/Seatex AIS Transponders have been used. They have been connected to the Vessel Commander and Mobile Commander System.

CCT’s Waterway Management System is highly qualified for information-, communication- and navigation purposes on inland waterways and meets the (Inland) AIS as well as Inland ECDIS standards.

The system meets the accuracy, the reliability, the high processing rate and the multitasking functionality necessary for use in measuring on inland waterways. The WMS’s operating comfort is highly user friendly.

Dipl.-Ing. Dr. Wolfgang Brandstätter
(Managing Director Donau-Betriebs-AG)