“NETWORK OF DANUBE WATERWAY ADMINISTRATIONS”
South-East European Transnational Cooperation Programme

STATUS QUO REPORT ON WATERWAY ADMINISTRATION

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1 LIST OF ABBREVIATIONS

DoRIS..........Donau River Information Services
EU..........European Union
GSM..........Global System for Mobile Communications
HSW..........Highest Navigable Water Level
IRIS..........Implementation of River Information Services
KHz........Kilo Herz
LNRL........Low Navigation and Regulation Level
NAIADES.......European Action Program for Inland Waterway Transport
NAP..........National Action Plan Danube Navigation
NELI..........Cooperation-Network for logistics and nautical education focusing on Inland Waterway Transport
NEWADA........Network of Danube Waterway Administrations
PLATINA.........Platform for the Implementation of NAIADES
RIS..........River Information Services
RNW.......... Equivalent Low Water Level
SWOT..........Strength-Weaknesses-Opportunities-Threats
TEN-T..........Trans-European Transport Network
WANDA........Waste management for inland Navigation on the Danube
2 OVERALL OBJECTIVE OF THE REPORT

The aim of the project NEWADA is to facilitate the coordination of activities and future plans and the exchange of experiences among organisations which are responsible for waterway administration along the Danube. Building on this, a second step will consist in the identification of model activities and implementation of pilot projects to increase the effectiveness of waterway management.

Activity 6.1 of NEWADA deals with organizational and strategic issues of the participating waterway administrations. As a starting point the Board of Directors shall elaborate a status quo report of their waterway administrations (Task 6.1.2.). The intention of this report is to get to know the other waterway administrations better, which will be very important for the future common activities and it will alleviate the future co-operation.

This report shall include general information on the organizational structure, the legal background, the existing key tasks and objectives as well as the available resources of each waterway administration. Based on this information a detailed and accurate SWOT (Strengths-Weaknesses-Opportunities-Threats) - analysis shall be elaborated for each waterway administration, which will be presented and discussed during a Board of Directors meeting.

The acquired results of this status quo report are the basis for the discussions between the participating directors on common future objectives of waterway administrations on the river Danube (Task 6.1.3.). Based on these findings a set of recommendations shall be elaborated for every waterway administration, which aims at optimizing the framework conditions of the respective waterway administration (Task 6.1.4.).
3 BACKGROUND INFORMATION

3.1. Legal background


via donau is a modern and efficiently running company that operates waterways and executes sovereign functions on behalf of the federal authorities with regard to waterways and waterway transport. In addition to the tasks of the federal waterway administration and transport development, via donau carries out pioneering work by planning and managing the Integrated River Engineering Project to the east of Vienna as well as operating the so called Danube River Information Services (DoRIS).

via donau is responsible for the following tasks:

Administration of federal waterways

- Regulation, preservation and development of waters
- Flood protection
- Water protection
- Riverbank engineering
- Planning, construction and preservation of towpaths
- Construction and preservation of federal ports and landing sites
- Hydrography and creation of favourable run-off conditions
- Federal agendas pursuant to the Federal Act on Creating a Danube Flood Control Agency (DHK)
Control Agency

- Regulation and preservation of waterways
- Administration of public waters
- Administration of movable and immovable federal property
- Tasks pursuant to the Hydraulic Engineering Assistance Act

Development of inland waterway transport

- Development and management of projects aimed at increasing intermodal and commercial waterway transport
- Development and implementation of new technologies and systems for inland waterways
- Promotion of inland waterway transport, lobbying on both the national and international level, promotion of strategic partnerships
- Implementation of pilot projects designed to set up intermodal waterway traffic
- Implementation of studies, surveys and research projects as well as execution of management tasks concerning the above mentioned fields for third parties and particularly public authorities

Operation of navigation information systems (RIS- River Information Services)

Lock supervision

- via donau performs sovereign functions in the areas of lock, weir and water supervision

3.2. Locations

via donau is based at five locations, one field office and nine locks on the Danube in Austria.

The main office is located in:
Figure 1: Techgate, Vienna

Vienna, Austria
Donau-City-Straße 1, 1220 Wien
Tel. +43 (0) 504 321 1000
Fax +43 (0) 504 321 1050

Furthermore, via donau operates the River Information Services DoRIS on the Austrian Danube with 23 base stations and one main office.

Figure 2: Austrian locks and locations of via donau
3.3. Projects overview

Since its foundation in 2005 via donau was involved in various projects concerning the promotion of inland waterway transport, the protection of the river Danube and establishing River Information Services (RIS) on the river Danube. The following list gives a quick overview of some key projects of via donau:

**DoRIS – Donau River Information Services**

Under the DoRIS project, River Information Services were gradually implemented on the whole Austrian stretch of the Danube. The core service of the DoRIS vessel information system consists of providing an overview of the current traffic situation (tactical traffic image) on vessels and on land for traffic control purposes and of creating a comprehensive information system for all matters of commercial inland navigation.

**NAP – National Action Plan on Danube Navigation**

The National Action Plan on Danube Navigation (NAP) constitutes the transport policy instrument for the implementation of the European inland navigation programme NAIADES and was developed jointly by the Federal Ministry of Transport, Innovation and Technology, via donau and the inland navigation sector in Austria. The central element of the NAP is a catalogue of 40 individual measures, which are to be implemented by 2015 with the aim to strengthen Danube navigation.

**PLATINA – Platform for the implementation of NAIADES**

PLATINA is a coordinating measure of the European Commission aimed at promoting inland waterway transport in Europe. The main goal of PLATINA is to support the European Commission, the EU Member States and third countries in the implementation of the EU’s NAIADES Action Programme both at technical and organisational level. via donau is the project coordinator of this project which comprises 23 partners of 9 countries.

**IRIS Europe II – Implementation of River Information Services in Europe II**

The purpose of the project is the expansion and further development of River Information Services in Europe focusing particularly on the improvement of service quality, expansion of
transport and fairway information services as well as the geographical and functional expansion of international data exchange. An additional task will be the definition and implementation of interfaces for logistical users of RIS. The project is carried out by 9 EU Member States, which participate as project partners, and 4 other countries, which are involved as cooperation partners.

**WANDA – WAste management for inland Navigation on the DAunube**

The purpose of the WANDA project is to develop and implement measures for the collection and disposal of waste from Danube navigation. The aim is to engage in cross-border coordination efforts to gradually establish a workable ship waste management system along the Danube and to ensure sustainable risk prevention.

**NELI – Cooperation Network for logistics and nautical education focusing on Inland Waterway Transport in the Danube corridor supported by innovative solutions**

The purpose of the project is the creation of a cooperation network between players in the training and further training sector related to inland waterway transport in the Danube region. The aim is the establishment of an expert network, implementation and/or harmonisation of e-learning courses for inland waterway transport in the Danube region (AT, SK, HU, HR, RS, RO, BG, UA) and the design and pilot testing of information and training centres for inland waterway transport in the port of Enns/Austria and in Galati/Romania.

**Life Project Thurnhaufen – River Bank Restoration**

The Thurnhaufen river bank restoration project is located within the Danube Floodplain National Park. This project was awarded the title Best LIFE-Nature Project 2007-2008 by the EU in 2009. The national park’s flora and fauna and flood water protection are benefitting equally from the renaturation of the previous blockstone bank into a natural river bank.
4 VIA DONAU FACTS AND NUMBERS

The following chapter provides a quick overview over the organisational structure of via donau as well as overall budget figures and other facts and numbers.

4.1. Organisational chart

The general organisation of via donau is displayed in following figure:

![Organisational chart of via donau](image)

Figure 3: Organisational chart of via donau
4.2. Key Figures 2009

**General balance sheet figures 2009**

<table>
<thead>
<tr>
<th></th>
<th>in 1000 €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total assets</td>
<td>37,476</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>12,274</td>
</tr>
<tr>
<td>Equity capital</td>
<td>9,321</td>
</tr>
<tr>
<td>Revenues</td>
<td>32,825</td>
</tr>
<tr>
<td>From federal government</td>
<td>28,042</td>
</tr>
<tr>
<td>Personnel expenditures</td>
<td>14,633</td>
</tr>
<tr>
<td>Cash flow from operating activities</td>
<td>22</td>
</tr>
<tr>
<td>Average number of employees</td>
<td>251</td>
</tr>
</tbody>
</table>

Table 1: General balance sheet figures 2009

The total revenues of via donau amounted in 2009 32,825,000 €, the total expenses were 57,946,000 €.

**Performance measures 2009**

<table>
<thead>
<tr>
<th></th>
<th>in 1,000 €</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total operating expenses</td>
<td>57,946</td>
</tr>
<tr>
<td>thereof for:</td>
<td></td>
</tr>
<tr>
<td>Property management</td>
<td>853</td>
</tr>
<tr>
<td>Flood control measures</td>
<td>29,546</td>
</tr>
<tr>
<td>DoRIS operation and info services</td>
<td>2,736</td>
</tr>
<tr>
<td>RIS development</td>
<td>929</td>
</tr>
<tr>
<td>Towpath maintenance</td>
<td>2,477</td>
</tr>
<tr>
<td>Hydrography and hydrology</td>
<td>2,627</td>
</tr>
<tr>
<td>River Bank and water protection</td>
<td>6,099</td>
</tr>
<tr>
<td>River engineering project east of Vienna</td>
<td>2,293</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>1,128</td>
</tr>
<tr>
<td>Services for economy and politics</td>
<td>1,395</td>
</tr>
<tr>
<td>Lock operation</td>
<td>3,766</td>
</tr>
<tr>
<td>Waterway maintenance</td>
<td>2,798</td>
</tr>
<tr>
<td>Others and merger projects</td>
<td>1,299</td>
</tr>
<tr>
<td>EU funding received</td>
<td>2,130</td>
</tr>
</tbody>
</table>

Table 2: Performance measures 2009
The biggest expense in 2009 was the construction measures for the modernisation of the flood protection dam along the river March.
5 KEY TASKS AND SERVICES

5.1. Motivation

via donau was created from the merger of the Österreichische Donau-Betriebs AG, the Österreichische Donau-Technik GmbH, the Entwicklungsgesellschaft mbH für Telematik und Donauschifffahrt and the Waterway Authority WSD.

Today via donau represents a modern waterway management and development company that meets the Austrian federal government’s responsibilities in the field of federal waterway administration.

5.2. Key tasks of via donau

via donau is a modern and efficiently running company that operates waterways and executes sovereign functions on behalf of the federal authorities. via donau is responsible for federal tasks in terms of planning, awarding and monitoring work on the river, collecting and administering fundamental data required by the federal government for water management, complying with the administrative agenda of the Danube Flood Control Agency (DHK), as well as carrying out development projects for inland navigation. The Federal Ministry for Transport, Innovation and Technology remains the competent authority for strategic planning, monitoring and supervising federal waterway administration.

In addition to the tasks of the federal waterway administration and transport development, via donau carries out pioneering work by planning and managing the Integrated River Engineering Project to the east of Vienna as well as operating the so called Danube River Information Services (DoRIS).

In detail via donau is responsible for the following tasks:

Administration of federal waterways
- Regulation, preservation and development of waters
• Flood protection
• Water protection
• Riverbank engineering
• Planning, construction and preservation of towpaths
• Construction and preservation of federal ports and landing sites
• Hydrography and creation of favourable run-off conditions
• Federal agendas pursuant to the Federal Act on Creating a Danube Flood Control Agency (DHK)

Control Agency
• Regulation and preservation of waterways
• Administration of public waters
• Administration of movable and immovable federal property
• Tasks pursuant to the Hydraulic Engineering Assistance Act

Development of inland waterway transport
• Development and management of projects aimed at increasing intermodal and commercial waterway transport
• Development and implementation of new technologies and systems for inland waterways
• Promotion of inland waterway transport, lobbying on both the national and international level, promotion of strategic partnerships
• Implementation of pilot projects designed to set up intermodal waterway traffic
• Implementation of studies, surveys and research projects as well as execution of management tasks concerning the above mentioned fields for third parties and particularly public authorities

Traffic Management
• via donau performs sovereign functions in the area of lock supervision (all nine Austrian Danube locks as well as the lock Nussdorf on the Danube Channel)
• Operation of DoRIS (River Information Services) on the Austrian Danube stretch
6 HYDROLOGY

This chapter describes the main hydrological activities of via donau – Österreichische Wasserstraßen - Gesellschaft mbH on the Austrian section of the Danube.

6.1. Monitoring Network

Different equipments, like pressure sensors, float gauge systems or bubbler level sensors, are utilized by the via donau for the measurement of the water level.

1. Float gauge system: Changes in the water level will be recorded by using a float gauge and its counter balance which are connected with a rope, chain or band.
2. Pressure sensor: To get the correct water level, the hydrostatic pressure of the water column (above the sensor) is detected
3. Bubbler level sensor: A compressor inside the instrument generates compressed air or gas. Through a pressure line and a metering valve the air bubbles out into the water. The water level is detected by the hydrostatic pressure of the water column.

Those systems are constructed to get data both at flood and low water level conditions. If it’s possible, changes in the water level through wave action or the influence of power stations have to be damped. To avoid data loss, the most important gauge sites have redundant equipment.

via donau uses four different types of remote data transmission:

1. Modem/landline: Data transfer via landline is relatively safe against breakdown. If costs and effort for installation and transfer are not too high, a redundant remote data transmission is highly recommended at the most important gauge sites. It’s the preferred system for fixed long service gauge sites.
2. Modem/GSM: This system is recommended for gauge sites in rough terrain and bad connection to the road network. It’s also a good choice for temporary studies and supporting gauges. A good connection to the GSM network of the provider is required.
3. Modem/GPRS: Equal advantages and requirements like GSM. It’s recommended for higher amounts of data and shorter intervals of data request, because of lower costs and a faster transfer.
4. UHF radio: via donau uses a radio transmission system for the network of groundwater measuring sites and some gauge sites. The frequency is appropiable for free and therefore there are no additional costs or fees. A relatively close network of measuring sites is recommended because the gauge sites need to communicate among each other.

To avoid data loss, the most important gauge sites have redundant equipment (landline + GSM, UHF radio + GSM, UHF radio + landline ...). In the case of a network breakdown a second transfer path is able to transmit the data immediately.

The transmitted data is administrated in a central data bank and routed to costumers and partners. The GSM and landline data files are collected by the central office passively at the gauge site. The GPRS data files are cached actively by the gauge site at a FTP server and will be collected by the central office afterwards. Also the UHF radio data is administrated in a system which is managed by the central office.

The interval of transmission depends on the relevance of the gauge site. Data from navigation and flood relevant gauges are transmitted at least every hour and published on the internet by the responsible organisation. Further gauge data, which are needed for the dimensioning and monitoring of water engineering projects normally, have a daily transfer interval, if a telecommunication system is implemented. For less relevant gauges a direct reading of the data logger every three month or a daily water level measurement by a person (if possible at 7:00 am) is sufficient.

Normally the data is transmitted to the central office in its original condition. If the data is going to be published immediately (Internet, data for forecasts,...), the unchanged original data will be sent to the responsible office at once. A hydrologic data management system “HyDaMS”, designed respectively adapted to the Hydrographic Services (“Hydrographischer Dienst”) in Austria, is used to archive the data.

6.2. Hydrological Conditions

The Austrian Danube has a length of 350.5 km and reaches from stream-km 2223.3 to 1872.7. The river flows from Germany through Austria to Slovakia while it passes 10 (respectively 11 with the small hydro power plant “Nussdorf”) hydroelectric power. The artificial power station chain
affects definitively the runoff characteristics of the stream. There are still two stream sections unaffected by the backwater, one in the “Wachau” and one in the east of Vienna.

6.3. Hydrological forecasting and warning

Currently via donau operates a website which contains low water forecasts forecasts (6h, 12h, 24h) for the relevant gauges in the two free-flowing sections Kienstock and Wildungsmauer.

Hydrologic assessments are made by the via donau team Hydrology. Besides a daily control of the weather situation (perception, temperature, satellite pictures,...) the gauges of the most important tributaries and the main gauges of the Austrian and German Danube are controlled. Additional the official flood news service (“Hochwassernachrichtendienst”) of Bavaria and Lower Austria are used to estimate the situation.

In low water level periods the discharge is influenced and controlled by the power station chain and their control system to a certain extend. For that reason the AHP - Austrian Hydro Power
developed a forecasting system for low water. Currently this forecasting system is in test mode. AHP provides a prospective forecast on the base of perception and discharge models and the inflow of big tributaries and their own regulation of the power plants.

In addition to the websites there are different ways for dissemination of information. Especially in case of flood events the notices are passed on via telephone and email (mailing list). Via donau operates an alarm system with different limit values of water level, which sends automatically generated emails to selected persons. The message contains the exceeded alarm level, the location of gauge, the time of the reached alarm level and the value of water level.

6.4. Transboundary cooperation

Danube neighbouring countries which adjoin directly to Austria are Germany and Slovakia. Via donau holds yearly meetings with both countries within the scope of the cross border commission. These meetings are about exchanging information, adjusting projects at the borders and joint inquiries of hydrological and hydrographical data. Measured values and measuring dates are controlled, discussed and determined. There is no direct online data transfer.

Transnational cooperation and data transfer within the scope of navigation is currently in development and treated within the EU-project “IRIS Europe I & II”. This project intends an international exchange of data relevant for navigation like water level, electronic navigation notices, exchange of positions and traffic approval data of ships.

The international data exchange is currently in a test phase and will be advanced in IRIS Europe II. Due to different competences and authorisations in the countries and their public authorities, multilateral agreements concerning the administration still have to be made. In a first step the agreement between Austria, Slovakia, Hungary, Romania and Bulgaria will be terminated.

Via donau operates different methods and systems for data transmission. The communication system for hydrological data “Callisto / Pulsaro” is an integrated part of the Hydrological atabase Management System (HyDaMS) and is able to make diverse automated data transfers in different format files. Possible ways of data transfer:

1. via FTP (File Transfer Protocol)
2. via TSTP (Time Series Transfer Protocol)
3. via MAIL as attachment

The system is very flexible and nearly every format file can be adapted.
In addition to the hydrological communication system via donau operates RIS - River Information Services in Austria. The DoRIS (Donau River Information Services) system was the first RIS installation in Europe fully conforming to the RIS Directive 2005/44/EC of the European Union. In addition to the above services the international exchange of RIS related information was implemented as a pilot in the IRIS Europe project.
7 HYDROGRAPHY

The purpose of this chapter is to describe the main tasks of the hydrographical team in Austria’s waterway management company. It contains information about surveying activities, measurement equipment and interval of measurements, data processing and management.

The focus of the hydrographic work is the measurement and acquisition of all parameters, which are necessary to describe the constitution and form of the riverbed and the dynamic processes of open waters. Main hydrographical tasks are:

1. River bed measurements
2. Discharge and current measurements
3. Terrestrial surveying
4. Cartography and hydrographical data management.

7.1. River bed measurements

Basically we distinguish two different surveying systems, the single-beam and multi-beam echo sounding system. There are two types of measurements: project related measurements, which are mostly limited to a small area and periodically recurring measurements of river sections. Periodical measurements are primarily made to control and document the changes of the river bed. Project related measurements are mostly made for river engineering projects, for wreck detection, and for controlling shallow water areas.

The collected hydrographic data must be corrected, this means checking the data for blunders, performing corrections and merging the depths with position data. Furthermore it must be proved if there are GPS failures or incorrect echos. Multi-beam data can be automatically filtered. For correction of single-beam soundings we use the hydrographic software Navisoft (Navitronic). To process the large quantities of multi-beam sounding data we use the Hydrographic Information Processing System HIPS (CARIS).

7.2. Terrestrial surveying

The terrestrial measuring provides the entire data basis for the Hydrography.
1. Control and addition of the geodetic benchmark field and the hectometer along the Danube, March and Thaya
2. Site plans and gradient diagrams (terrestrial), (e.g.: for flood protection works, oxbow lakes, biotopes, gravel bars, etc.)
3. Leveling in case of flood or low water (water level measurement)
4. Measuring of buildings (locks, bridges, etc.)
5. Implementation and maintenance of the entire benchmark database (including hectometer, gauge, etc.)

7.3. Geographic Information System

For about three years ago the implementation of a geographic information system (ArcGIS/ESRI) started, which contains all relevant hydrographical and surveying data like:

- Orthophotos
- Aerial photo evaluation
- Digital cadastral map
- Project concerning riverbed evaluation
- Hectometer and benchmarks
- Navigation line
- Berths

All positions are referenced to Gauß-Krüger projection, based on the ellipsoid Bessel 1841. The original Zero- (Prime-) Meridian of the Austrian Gauß-Krüger (Transverse Mercator) is Ferro (17°40’ W Greenwich). In Austria we use heights above Adriatic Sea Level. For navigational purposes all sounding data will be reduced to Equivalent Low Water Level (RNW). Heights of bridges and overhead cables will be referenced to the Highest Navigable Water Level (HSW).

7.4. Transboundary cooperation

In addition to the bilateral discharge measurements together with Slovakia and the Czech Republic the hydrographic team measures “evidence profiles” at the river March. For this reason 66 river cross profiles are defined, there from 13 profiles include the floodplains. The amount of work is
divided between Slovakia and Austria, because these measurements are done within the scope of the Austrian-Slovakian Cross Border Commission every ten years.
8 WATERWAY MAINTENANCE

During the survey activities a so called Naufahrt is done monthly by via donau. Within the longitudinal movements they try to find out if there are shallow sections in the navigation fairway below 25 dm in the free flowing sections of the Wachau and east of Vienna and less than 27 dm in impounded sections and at the mouth of the river Enns. If that is the case cross-sectional profiles for the relevant section are created to discover the dimensions of the shallow section / ford. Afterwards they are transmitted immediately to Team DoRIS for publication.

At the same time the responsible Team for hydrography from via donau is instructed to do a record of the river basis. This record is the base for dredging projects and it is needed to start the dredging of the shallow section / ford. Furthermore, the received data should be integrated into ECDIS. Following figure displays the annual dredging cubatures on the Austrian Danube in the period 1996-2006:

![Dredging cubatures from 1996 to 2006 on the Austrian Danube](image)

Figure 5: Dredging cubatures from 1996 to 2006 on the Austrian Danube
The dredging cubatures from 1996 to 2006 including the flood 2002 amount to 360,000 m³/a gravel and 180,000 m³/a silt. Private companies are engaged by via donau via a public tender process to do the dredging work. Most of the companies are using hydraulic excavators on stilt-pontoons, transport barges and vessels.

The dredging works require an initial planning and a concluding success control of the works. This recurrent process can be described as fairway maintenance cycle and is illustrated by following chart:

---

**Fairway maintenance cycle**

- **Bathymetrical Survey of the fairway**
  - Continuous monitoring and general bathymetrical survey of the fairway in order to identify shallow areas (fords)
  - Detailed bathymetrical survey of shallow areas in order to plan and monitor dredging measure

- **Execution of dredging works**
  - Dredging of shallow area (ford) by assigned dredging company
  - Monitoring (Success control) of works: Bathymetrical survey of dredged area
  - Internal documentation and external communication to target groups (e.g. shipping companies)

- **Planning of dredging works**
  - Planning of necessary dredging works in identified shallow areas (fords), based on results of detailed bathymetrical survey
  - Contracting of works - assignment of dredging company

---

Figure 6: Fairway maintenance cycle

The fairway maintenance cycle consists of three recurrent and interdependent tasks:

- the continuous bathymetrical survey of the fairway
- the planning of the necessary dredging measures
- the execution of the dredging works including the monitoring of the works (success control)
The current status of the weakest sections on the Austrian Danube is displayed on the Austrian DoRIS website (Link: http://www.doris.bmvit.gv.at/en/water_levels_low_sections/shallow_sections/)

Figure 7: Overview on current shallow sections on the Austrian Danube

Furthermore a current river bed survey is available on the above mentioned website for the weakest sections/fords in the two free-flowing sections Wachau and to the east of Vienna.
Figure 8: Example of a river bed survey of a shallow section on the Austrian Danube
The figure displays all the areas within the fairway which do not achieve a fairway depth of 2.5 m under LNRL in red colour. This information shall be seen as assistance for the skipper in case of low water periods in order to optimise the possible draught of the vessels.
9 KEY EQUIPMENT OF VIA DONAU

9.1. Echo sounding equipment and other vessels

**Vessel Alpha (mobile)**
Depth measurement with single-beam echo sounder Kongsberg EA 400 (38 KHz, 200 KHz)
Software: Navisoft Survey (Navitronic)
This vessel can be equipped alternatively with a multi-beam echo sounding system.

**Vessel Munin**
Depth measurement with multi-beam echo sounder Reson SeaBat 8101 (240 KHz), IXSEA
Octans (gyrocompass motion sensor)
Software: Navisoft Sweep (Navitronic)

**Vessel 4**
Depth measurement with single-beam echo sounder Reson Navisound 415 (15 KHz, 33 KHz and 210 KHz)
Software: Navisoft Survey (Navitronic)
This Vessel can be equipped alternatively with a multi-beam echo sounder.

**Vessel Beta (mobile)**
Depth measurement with single-beam echo sounder Kongsberg EA 400, 200 KHz
Software: Navisoft Survey (Navitronic)

**Vessel Epsilon (mobile)**
Depth measurement with Kongsberg EA 400 (38 KHz, 200 KHz)
Software: Navisoft Survey (Navitronic)
Figure 9: MB Epsilon (since 02/2009)

3 inspection vessels

1 exhibition vessel, MS Negrelli

Figure 10: MS Negrelli
20 other smaller working vessels

9.2. Vehicle fleet

6 lorries (average age 11 years)
52 vehicles < 3.5 tons (average age 3 years)

9.3. Work machines

16 large or middle sized mowing machines
1 tractor
1 wheeled loader
## SWOT - ANALYSIS

### STRENGTHS
- Diversification of activities: infrastructure and traffic management, Danube navigation development, environment, flood prevention
- Possibility for extended scope of action through legal status (limited liability company, 100% owned by the republic of Austria)
- Legal reference (Waterway Act) for basic financing of activities
- International network and cooperation: EU and Danube region (projects and development of IWT related policy topics)
- Independent services for the industry
- Good working conditions / technical equipment (Offices, vehicle fleet, vessels)
- Synergy through activities in the fields of environment and flood protection

### WEAKNESSES
- Merger of the two business segments infrastructure management and navigation development not yet finished
- Core activities and competencies not fully accepted at national level
- Commercial viability of activities still improvable (as an outsourced company)
- Lack of basic quality standards for main activities
- Autonomous project execution improvable (management by objectives)

### OPPORTUNITIES
- Optimisation of internal procedures and cooperation (Merger of the two business segments infrastructure management and development activities)
- Improved marketing of activities: positioning as innovative and environment-orientated service company
- Improved customer focus in the area of infrastructure management
- European transport policy (TEN-T and NAIADES)
- Realignment of transport policy in favour of IWT as necessity of ongoing climate change debate
• Improved cost management and stronger focusing of the strategic orientation of the company

**THREATS**

• Relatively high dependence on annual public budgets
• Oligopolization tendencies in certain areas of external services (e.g. dredging activities)

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