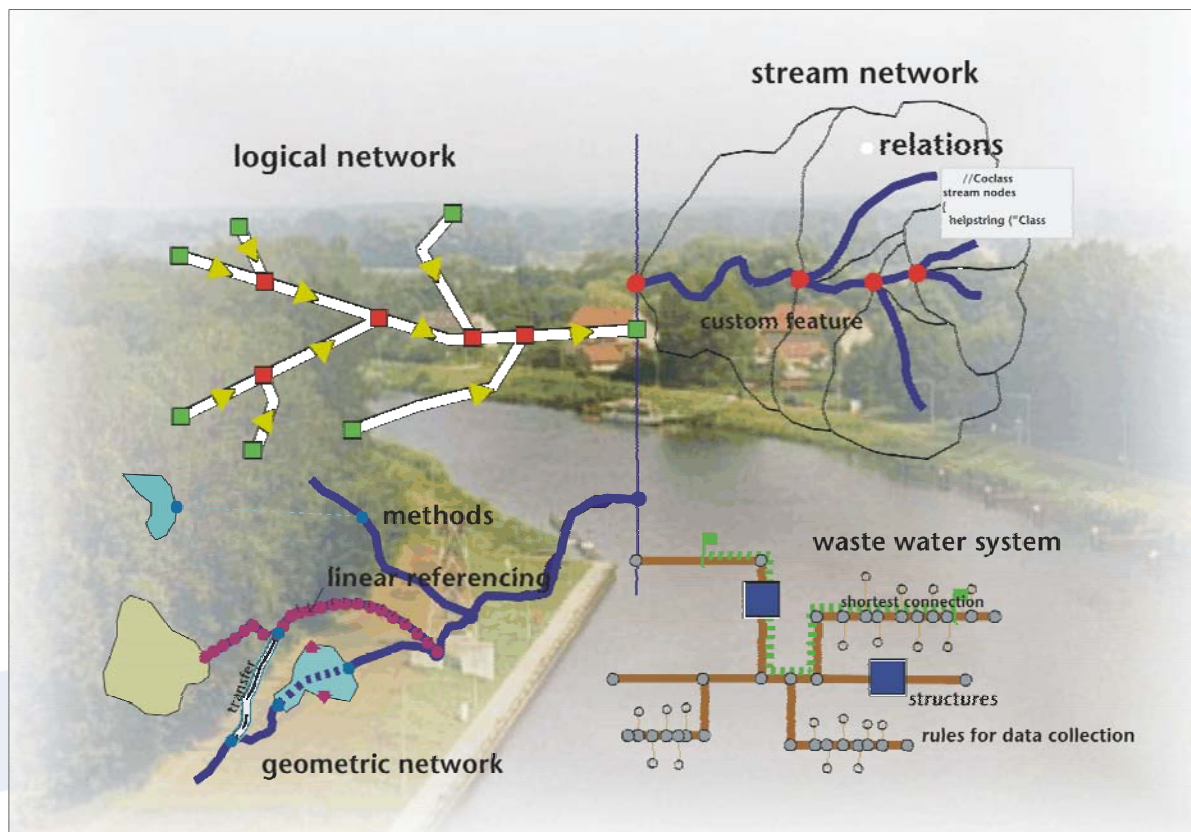


# WISYS<sup>®</sup>

*ArcGIS-based Information System for River Basin Management and Tasks Deriving from the European Water Framework Directive*



Standardised object model in terms of content and technology

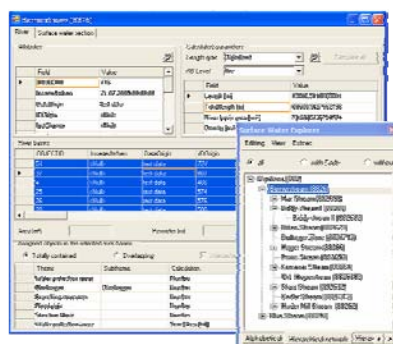
Tools for space and time-related data management and analysis

Use as standalone or workgroup solution and as a client-server system

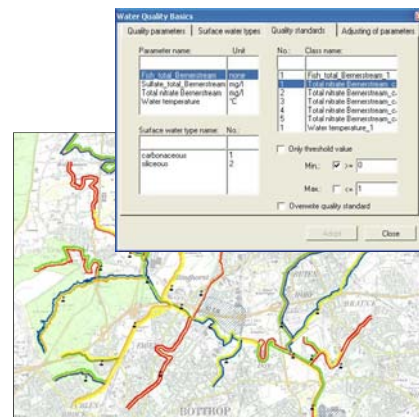
The **Theme Overview** dialog provides a rapid overview of available themes in the database. By classifying themes into groups (freely configurable tabs) it is also possible for the layperson to find and activate required information efficiently and easily. For increased Theme Management functionality **Theme Manager** is available.



**Surface Water Explorer** was developed as a powerful information tool. It facilitates navigation, search and identification in various hierarchical water system displays. Both direct information regarding the waterbody (length, catchment area size) and assigned information (e.g. measuring points, emissions *inter alia*) can be easily and swiftly accessed and related information can be analyzed.



With **Water Quality Manager** surface waterbody quality classification based on measured values accessed via Time Series Manager plus the underlying waterbody types and quality class parameters assigned to the types can be realised.



With WISYS information system DHI-WASY makes available to authorities and working parties responsible for watering an optimum tool for database and GIS-based collection, management and analysis of all relevant information and also for public relations work using ESRI ArcGIS.

### Data Management - Basis for Integration

For both management and inventory of surface and groundwater data and programs of measures for current implementation including River Basin Management Plans (RBMP) across the transinstitutional exchange of data regarding water supply and distribution is essential. These exacting demands have been taken into account in development of the object model which is able to place relevant data of whatever nature in relation one to another in an increasingly standardised form. The WISYS object model has been developed and optimised over a number of years. It implements in full the EU WFD "Water Bodies Horizontal Guidance Document" (2002) and the "Guidance Document Implementing the GIS Elements of the WFD" (2002) and also other available standards. In addition requirements relating to river basin management stipulated by various regional and national water authorities have been incorporated. The object model is subject to ongoing adaptation to new requirements and subsequently made available to users. Special integral WISYS tools perform importation and migration of already existing digital spatial data into the WISYS object model. This process provides a high degree of quality improvement and integration of available data.

The foundation of multiple use and standardisation of data stocks is therefore already in place. With a specific DHI-WASY add-on the privilege administration is extendable.

With WISYS patterns are provided for migrating both so-called Water Framework Directive template data into the WISYS system and for exporting updated data to the template shapes at any time. In this way Water Framework Directive reporting obligations can be met both efficiently and easily.

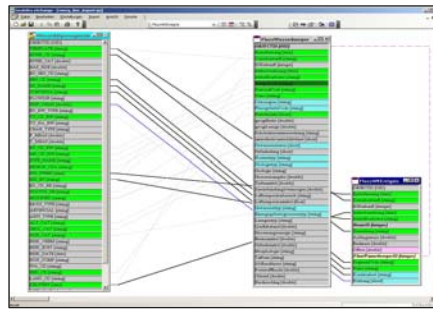
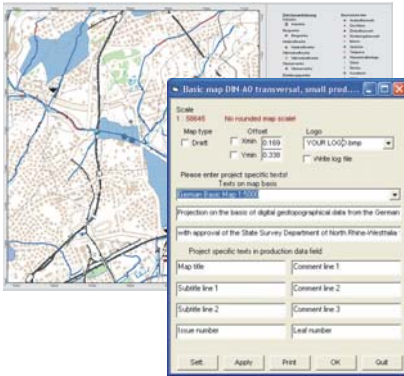
### River Network as Central Element

A central element in river basin management is formed by the water courses with their connections via estuaries or points of outflow. These form the river network. WISYS offers a varied range of display overviews of this network. In addition to geometric view which is essential for spatial reference itself and map creation WISYS also provides topological and relational views. Using relationships it is possible to manage and utilize relationships of data stocks one to the other. For example it is possible to establish relationships between emitters, emission site and waterbody-related emission points. Analyses such as "Show all waste water treatment plants emitting into waterbody stream A upstream of Observation Point M1" are procurable with the click of a button. This query however is only possible because of the network topology is constantly updated in line with every change in geometry. This is an invaluable advantage for precise and uncomplicated setup of analyses and evaluations. WISYS is designed to work with two River Networks (Working scale and Reporting scale) in Germany. The calibration (stationing) is transferred from one river net to the other river net.

With **Layout Manager** interactive maps with any required content can be generated in accordance with one of the predefined standard layouts.

**GeoData eXchange** is a GIS tool supplied with WISYS especially designed for import and export of spatially oriented data (e.g. shape files, coverages) to a normalised geodatabase structure (SDE or Personal SDE) or from the latter. This is the ideal tool for initial migration of available digital data to the WISYS system.

Via **WISYS Web** spatially oriented environmental information can be made accessible to the public. Additionally, employees of various participating institutions can rapidly obtain an overview via this platform (e.g. designed as an Intranet).



### Additional WFD Themes

Naturally WISYS supports administration of additional river basin management elements and of the WFD such as for example catchment areas, surface and ground water bodies, water types, significant impacts and beyond that additional information objects from the spheres of hydrology and hydrogeology, topography, administrative structure and many more.

Presently the WISYS object model comprises some 275 different themes (classes) with a total of some 3000 defining attributes.

### Tools which Help

In support of both management and use of data WISYS provides a comprehensive collection of specific tools which omits nothing to be desired. These include for example a Surface Water Body Manager which assumes convenient management of water courses, their geographical stationing and surface waterbodies.

Water Body Explorer and Communal Explorer are ideal for efficient searching the extensive data stock and uncovering deficiencies.

With Time Series Manager time-relevant information, for example from WFD related monitoring programs can then be drawn on using Quality Manager to provide a WFD-compliant water situation and water body type related assessment. For planning of measures data can be exported directly to prognosis systems (e.g. MIKE11 from DHI or FEFLOW from WASY). Implementation of decision trees for programs of measures based on significant pressures, their impacts, the actual state and interaction has been developed in the course of research projects and is presently being incorporated into the product as a WISYS Web Component.

The reduction of nutrient emissions to surface water bodies is one of the main factors in the establishment of program of measures until 2009 to achieve good ecological condition. Therefore the source apportionment model MONERIS for quantifying diffuse losses by several pathways (Leibniz-Institute of freshwater Ecology and Inland Fisheries, Germany) will be coupled to WISYS.

An integral WISYS component is a Layout Manager which facilitates uncomplicated map generation and issue and which meets in full all cartographical requirements. Implementation of reporting standards is in virtual realtime.

### Informing the Public

On setting up river basin management plans at the latest a wide participation procedure is stipulated for the WFD. The Internet Module based on ESRI ArcIMS shipped with WISYS affords the option of providing citizens with an easy-access interactive information platform within which they can also inform themselves regarding planning content without the need for any previous specialist knowledge. The advantage of this solution is that updated required freely provided information content can be offered without any redundant data storage and additional expense. The user interface on the one hand is usable accurately by the layperson and on the other hand is also so flexible that it additionally offers Intranet users a crucial information added-value.



### WISYS is Flexible, Scaleable and Dynamic

The system can be used as a workgroup solution based on an ESRI Personal or File Geodatabase without any server installation or as an institution or company-wide solution based on a standard SQL database and the ESRI ArcSDE geodata-server. For the user no differences in operation ensue, without on logging onto the system. Due to the dynamics flexibility is especially in demand for the WFD.

WISYS is available in a range of languages and can therefore be used very well in a cross-border context. Versions are available in English, French, Polish and in the near future additionally Chinese. Adaptations to additional languages including the object model are a convenient option.

In the course of project and product development service WISYS is under constant further development and adapted to the requirements of the European Water Framework Directive and of river catchment management, which are themselves in turn subject to a permanent dynamic.

New Version 3.5 has the following innovations compared to predecessor versions:

- WISYS 3.5 is compatible with current ESRI ArcGIS 9.2 software and all tools work therefore under ArcGIS 9.2
- Migration of older WISYS databases is made possible via a convenient upgrade
- WISYS Core Model extension 2: Handling two river networks (Working scale, Reporting scale) by tools ; Transformation of calibration from Working scale to Reporting scale
- Extended administration of roles and privileges as a specific DHI-WASY add on
- Edit Tracking System as a Workspace Extension (automatic update of documentation fields like first Editor and others fields)
- Time Series manager has been optimised, e.g. import from extern time series data sources
- Advanced WISYS GIS Event Projection with geometric and (New!) attributive adjustment; simple error handling

- Theme manager and surface water explorer tools have been expanded and optimise.
- With WISYS Web information can be published via the Internet and WISYS Web Editor additionally facilitates editing (generate and modify) of GIS Events in the WISYS database via a browser.
- The Time Series module is for both performing searches in external time series systems (query components) and display of query results as measuring point-related single series or time series (analysis components) which can be graphically visualised on the map.

### The Tools in Overview

- WISYS Login
- Theme Overview
- Theme Manager
- WISYS Editor
- Water Manager
- Waterbody Manager
- Event Manager
- Event Projection
- Flow Direction Manager
- Time Series Manager
- Water Quality Manager
- Layout Manager
- Water Explorer
- Municipal Explorer
- "Spatial Spreadsheet" (balancing)
- WFD Reporting System
- Object Information Manager
- Extended Privileges Administration
- Relationship Support
- Edit Tracking System
- GeoData exchange
- Metadata Administration
- Symbol Library
- Internet Module
- Import / Export
- Licensing



### Contact

#### DHI-WASY GmbH

Waltersdorfer Straße 105, 12526 Berlin, Germany

Tel: +49 (0)30 67 99 98-0, Fax: +49 (0)30 67 99 98-99

mail@dhi-wasy.de

Offices in Dresden, Syke, Cologne and Königs Wusterhausen

[www.dhi-wasy.de](http://www.dhi-wasy.de) [www.dhigroup.com](http://www.dhigroup.com)