

# Working Plan: Cross Border Experiment

Part of: OGC/WMO Domain Working Group in Hydrology  
Interoperability Experiment 2 – Surface Water (HDWG\_IE2)

## Dokument History

Date	Release	Author	Paragraph modified	Description
07/06/2010	0.1	Christian Michl	All	First version
07/06/2010	0.1	Carsten Heidmann	All	Minor changes
14/06/2010	0.1	Michael Natschke	KISTERS deliverables and outcomes	Added details of the KISTERS deliverables, data sources and technologies
14/06/2010	0.2	Carsten Heidmann	All	Combined version with input from different parties (52°North, IOW Sandre)
15/06/2010	0.2	Christian Michl	All	Final feed-back from different parties, draft version for OGC TC in Silver Spring

## Overall Goal

In the experiment the proposed WaterML2.0 encoding will be tested with surface water data by disseminating surface water data from the river Rhine (*French: Rhin – German: Rhein*) between Germany, the Netherlands and France to all participants using OGC SOS, WFS and WMS web services. This will additionally demonstrate cross border surface water data interoperability in a field with different administrative responsibilities and with a lot of multilingual issues.

## Participants

### ***KISTERS (Germany):***

- Will provide an SOS Service speaking WaterML 2.0 as part of the KISTERS Hydrological Information System WISKI 7.x. The SOS Service enables WISKI 7.x to publish but also to consume meta and time series data in WaterML 2.0 Format.
- This WISKI 7.x System will be implemented at the Service Centre Information Technology of the BMVBS for the purpose of this experiment. Data from the Global Runoff Data Center will also be made available through the WISKI 7.x version (see Global Runoff Use Case).
- KISTERS will also contribute to the implementation of a catalog service.
- Participants include: Michael Natschke and Stefan Fuest.

### ***52° North (Germany):***

- Will contribute a SOS implementation supporting WaterML 2.0. This will include: (i) support for the deployment of the SOS implementation in order to allow other contributors to serve surface water data and to (ii) supply client APIs and components to access SWE services which can be used to build client applications.
- Depending on the specific requirements, 52° North can provide a catalogue technology for the discovery of sensors and the look up of observables/phenomena and their semantics.
- Participants include Simon Jirka and Arne Broering and associates.

### ***International Office for Water – Sandre (France):***

- Will test hydro quantity data exchange using WaterML 2.0 and deploying OGC webservices (WMS, WFS, SOS). Thus will contribute to the evolution on WaterML 2.0.
- Potential feedback on the French Water Information System will also be evaluated.
- Participants include Sylvain Grellet and associates.

### ***Service Centre Information Technology of the BMVBS (Germany):***

- Will provide surface water time series data of the German federal hydrometric network (quantity and quality) and surface water data from the Netherlands which is archived in the hydrological information system PEGELONLINE using SOS and WaterML2.0.
- Loading of WaterML2.0 XML-documents with the application "Altova MapForce" and experimentally performing transformations of these documents.
- Test and interoperability-check of the available WebServices with XMLSpy, Excel/InfoPath2007, gSOAP-toolkit and optionally .NET und Java.
- Test of the available WebServices against the WS-I 1.1 Basic Profile with the WS-I testing tools.
- Participants include Christian Michl, Dietmar Mothes and associates.

### ***disy Informationssysteme GmbH (Germany):***

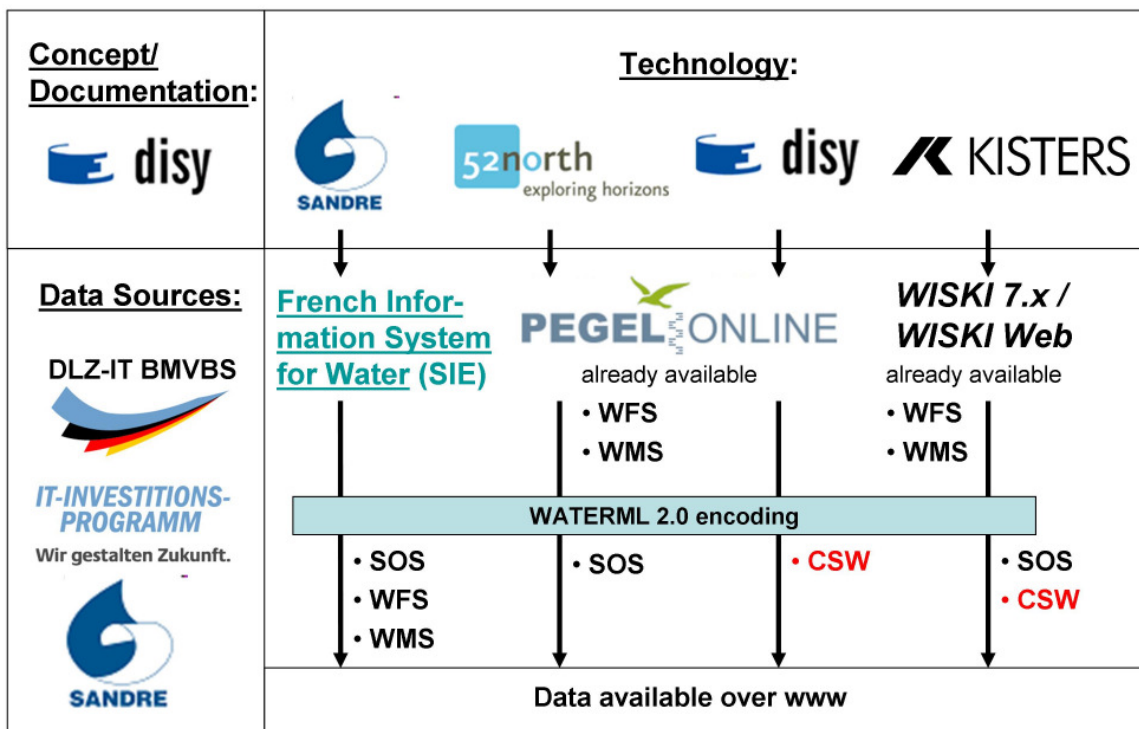
- Will provide catalogue implementation for the description and discovery of services.
- Will provide an implementation of the 52° North web client for
- Participants include Carsten Heidmann and associates

Disy and the Service Centre Information Technology of the BMVBS will coordinate the European cross-border experiment.

## **Architecture**

The setup of the cross border experiment will include several server implementations of WaterML2.0 using SOS, WFS and WMS as well as clients able to consume WaterML2.0 data.

A schematic overview of technology and data sources as well as the role of the participants is shown in the figure below. Initially the experiment will use a simple setup with service endpoints known to the participants (see SOS implementation in figure). Later in the experiment it is planned to use catalogue services (see CSW implementation in figure) for the service and data discovery.



**Phase 1: Implementation of SOS only**  
**Phase 2: Implementation of CSW**

## Objectives

The cross-border experiment has the following objectives:

- (1) Advancing the development of WaterML 2.0 to the sub domain of surface water observations.
- (2) Test compatibility of WaterML 2.0 with existing IOW-Sandre, DLZ-IT services and with implementation of the OGC SOS, WFS and WMS standards.
- (3) Advance exchange of surface water data between Germany and France in the cross-border area of the river Rhine, such that participants can dynamically and transparently access the data and utilize it with their respective information systems.

## Deliverables and Outcomes

### **KISTERS (Germany):**

KISTERS will provide the software and services around their Hydrological Information System WISKI. WISKI itself consist of the following components:

- Data store (RDBMS, such as ORACLE or MSSQL)
- KiTSM (KISTERS Time Series Management Server; Middle tier; Java)
- the WISKI 7 client application as well as WISKI Web Pro.

For the surface water interoperability experiment the KISTERS System will be implemented at the DLZ-IT. The implementation includes setting up the measurement station network as well as enabling the real time data flow. The SOS Service will be implemented to publish data, speaking WaterML 2.0.

The client applications WISKI 7 and WISKI Web Pro will consume data through SOS and provide functionality to browse, display, download and analyze data. KISTERS will contribute to the development of the catalog service.

Deliverable	Technology	Data Sources	Comment
WISKI 7 database	ORACLE/ MSSQL	German federal hydrometric network	Data base contains basic structures of measurement stations and meta data (technology is already existing).
KiTSM server	JAVA	WISKI 7 Database	KiTSM will manage time series data stored in the database, provides calculation and analysis functions, and will also publish and consume data through SOS (technology is already existing, SOS/ WaterML2 needs to be implemented).
WISKI 7 Client	C++	KiTSM	WISKI 7 allows user to manage station meta and time series data. It also is used to setup and configure the measurement network infrastructure; data delivered through SOS can be accessed from the WISKI 7 Client (technology already existing, SOS/WaterML2 consumption needs to be implemented).
WISKI Web Pro	Ajax/Dojo	KiTSM	WISKI Web Pro is the web frontend on top of WISKI/KiTSM System allowing the data consumption from the KiTSM System but also from other SOSs (technology is already available, enhancements necessary).
SOS Service/ WaterML 2.0	JAVA	- KiTSM for data publishing - External services for data consumption in WISKI7 and WISKI Web	SOS service implementation into the KISTERS Server Architecture (Requires development).

### ***52° North (Germany):***

52° North will provide a SOS implementation for serving WaterML 2.0 encoded hydrological measurements based on its regular SOS. This will be complemented by according client developments.

### ***International Office for Water – Sandre (France):***

IOW will use near real time data extracted from the French Banque Hydro (hydrometric databank of the French Water Information System) in SANDRE format to supply WaterML 2.0 encoded hydrological measurements. Dataset will concern Rhine/Rhin river quantity monitoring stations.

An SOS implementation based on 52north-SOS product and SOS 1.0 specifications will make those datasets available. WFS and WMS will also serve monitoring stations features. In a latter stage the possibility of deploying a CSW catalogue will be evaluated.

### **Service Centre Information Technology of the BMVBS (Germany):**

The DLZ-IT will supply the data sources (near real time and archive) by the systems PEGELONLINE and WISKI. It will also host the implementation of the experiment for the two systems (PEGELONLINE and WISKI 7.x/Wiski Web). The surface water data from the Netherlands will be available over PEGELONLINE. The outcome will be to distribute water level and discharge data using the WaterML2.0 encoding within two SOS implementations (one by 52°North for PEGELONLINE and one by Kisters for WISKI 7.x and WISKI Web).

### **Disy Informationssysteme GmbH (Germany):**

Disy will provide an CSW implementation based on the product Preludio. This will allow the service discovery for the services used in the cross border experiment. The implementation will use the AP ISO 1.0 specification for the service description.

<b>Deliverable</b>	<b>Technology</b>	<b>Data Sources</b>	<b>Comment</b>
CSW	Java	./.	This catalogue will be a basic implementation, using the ISO AP 1.0 specification.
Webclient	Java	./.	Disy will provide a server with an installation of the 52° North web client

### **Timeline**

The timelines follows the milestone plan of the whole Surface Water (HDWG\_IE2).

### **Detailed Workplan**

In the following table the different data types are described giving details about technology, data sources, party in charge and outcome.

<b>Data Type</b>	<b>Description</b>	<b>Technology</b>	<b>Data Sources</b>	<b>Outcome</b>	<b>Party in Charge</b>
<b>Station</b>	Provides location of the available hydrometric stations	WMS, WFS	<u>France:</u> one for the hydrometric stations descriptions, one (or more) to display the sampled feature  <u>Germany:</u> DBMS PEGELONLINE , DBMS WISKI	Display available hydrometric stations on a map (WaterML2.0 encoded information will be available to describe the monitoring)	<u>France:</u> IOW-Sandre  <u>Germany:</u> DLZ-IT, Kisters
<b>Observation</b>	Each station provided in the <b>station</b> use case can provide access to its related observation	SOS	<u>France:</u> hydrometric databank  <u>Germany:</u> DBMS PEGELONLINE , DBMS WISKI	Display available observations at one hydrometric station	<u>France:</u> IOW-Sandre  <u>Germany:</u> Kisters, 52°North
<b>Time Series</b>	Accessing all time series from	SOS	<u>France:</u> hydrometric	Display (chart) and download	<u>France:</u> IOW-

	an Observation		databank <u>Germany:</u> DBMS PEGELONLINE , DBMS WISKI	hydrometric time series	Sandre <u>Germany:</u> Kisters, 52°North
<b>Catalogue Observation</b>	Accessing all observation from a CSW based catalogue	CSW-SOS	<u>France:</u> hydrometric databank  <u>Germany:</u> DBMS PEGELONLINE , DBMS WISKI	All observations that correspond to a specific query in the CSW (visualization and download possible)	<u>France:</u> IOW-Sandre  <u>Germany:</u> Kisters, DLZ-IT, disy
<b>Catalogue Time Series</b> (in discussion)	Accessing all time series from a CSW based catalogue	CSW-SOS	<u>France:</u> hydrometric databank  <u>Germany:</u> DBMS PEGELONLINE , DBMS WISKI	All time series that correspond to a specific query in the CSW (visualization and download possible)	<u>France:</u> IOW-Sandre  <u>Germany:</u> Kisters, DLZ-IT, disy