DRIHM - Distributed Research Infrastructure for Hydro-Meteorology

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T.K.Millard, Q.K.Harpham, HR Wallingford.
DRIHM Objectives

- **To support** the development and deployment of a **HMR** e-Science environment

- **To promote** the establishment and diffusion of a **service-oriented culture** (involving specialist scientist users, members of public services, members of the general public)

- To provide **integrated HMR services**

- To design and deploy **user-friendly interfaces**

- To provide HMR e-Science **support centres** and corresponding **training activities**

- To support hydro-meteorological **forecasting chains**
Studying Flooding with DRIHM

- Experiment Suite 1: Rainfall
- Experiment Suite 2: Discharge
- Experiment Suite 3: Water Level, Flow & Impact
DRIHM e-Science environment
Computing Resources

PRACE

EGI

Static Data Repository
Repository providing static data for a particular model
Applies same concepts as DRIHM Binary Repository

"DRIHM Binary Repository"
drihm-tools.pub-
lab.mmi.ifi.lmu.de

Download for local visualization
Remote visualization
Statistics
3D Visualization

HMR-Scientist
Develops model and defines job inputs

Operations
Quality assurance and testing before production deployment. Uses the EGF test.
The e-Science Environment Structure
DRIHM FAQs

What has been done to numerical models to enable them to run on the DRIHM eInfrastructure and exchange data?

What do I need to do to my model to get it on the DRIHM eInfrastructure?
DRIHM Model MAP

M etadata, Documentation and Licence

A daptors to common interface standards for I/O using controlled vocabularies

P ortability of model components
Metadata, Documentation and Licence

Metadata File

- Title, abstract, keywords;
- Responsible person;
- Rectangular geographic bounding box;
- Technical details (language, processors, OS, OpenMI status, run time);
- URLs to code, executables, documentation;
- Inputs and Outputs (parameter, temporal, spatial, type, feature type).
Metadata, Documentation and Licence

Documentation
- General description;
- How to install;
- How to use;
- Full manual;
- Technical changes made for DRIHM.

Licence
- To use;
- Open Source.
Metadata, Documentation and Licence

FIND INTERACTIVE MAPS, GIS DATASETS, SATELLITE IMAGERY AND RELATED APPLICATIONS

GEONETWORK'S PURPOSE IS:
- To improve access to and integrated use of spatial data and information
- To support decision making
- To promote multidisciplinary approaches to sustainable development
- To enhance understanding of the benefits of geographic information

GeoNetwork opensource allows to easily share geographically referenced thematic information between different organizations. For more information please contact

Applications
Audio/Video
Case studies, best practices
Conference proceedings
Adaptors and Controlled Vocabularies

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Adaptors and Controlled Vocabularies

File-based interface standards:

1. WaterML 2.0 for Point Series data, using standard parameter names.

2. NetCDF-CF1.6 for Grid and Grid Series data, using standard parameter names.
Adaptors and Controlled Vocabularies

Memory-based interfaces with OpenMI 2.0
Portability of Model Components

1. The component requires only **standard** installations of its supporting system software.

2. The component provides **all binaries and libraries** on which it depends.

3. The component makes **no assumptions** about **absolute directory** structure.
The DRIHM Model Suite

- **WRF NMM**
- **WRF ARW**
- **Meso-NH**

**P Interface: NetCDF 1.6**

- **WRF NMM Output Bridge**
- **WRF ARW Output Bridge**
- **Meso-NH Output Bridge**

**Q Interface: WaterML 2**

- **Drift Input Bridge**
- **RIBS Input Bridge**
- **HBV Input Bridge**

**Experiment Suite 1**
Rainfall

**Experiment Suite 2**
Discharge

**Experiment Suite 3**
Water Level, Flow & Impact
Vision for User Engagement
IQmulus

IQmulus Summary (www.iqmulus.eu)

IQmulus is a processing service for large geospatial datasets.

IQmulus contains a group of private and public organisations with expertise in providing data processing services. They have identified the need to collaborate to deliver information from large geospatial datasets in a commercially sustainable way.

IQmulus provides a heavyweight data processing service that performs feature extraction and transformation services for large geospatial point cloud and coverage datasets.

IQmulus will investigate standard approaches for users to extract precise information from large geospatial data sets. Users will be able to use standard services to get the data without needing knowledge of the underlying IQmulus infrastructure providing the processing of the large source datasets.

The standards adopted by IQmulus members will ensure users receive consistent information that they can combine or mash-up with other data in a standard web services framework.

IQmulus will consider two testbeds to demonstrate the value of the IQmulus concept for two real-world use cases: Vulnerability Mapping and Marine Spatial Planning.