GLOWA Volta

Enterprise Data Management, Distribution and Metadata Catalogue System

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Motivation

GLOWA Volta Project

- Organization of data stock for publication and distribution

Volta Basin water sector

- Dense network for data exchange (Fig. 1)
- Unknown data sources (Fig. 2)
- Deficient electronic data exchange facilities (Fig. 3)
- Unreliable data quality (Fig. 4)
- Poor technical environment

Contribution

- Quality controlled GLOWA Volta data stock
- Flexible and adaptable to requirements of stakeholders for assessment and management of heterogeneous geoscientific data
- Definition of data standards, policies and workflows to ensure data quality and interoperability
- Facilities to access and sharing data and information with project partners and water management organizations in the Volta Basin

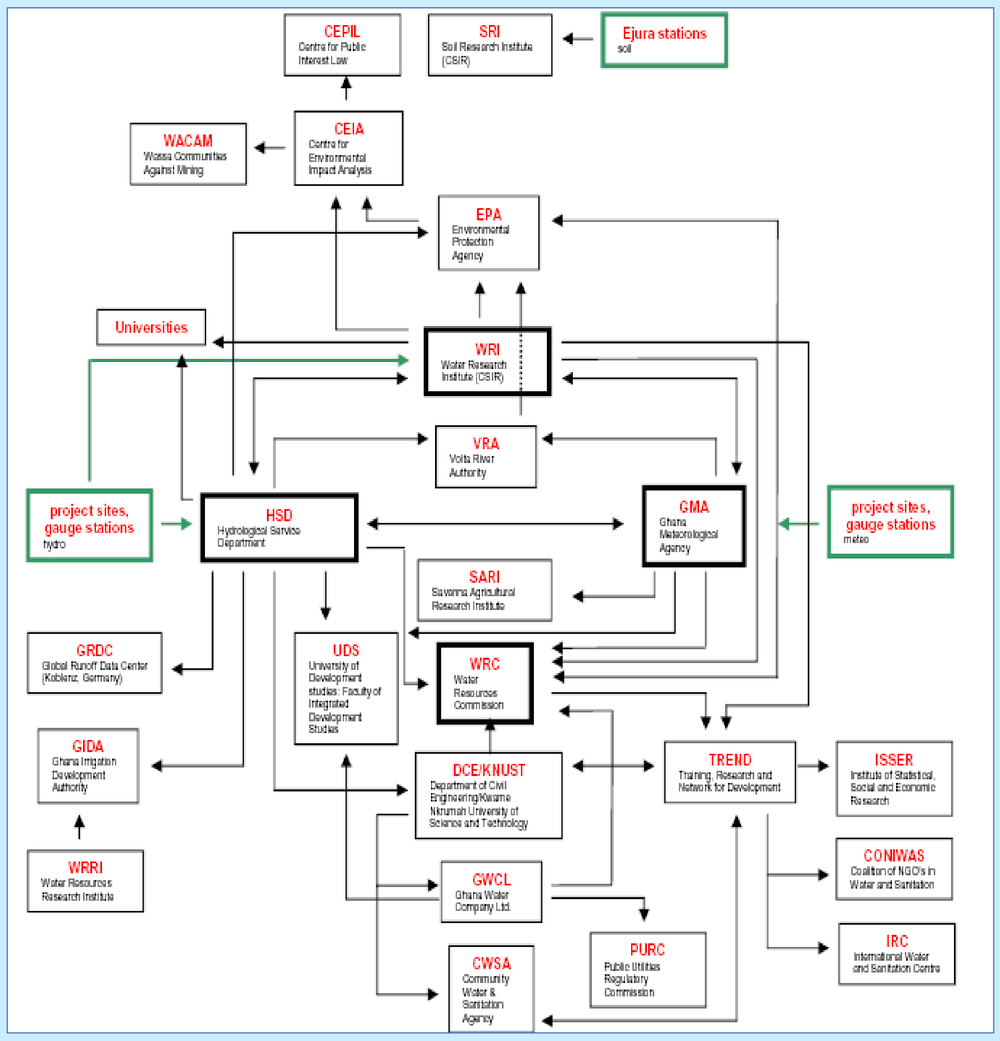


Fig. 1: *Data flows among actors of water sector in Ghana. Derived from a data management survey with 19 institutional participants, Ghana 2007*

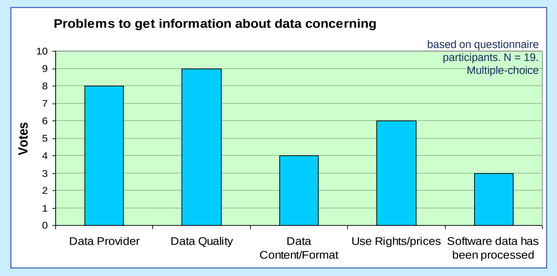


Fig. 2: *Lack of metadata*

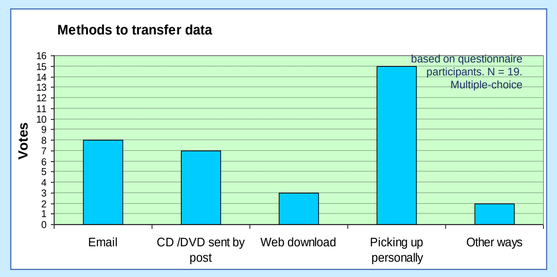


Fig. 3: *Methods of data transfer*

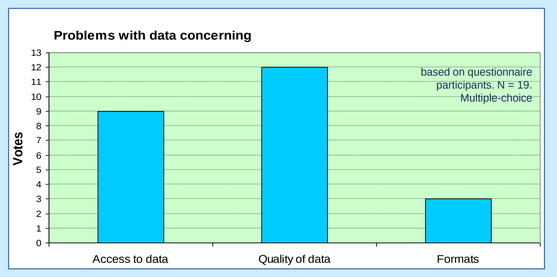


Fig. 4: *Problems in data use*

Infrastructure for Data Management

Intranet

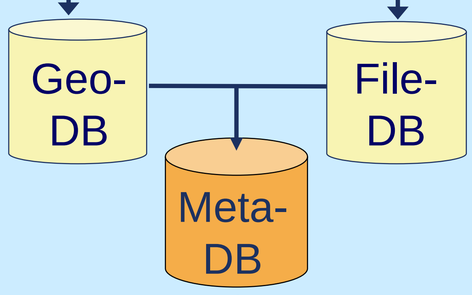
Simulation Systems / GIS

- Scientific analysis
- Administrative planning

Data Management System

Databases (DB)

- Assessment and storage of geoscientific data
- Metadata repository: description of data



Geoportal

- Interface to publish, search, view and manage ressources
- Informative visual facilities and interactive maps
- Data exchange facilities (down- and upload)

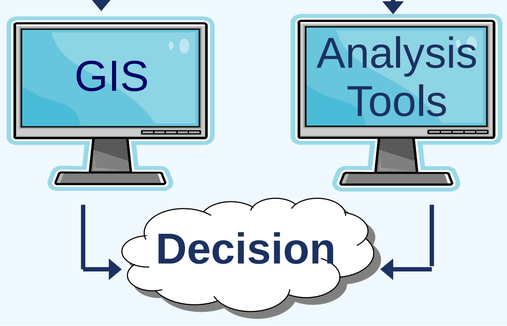
Internet

External Clients

- Access data storages and provide data for local applications

Decision Support Tools

- Processing, evaluating and mining of shared data
- Simulation and evaluation of decision policies



Data Management System

Architecture

GLOWA Volta Project central *data store*

- Organized on *topics* following hydrological, climatological, landcover change and socio-economic applications requirements
- Due to *high heterogeneity* of data file-based storage with a separate database catalog is used
- Diverse ESRI-databases used as temporal databases for working research groups
- Direct network access to the central storage simplifies data exchange and synchronization with local data for local applications
- Separated areas for in-house data sharing, upload and storage of quality controlled data that are accessible only via Geoportal interface

Workflow

Defines standard rules for data organization and assessment

- Dublin Core Metadata Element Set used (DCMES - easy to use, ISO-certified)
- Exchangeable formats
- Informative table headers and significant file names
- Clear assignment of owner rights
- Administrative controlled data flows between workstation clients and database server

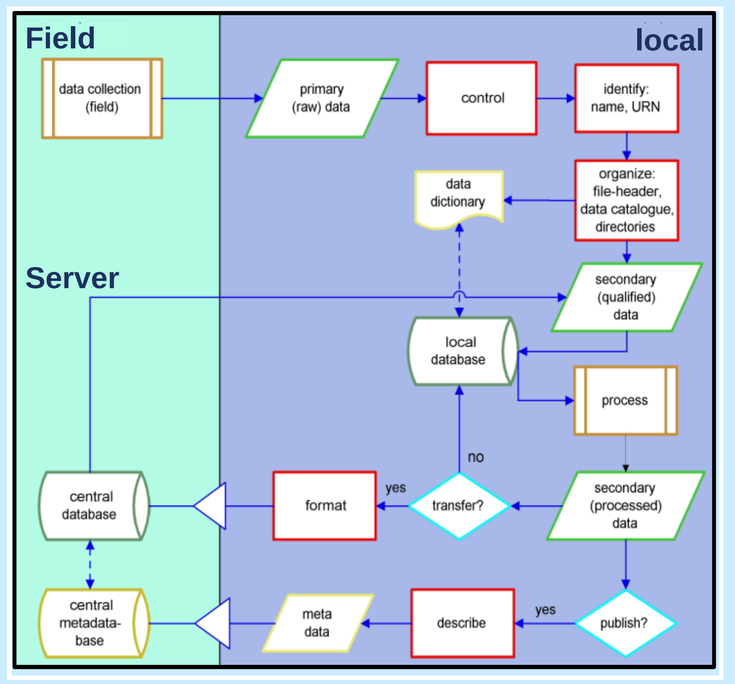


Fig. 5: *Data management workflow*

Results

- Cataloguing and managing heterogeneous datasets
- Publishing and sharing data and metadata over the Web
- Coordinated access to the data within a local network
- Generality of the system and applicability to other organisations
- Use of common standards for broad interoperability

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