
Scientific Data Management for SuMaRiO – Concept and Implementation of a SDI-Node

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*SuMaRiO Kickoff Meeting
Urumqi, 27./28. June 2011*

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Problem Description

- Different participants of various research disciplines (institutes, universities and regional authorities)
- New challenge in information and data exchanges
- Need of scientific data management which protect and enhance the values of scientific data
- Collaborative using across the borders of scientific disciplines
- Requires an improvement of existing concepts of SDI (Spatial Data Infrastructure)

Scientific Data Management

- Includes the development, execution and supervision of policies, programs and practices that protect and enhance the value of scientific data
- The current practice is influenced by developments of Spatial Data Infrastructures (SDIs, or GDIs)
- SDIs are currently build on a national (e.g. GDI-DE), European (INSPIRE), and global level (GSDI), or specific communities (e.g. GEOSS)
- All these efforts are based on the same set of standards and best practices describing interfaces to data services and the encoding of data (e.g. OGC, ISO, OASIS, W3C)

Data Management Activities in SuMaRiO

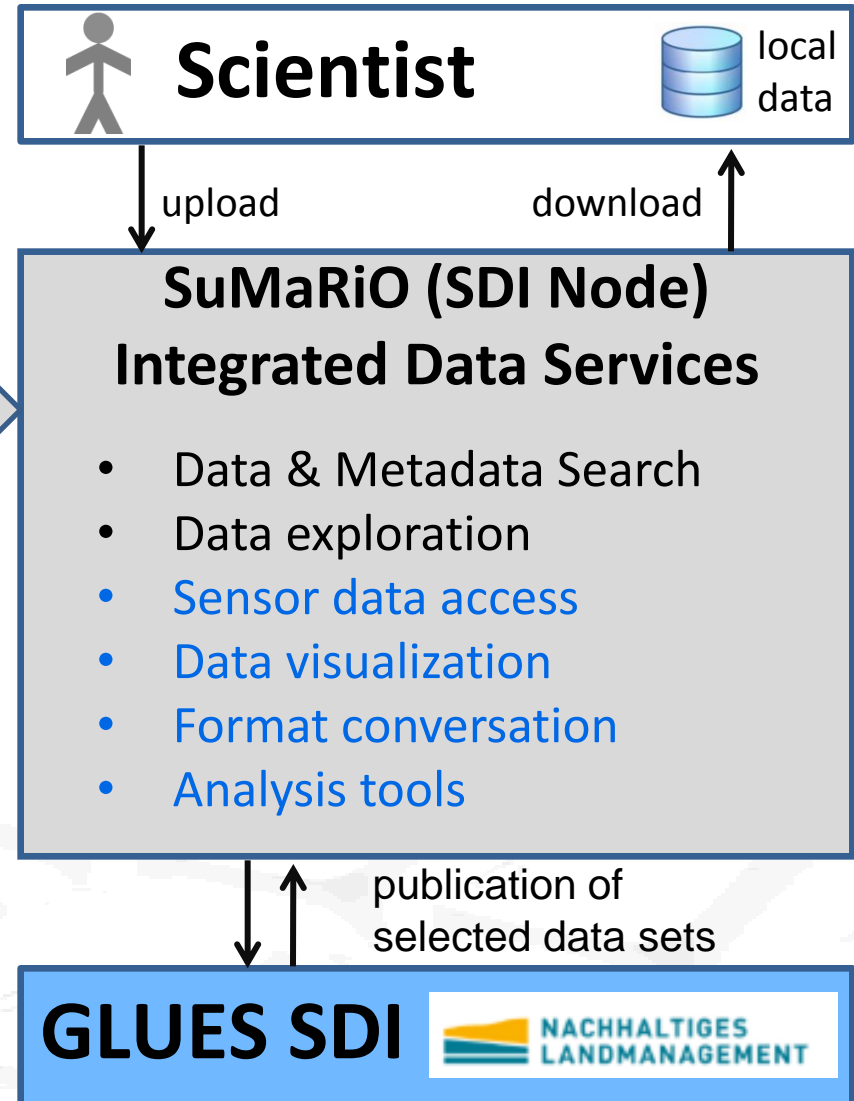
- Design and implementation decentral data management facility for shared data
 - Implementation of geodata services
 - Integration and harmonization of reference data sets
 - Dynamic access to monitoring data
- Data management as support, training, and knowledge transfer activity
- Design and operation of a project portal

Overall Data Management Framework

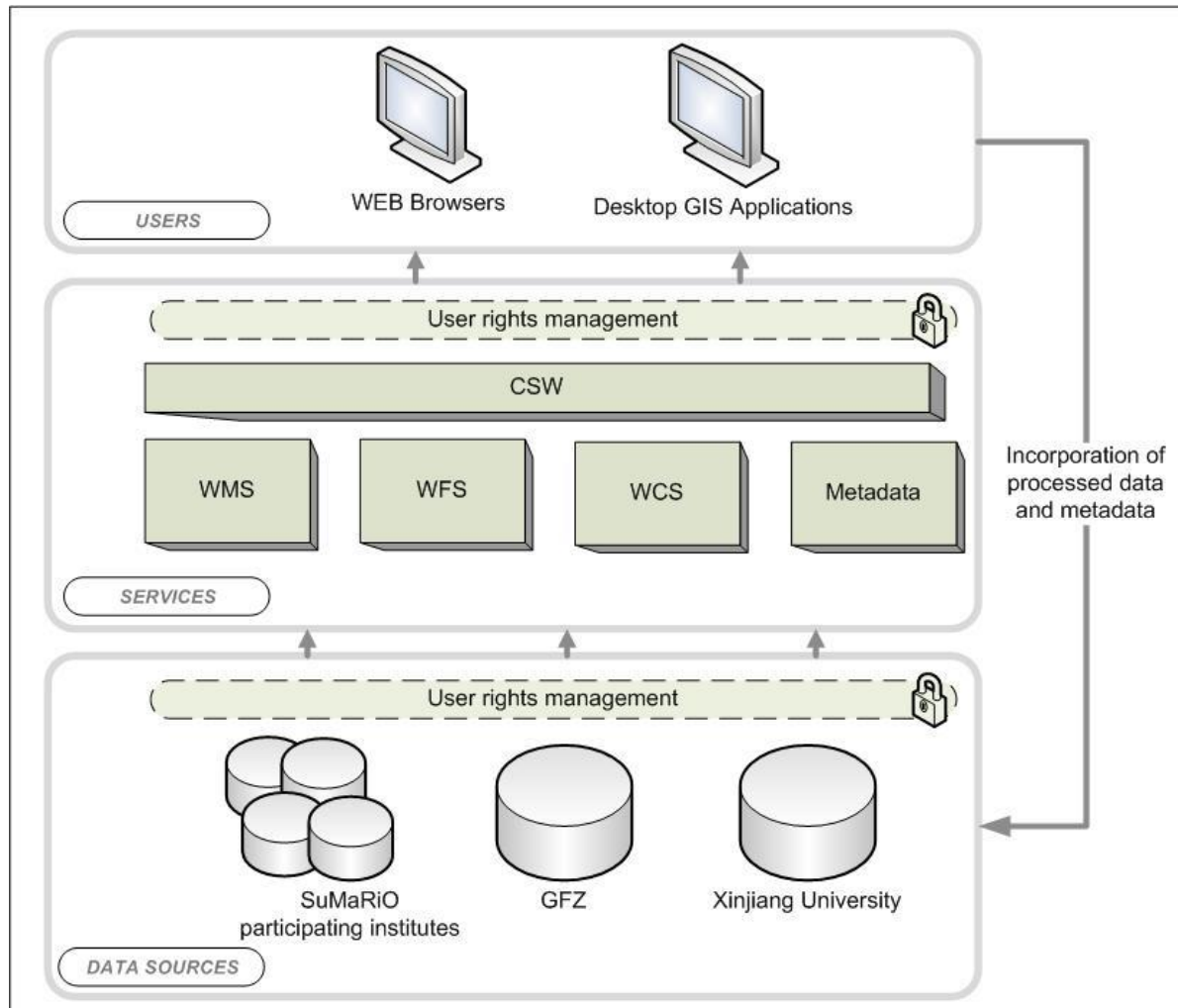


Protocols

CS-W,
WMS,
WFS,
SWE...



Data Management Framework (SDI-node)



Road Map

- Identifying of user and system requirements
- Identifying data sources in respect to the requirements
- Designing of an operating and a data base concept
- Implementation of servers at GFZ and Xinjiang University (other institutes will follow)
- Connecting the servers via Web services
- Attaching metadata through own SuMaRiO Metadata editor PanMetaDocs, Establishing of a user rights management

Outcomes & Summary

- A SDI-node in which databases, servers and websites are combined to an easy to use services for scientists
- More or less technical solution
- But scientific benefit can be generated by enhancing existing solutions or developing new tools
- Because: IT development is really fast, few problems become urgently, like metadata handling, data provenance, sensor integration

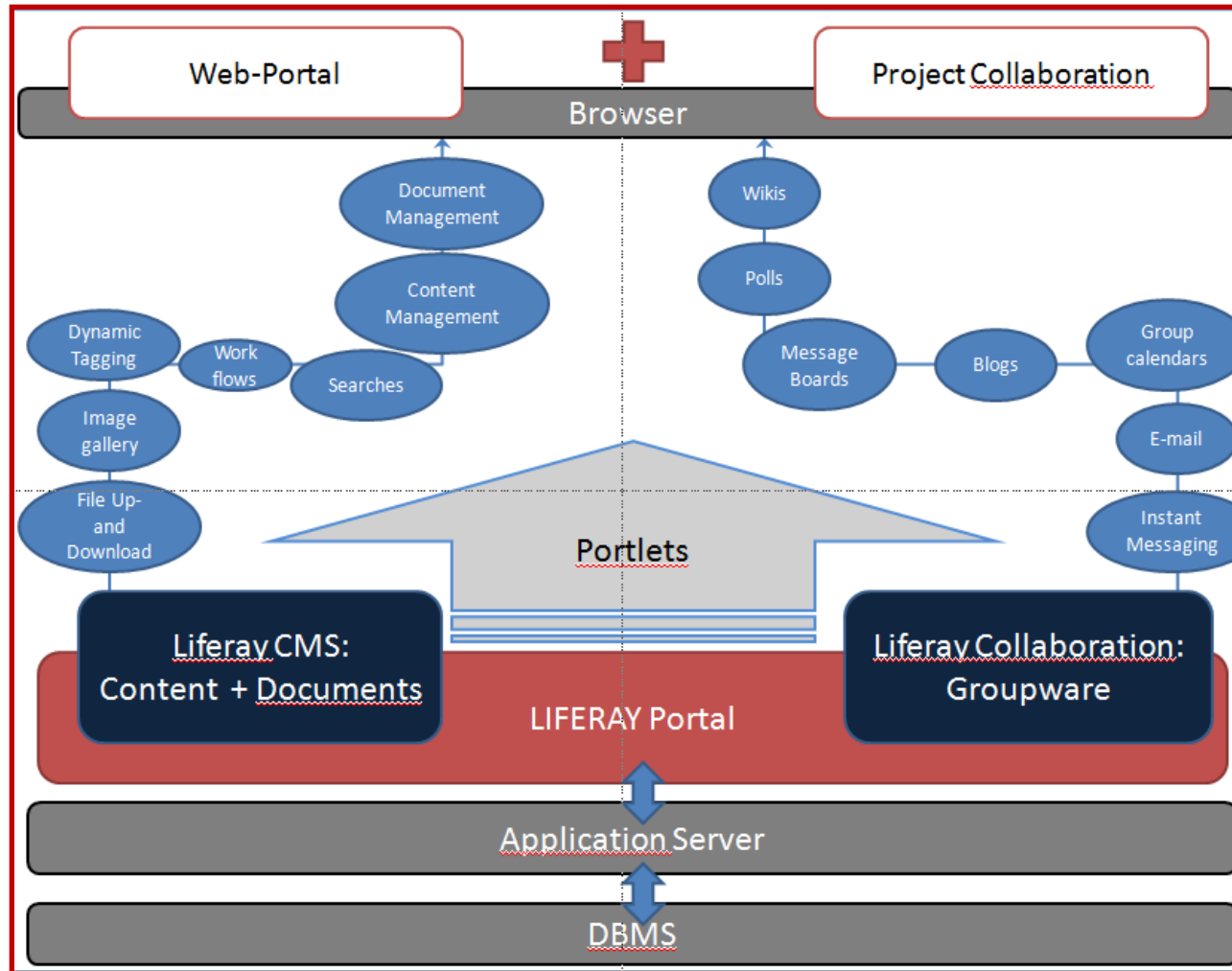
Open Questions

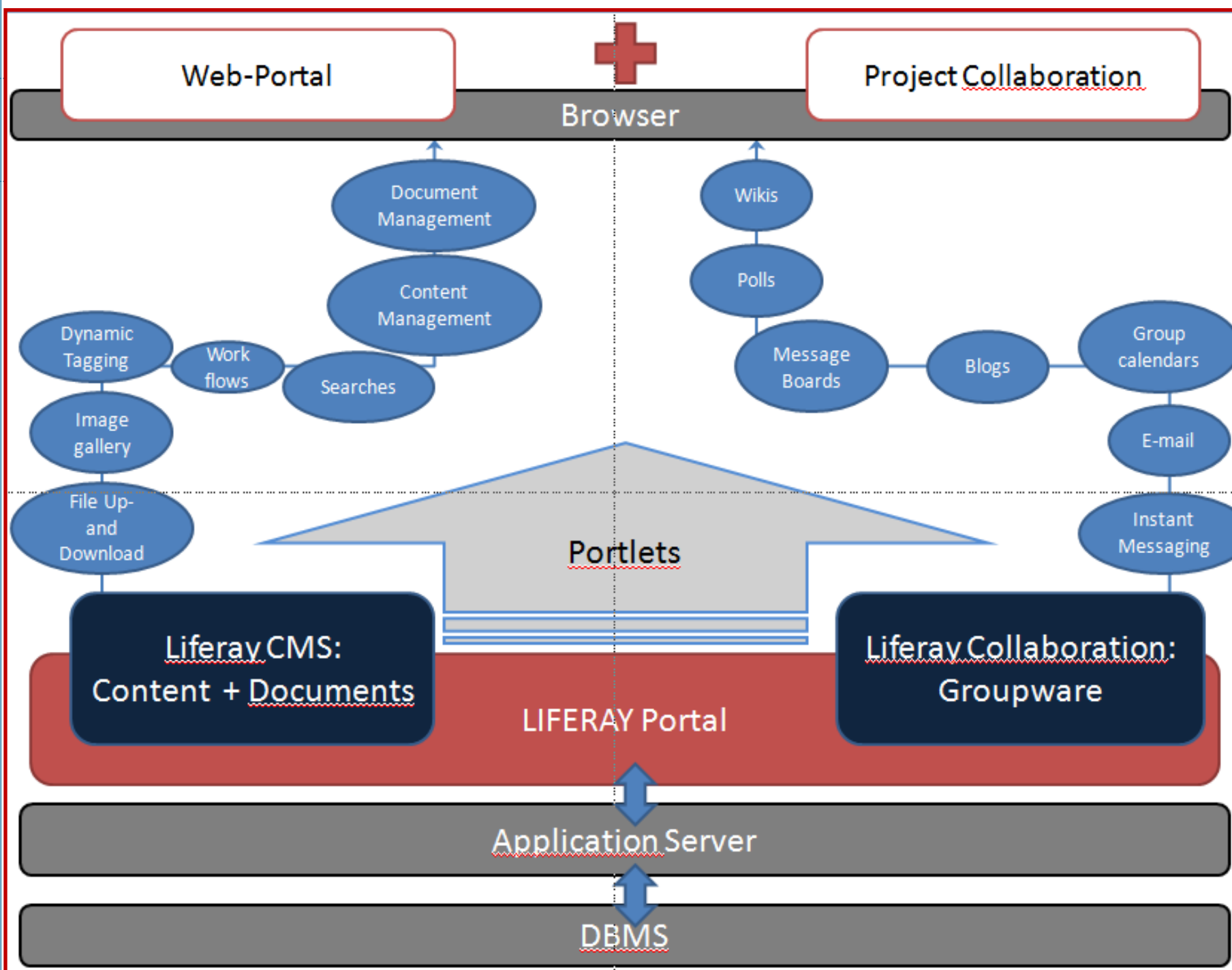
- Which data comes from SuMaRio scientists ?
- Possibility to use spatial base data from Tarim region?
- How can the data be ingested into the DBs?
- Will there be linkages for a direct import for sensor data?
- Which technical solution is preferred, commercial or Open Source software?
- How can co-operation be filled with lives?
- Do we need an official common agreement?

END

Thanks for your attention!

Additional: Project Portal







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SuMaRiO > Welcome

Welcome to SuMaRiO - Sustainable Management of River Oases along the Tarim River

The overarching goal of SuMaRiO is to support oasis management along the Tarim River under conditions of climatic and societal changes. A main result envisaged is to develop an indicator-based Decision Support System (DSS) that allows a Sustainability Impact Assessment (SIA) within regional planning. This SIA will take into account the perspectives of all relevant actors and consider relevant Ecosystem Services (ESS) in the problem field of land and water management in the Tarim River Basin. The perspectives will be obtained and analyzed through a transdisciplinary research process. Then, under given scenario assumptions, possible actions and their impacts are estimated. In the implementation phase, the goal is to train Chinese partners in the use of the English and Chinese DSS.

The Tarim River is one of the largest inland rivers in the world and located in the Northwest of China. It is known worldwide for its natural resources, extreme climatic and hydrologic situation and vulnerable ecosystems. The river basin covers one million square kilometres. A large part of the basin is a relatively flat desert region with a mean annual precipitation of around 40 mm per year and has more than 3000 mm of evapotranspiration. Water resources are mainly provided by high mountain precipitation, seasonal snow and glacier melting which feed the Tarim River through its tributaries. Water resources and ecosystem stability are the most obvious and sensitive issues in this hyper-arid area.

During the past five decades, intensive exploitation of water resources, mainly by agricultural water consumption, has resulted in changes of the temporal and spatial distribution of water resources and has caused serious environmental problems in the Tarim River Basin. The ecosystems and the ecological processes dominated by natural vegetation are seriously impacted by water diversion for irrigation purposes. The SuMaRiO cluster (Sustainable Management of River Oases along the Tarim River / China) aims at changing the land management strategies in the River Oases towards more sustainability under serious environmental challenges. This will have positive effects for nearly 10 million habitants, of which 80% are ethnic minorities. In consideration of the ecosystem functions and ecosystem services of the environment, SuMaRiO will analyze best solutions integrating social, economic and ecologic issues.

