

MOIST – Multidisciplinary Oceanic Information SysTem: a data management system for multi-parametric observatories.



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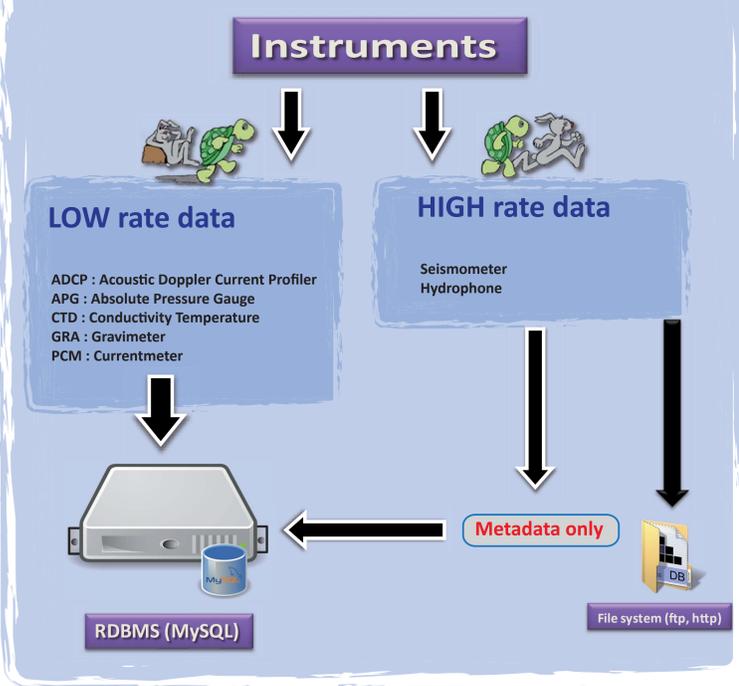
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Abstract:

Data management has recently become a big challenge in terms of storage capacity and data access in many disciplinary sectors. In the Earth Sciences, the development and use of multi-parameter seafloor observatories addressed to a multidisciplinary approach to the investigation of processes with different time scales (from seconds to decades), has posed the need to collect, organise and maintain a variety of long time series. MOIST (Multidisciplinary Oceanic Information SysTem) is a relational database initiated within the ESONET NoE project and now under development in the frame of the ESFRI European Research distributed Infrastructure EMSO - The European Multidisciplinary Seafloor and water column Observatory. MOIST is aimed at hosting multidisciplinary data and meta-data and is organised in two functional blocks. The core part is the harvesting engine that indexes data and keep track of the data source. It is the unique access point for EMSO data mining and retrieval. This central part is connected to the EMSO nodes, sited around European continental margin from the Arctic to the Atlantic, the Mediterranean and the Black Sea, which preserve their own data acquisition systems and databases. The MOIST overall configuration constitutes an e-infrastructure that takes care of all the data flow from acquisition to dissemination. To ensure a such working environment special attention is devoted to all standardisation aspects in terms of file formats, metadata, interoperability, transport protocols and shared vocabulary for keywords and parameters. Every EMSO node, besides a basic suite of sensors common to all nodes, can have its own specificity and scientific mission, therefore it will produce specific data with particular instruments. MOIST will support them in organising, indexing and transforming data into a compatible data scheme. MOIST is developed to adopt the most common standards (e.g., OGC, NASA, INSPIRE) for organising its information system. MOIST will serve the development of EMSO by organising the data management from the acquisition to their availability on the net, passing by migrating the existing heritage, as well, into the modern database. This guarantees the quality, completeness and availability for diverse sciences, anticipating the future by initiating a long-term data preservation strategy. The harvesting and data retrieval system will be a full-web architecture and can be joined using a web browser only, independently from any operating system. A user-friendly interface will integrate and be able to represent all the data that are time or spatially related.

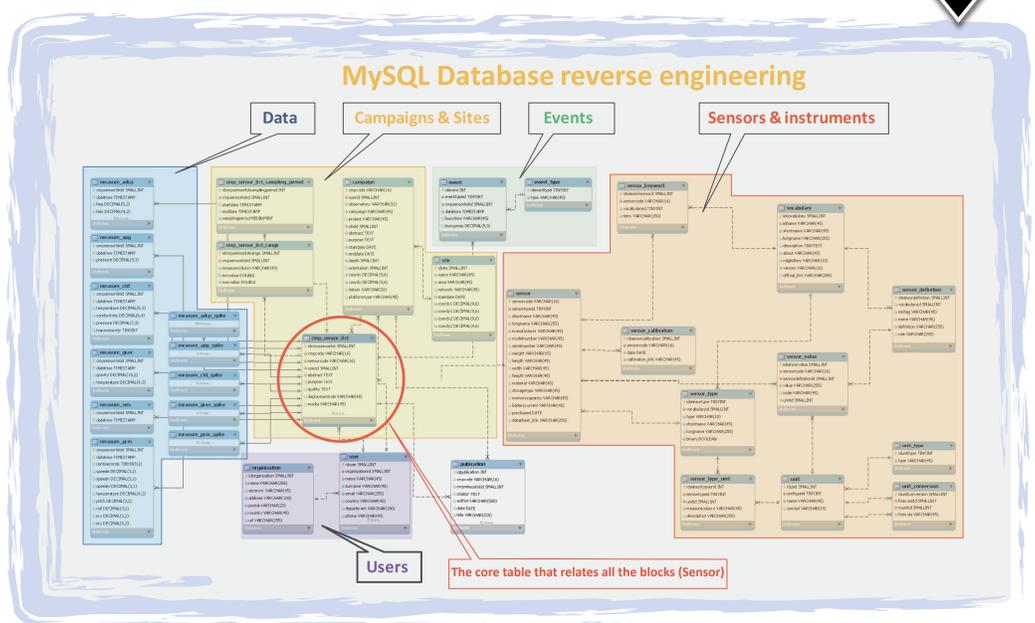


The data classification & Destination



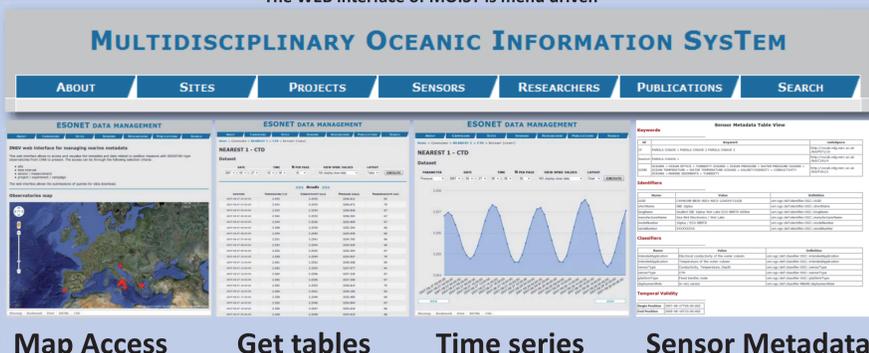
Multidisciplinary data are collected as ASCII or binary files stored on the file system. Data are differentiated by their sampling rate and nature. The low rate data (ADCP, APG,CTD etc...) are checked and inserted in a Relational Database Management System. The High rate data (Seismic, Hydrophones) are indexed, described by a metadata files that will reside in the same RDBMS. The metadata will describe the data and also their position in order to be downloaded. The data are inserted in the respective tables thanks to a server-side scripts.

The database is constructed around the Sensor table that represents the origine of the data. The tables are organized in functional blocks. The structure is dynamic and can receive other type of sensors and hence the corresponding data tables



The data Dissemination & Outreach

The WEB interface of MOIST is menu driven



The data are organized in a RDBMS and hence a WEB application for querying, plotting and downloading the data is possible. MOIST is a data management system with a WEB application at <http://moist.rm.ingv.it>. It is possible to query the data using a map or web-form oriented interface. The site is OpenSearch compliant. The PHP code-behind can produce on the fly several types of file as an exporting facility (zipped CSV, json, NetCDF, KML). MOIST adopts several standards for organized data. such as SensorML for the sensors registry, the NASA-DIF standard for the measure description.



Some mouse Clicks:

INGV : <http://www.ingv.it>
 EMSO : <http://www.emso-eu.org/management/>
 MOIST : <http://moist.rm.ingv.it>
 ESONET NoE : <http://www.esonet-emso.org>