

## Introduction

The aim of ERIS, as part of the research unit "Earth rotation and Global Dynamic Processes (FOR 584)", is to describe the rotation of the "System Earth" taking into account the influence of the various sub-systems of Earth, e.g. ocean, atmosphere, etc.

ERIS follows a holistic approach to describe the Earth rotation by aggregating datasets and models coming from various fields of geosciences in heterogeneous formats.

Up to now ERIS provides:

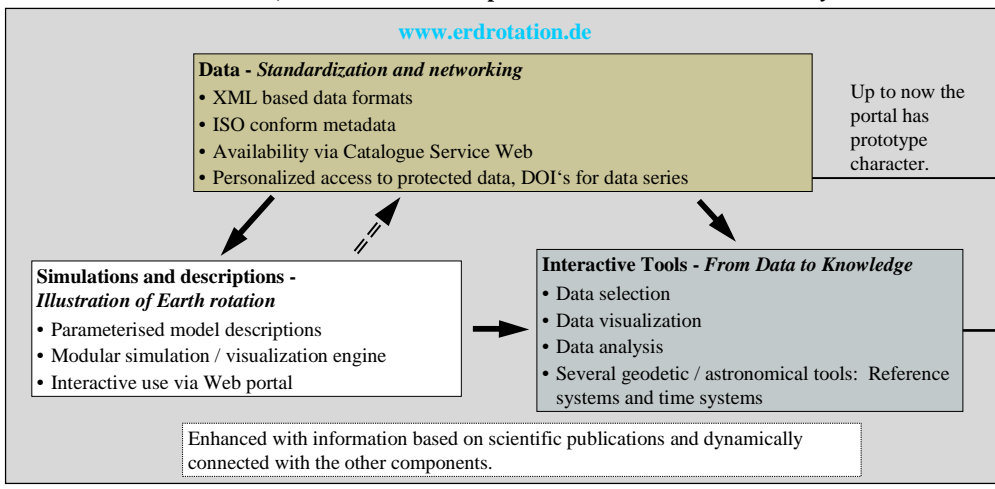
- **Observational and analytical data:** structured access to all relevant and available data produced by several institutions and organisations
- **Methodological information and interactive tools:** Interactive analysis and visualization of data allowing to execute typical and frequently needed operations on the available datasets

ERIS will provide standardization of data and metadata and connect them with (at least) standardized description of models. This will enable the application of interoperable tools for enhanced network based data access, data visualization and data analyses, etc.

To realize this approach the main tasks of ERIS are:

- Data - Standardization and networking
- Interactive Tools - From Data to Knowledge
- Simulations and descriptions - Illustration of Earth rotation

## The main modules of ERIS, included in the Web portal *Earth Rotation and Global Dynamic Processes*

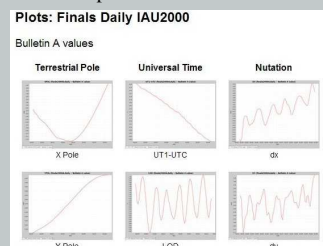


## Data preparation

- Transformation of data series (EOP, AAM, OAM etc.) into standardized data formats based on XML
- Generation of several output formats like PDF or HTML from XML versions (realized by applying the XML technology XSLT)
- Generation of metadata for scientific data, using schema-validated XML, too
- Development of interfaces for data networking
- The most important EOP series are actually presented - available for download in different file formats and completed by links to metadata files.

## Geodetic and astronomic tools (SOFA)

- **Data visualization**
  - Generation of data plots of all versions of the data series presented
  - For each series a compendium of plots of all parameters is presented
  - Single plots for each parameter are accessible



## Interactive data analysis tool (screenshot showing a preliminary design)

Data – load data files  
 Procedure – run analysis operations  
 Output – results as data and visualizations

available analysis operations

chosen data file

storage of intermediate results

apply to data series of the ERIS and IERS data archives as well as to own data

architectural framework based on a classical client-server-approach

development will be finished in Sept./Oct. 2008 and the tool will be available for public use in the beginning of 2009

## Specialized data reader

- Extraction of a single day from EOP data series by entering date as Gregorian date or as MJD
- Access to data series of the IERS data archive (Bulletin A and B, Finals Daily, Finals Data, Finals All, C04)

**EOP Reader Result**

EOP-Data taken from C04 05:

Date: 11.2008  
 MJD: 54666

X Pole	[arcsec]	-0.000518	err X Pole	[arcsec]	0.000012
Y Pole	[arcsec]	0.258431	err Y Pole	[arcsec]	0.000015
UT1-UTC	[sec]	-0.2732049	err UT1-UTC	[sec]	0.0001474
LOO	[sec]	0.0003044	err LOO	[sec]	0.0000195
nutation dx	[arcsec]	-0.000433	err dx	[arcsec]	0.000062
nutation dy	[arcsec]	0.000023	err dy	[arcsec]	0.000127

## Future Work

- Extended plot tool: Interactive user interface to configure plots on demand and generate them on the fly
- Extended EOP reader: Extraction of time sections and parameters and export of the resulting data in different file formats
- Models and simulations: Simulation and visualisation of basic models of Earth rotation and Comparison of simulated data with observational data