

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:

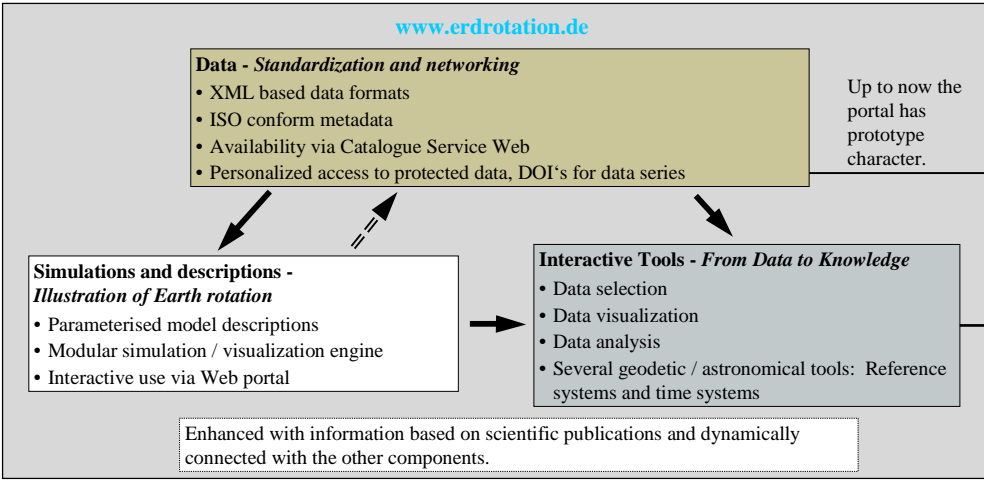
- **Observational and analytical data:** structured access to all relevant and available data produced by several institutions and organisations
- **Methodological information and interactive tools:** Interactive analysis and visualization of data allowing to execute typical and frequently needed operations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

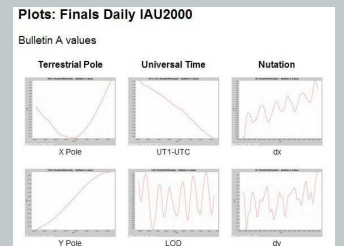


Data preparation

- 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

x	Filtered Value
37.665,0	-0,021149
37.666,0	-0,019843
37.667,0	-0,01841
37.668,0	-0,017245
37.669,0	-0,015743
37.670,0	-0,014499
37.671,0	-0,013314
37.672,0	-0,011981
37.673,0	-0,010697
37.674,0	-0,009456
37.675,0	-0,008259
37.676,0	-0,007099
37.677,0	-0,006172
37.678,0	-0,005078
37.679,0	-0,004011
37.680,0	-0,002968
37.681,0	-0,001943
37.682,0	-0,000938

- 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: 11.2.2008
 MJD: 54466

Parameter	Value	Unit	err	Parameter	Value	Unit	err
X Pole	-0.000518	[arcsec]	0.000012	err X Pole	0.000012	[arcsec]	
Y Pole	0.258431	[arcsec]	0.000015	err Y Pole	0.000015	[arcsec]	
UT1-UTC	-0.2732049	[sec]	0.0001474	err UT1-UTC	0.0001474	[sec]	
LOQ	0.0003341	[sec]	0.0000195	err LOQ	0.0000195	[sec]	
nutations dx	-0.000433	[arcsec]	0.000062	err dx	0.000062	[arcsec]	
nutations dy	0.000023	[arcsec]	0.000127	err dy	0.000127	[arcsec]	

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