

ADEI AND TANGO ARCHIVING SYSTEM – A CONVENIENT WAY TO ARCHIVE AND REPRESENT DATA

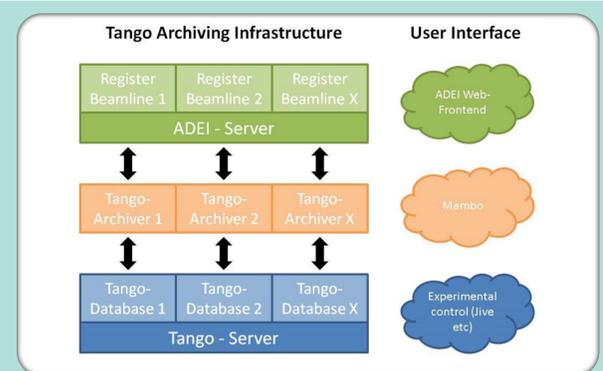
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ABSTRACT

Tango offers an efficient and powerful archiving mechanism of Tango attributes in a MySQL database. The tool Mambo allows an easy configuration of all to be archived data. This approved archiving concept was successfully introduced to ANKA (Angströmquelle Karlsruhe). To provide an efficient and intuitive web-based interface instead of complex database queries, the TANGO Archiving System was integrated into the “Advanced Data Extraction Infrastructure ADEI”. ADEI is intended to manage data of distributed heterogeneous devices in large-scale physics experiments. ADEI contains internal preprocessing, data quality checks and an intuitive web interface, that guarantees fast access and visualization of huge data sets stored in the attached data sources like MySQL databases or data files. ADEI and the Tango archiving system have been successfully tested at ANKA's imaging beamlines. It is intended to deploy the whole system at all ANKA beamlines.

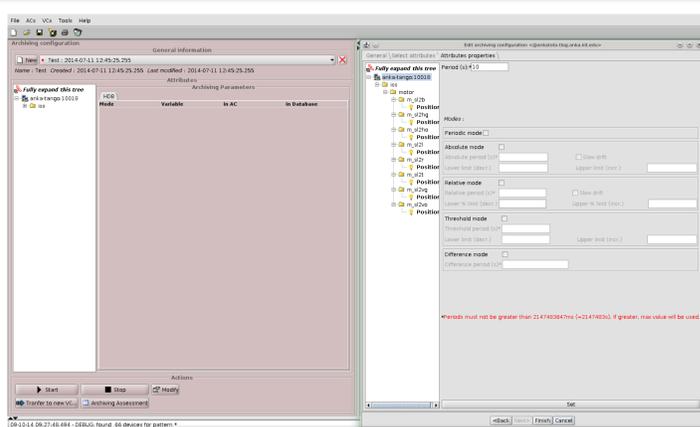
GENERAL STRUCTURE OF THE TANGO ARCHIVING AT ANKA

- The basic archiving system is based on the proved Tango Archiving system.
- Each Tango database (one for each beamline) has it's own Tango Archiving System with it's own MySQL database where the data is archived. This database can be read/write with the Tango-Servers “Archiver” and “Extractor”.
- The data which has to be archived is set up by the user friendly tool Mambo.
- The archived data is represented by the absolute convenient Web front end ADEI.
- For all servers is no special hardware required.
- The complete system can be installed in an easy and fast way.



WORKFLOW OF ARCHIVING AND REPRESENTING TANGO DATA

1. MAMBO: Archiving data



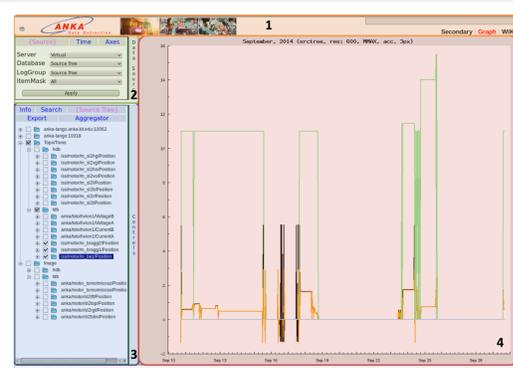
Screenshot of Mambo to configure the archived Tango data.

- Mambo is a GUI to configure the Tango attributes which has to be archived
- Mambo is connected to the underlying Tango-Servers “Archiver” and “Extractor” which are connected to the archiving MySQL databases.
- You have a temporal database and a historical database to archive Tango attributes
 - Temporal database:
 - Min period saving a data point: 100 ms
 - Duration of saving data: 3 days
 - Historical database:
 - Min period saving a data point: 10 s
 - Duration of saving data: unlimited

Where to get it?

<http://www.tango-controls.org/tools/archiving-system-2/archivingsystem>

2. ADEI: Representing data



Screenshot of ADEI Web Front-end for the ANKA Tango Archiving System. The data from ANKA slow control system (Bragg axes at the Topo-Tomo beamline) is rendered in the plot. (1) main menu, (2) dropdown-menu for selecting server respectively beamline, (3) data selection, (4) plot of the selected data.

- Support for long running experiments and high data rates
- Fast and intuitive browser through experiment database
- Intelligent caching for optimal performance
- Platform independent programming interface
- Easy integration with major data analysis frameworks
- Fast & flexible navigation
- Support for gestures on multi-touch devices (iPhone, iPad)
- Works in all major browsers
- Display multiple plots and axes
- Multiple modes of aggregation
- Data filtering and interpolation
- Flexible export subsystem supporting multiple formats: CSV, Excel, ROOT, TDMS, Matlab

Where to get it?

<http://adei.info>

CONCLUSION & OUTLOOK

The whole system can be setup in fast and easy way with only a small amount of work. The concept has been proved to be absolute stable and reliable. The big advantage of the whole system is that it's connecting the Tango archiving system with a total user-friendly web-based user interface to read out the logged data. Due to the ADEI architecture the visualization of huge datasets is extremely fast. After several months of testing phase it has been proved that the beamline and experiment status can be represent in a convenient and transparent way. As it has been previously emphasized, the Tango archiving system connected to the web front-end ADEI is implemented at the Topo-Tomo as well as at the Image beamline. The remaining challenge is now to implement it to all ANKA beamlines. This is scheduled for the beginning of 2015.