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SMART STRUCTURED MEASUREMENT PROCESS FOR VERSATILE SYNCHROTRON BEAMLINE DATA AT ANKA

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ABSTRACT The achievement of the scientific results depends more and more from the offered opportunities of embedding *measurement data* into its specific context with a *metadata* description and a complete *life cycle management*. At ANKA we have set up a smart structured measurement process which stand out due to its seamless integration into the overall data management, the support of recent control concepts for fast data generation as well as its support of well time-tested SPEC based scan systems. The presented measurement process focuses to the minimal implementation for all involved components without a break of well accepted habits.

The distribution of experimental data as it shown in fig. 2 (symbolised by disks) allows a very flexible instrumentation and a *fast* data production and storage. At the same time storage bottlenecks are avoided. The idea of TANGO[1] focus to the retrieval of measurement data with high speed and rate. A special *concept of logging* scientific metadata is *currently not addressed* by the control system.

In order to provide these spread data for contemporary data management approaches (data catalogue systems like LSDF[2] or ICAT (chosen by PaNdata [3])) special attention to the logging was spent. The experiment coordination service (ECS) was introduced to bridge this gap.

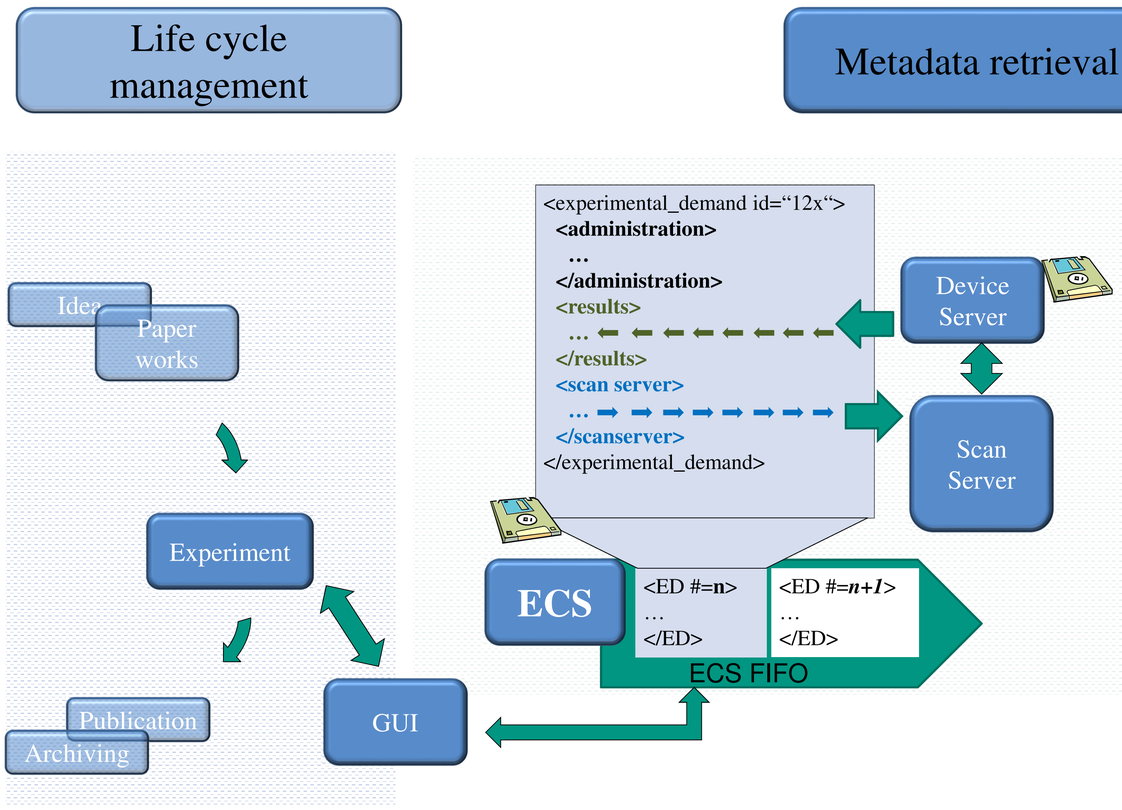

Figure 1: Metadata retrieval becomes a central key in the management of scientific data. The complexity of contemporary experiments is constantly growing due to progresses in the development of control systems. In order to avoid a loss of information the challenge is to provide concepts to collect sufficient contextual metadata. At ANKA a special TANGO device – the Experiment Coordination Service ECS – is dedicated to that problem.

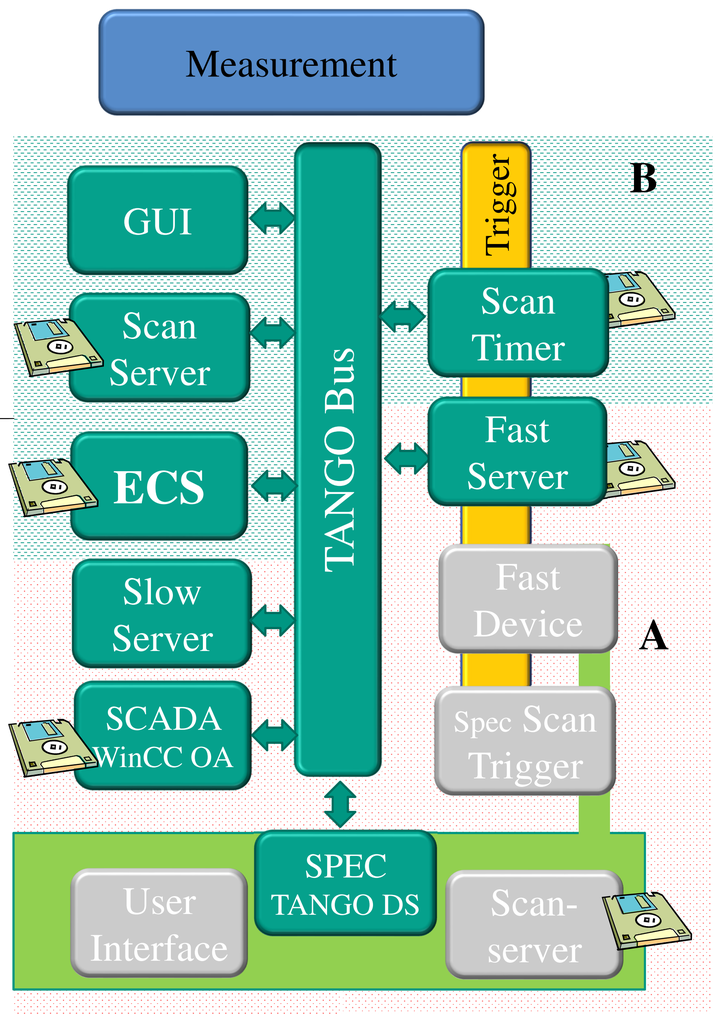

Figure 2: Principal experiment layout for ANKA beamlines. The *part A* is productive. The SPEC server/client integration [6] enables options for slow and fast experiments. The trigger system (yellow) guarantees the synchronisation during the scans. The *part B* is currently introduced at ANKA.

The ECS manages an order queue (FIFO) of experimental demands (ED) (see fig. 1). As the majority of other interactions to that device they are injected as a string by a simple TANGO command. The string is formatted as a XML based telegram. Created data has to be announced to the ECS by the cooperating scan server or other special devices (e.g. WinCC OA [5,7]). Typical collected information are filenames and data locations, peripheral logging data, owner of the data and directives for their further processing. The measured data itself is not touched at this stage of processing.

SUMMARY At ANKA we have set up a new smart structured measurement process (ECS). The new at ANKA introduced smart concept offers the base for the implementation of the desired automated overall data management with minimised efforts. The ECS itself was introduced into the well time-tested SPEC measurement environment without breaking accepted habits and SPEC was improved to act in the TANGO environment as a virtually divided cooperating UI and scan server.

REFERENCES

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