

3.3-P14. IDCDACS: IDC's Distributed Application Control System ported to Open Technologies

The Distributed Application Control System (DACS) is the backbone of the automatic processing of seismic, hydro-acoustic and infrasound (SHI) waveform data at the IDC. It drives the execution of processing applications by organizing data into time intervals, processing steps into pipelines, and using message queues for task scheduling. Because licensed software hampers free distribution and use of IDC software to and by National Data Centres, IDC eliminated the dependency on the proprietary Tuxedo middleware. We redesigned the existing system and implemented the new IDCDACS based on an open-source messaging solution in combination with existing in-house IDC libraries and a custom-developed application framework, which together replace Tuxedo in a robust, reliable and scalable way. Our solution utilizes the RabbitMQ high availability message broker and the Advanced Message Queuing Protocol (AMQP), an open industry standard and wire-level protocol mandating that senders and recipients can interoperate irrespective of their specific implementation. The new IDCDACS was implemented using the Scrum agile development methodology, aligned with evolving requirements and priorities. IDCDACS is flexibly configurable to control different processing applications and pipeline-like processing workflows, i.e. it is by design not limited to SHI data processing, which is the primary use case at the IDC.

Primary author: ERTL, Martin Franz (CTBTO)

Presenter: ERTL, Martin Franz (CTBTO)

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