

14th Technical Meeting on Control Systems, Data Acquisition, Data Management and Remote Participation in Fusion Research

Contribution ID: 128

Type: Oral

JET CODAS The Final Status

Tuesday, 16 July 2024 09:00 (20 minutes)

The JET Control and Data Acquisition System has stood the test of time and seen us through to the end of JET Operations in 2023. The system architecture has remained largely un-changed over the last decade or so although many new diagnostics and control systems have been added and the volume of data collected has grown massively. CAMAC remains at the heart of the system, particularly for continuous acquisition and control for much of the traditional, stable parts of the system. However most of the newer diagnostics and control systems are network connect network attached. A significant change was done to the CAMAC interface was done about a decade ago to remove the Serial Highway driver from the Sub-System host so that the Sub-System hosts could be virtualised and run on more powerful Oracle/Sun hosts, the hardware interface the Serial Highway driver running on legacy sub-system host network attached. Other significant changes have been the development of a standard, web based interface for control and data acquisition for diagnostics –the Black Box interface, the adoption of EPICS for several diagnostics and plant control along with integration into CODAS and the adoption of the ITER SDN protocols over ethernet to supplement the original ATM based real time control infrastructure. The SDN bridge created a natural basis from which to implement an upgrade to the plasma control system using MARTe2. Various improvements were done during the COVID-19 era to improve remote collaboration including the introduction of web access to the traditional mimics.

These developments were primarily driven by the enhanced requirements for the 2nd and 3rd Tritium campaigns on JET which included significant expansion of the neutron and gamma diagnostics along with expansion of the Tritium introduction systems and enhanced control systems. Towards the end of JET Operations the requirement for the Laser Induced Desorption (LIDS-QMS) required significant development work to incorporate the associated control and data acquisition systems together with pushing the mode of operation for JET Pulses. At the very end of JET Operations the requirements for long pulse operation also pushed the pulse operating mode. We now progress to Decommissioning and Repurposing JET and CODAS continues to be adapted to support the diminishing number of systems required to support the plant that is still operational and support diagnostic calibration later this year.

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Session Classification: Machine Control, Monitoring, Safety and Remote Manipulation

Track Classification: Machine Control, Monitoring, Safety and Remote Manipulation