

Introduction of ITER CODAC Relevant Technologies on JET and MAST

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The JET control and data acquisition system (CODAS) is an integrated system that provides all the pulse based and continuous data acquisition, real time and slow control and control room interfaces for JET. It has a long history, dating back to the beginning of JET in 1980. It utilises both commercially available hardware along with many in-house modules. The software has grown up and evolved largely independently of other developments in big science. Similarly, the data acquisition system on MAST has a long history of evolution from previous facilities at Culham (COMPASS). It utilises commercially available and in-house hardware (some shared with JET CODAS) and software that has developed largely independently of JET and other external developments. More recently, we have begun to adopt some ITER CODAC relevant technologies on both JET and MAST, in part, to also introduce some standardisation between the two facilities. This started with a pilot project to create a cubicle and environment monitoring system using commercial hardware and EPICS monitoring and HMI. We have since gone on to implement several camera and spectrometer filter controllers, several types of turbomolecular pump controller, and various radiation protection monitors in EPICS on JET. We are also implementing a central information display system for MAST that links the OPC interface on the machine control through to several display screens showing the machine state using EPICS. We have several MARTE based real time applications on JET and are now developing an application to provide real time proceeding of high-resolution Thomson scattering data using MARTE V2 (an ITER/F4E initiative to improve the robustness of this real-time framework). We are also considering upgrading the existing MARTE applications to this version. On JET we have also started to use another ITER CODAC technology –SDN to supplement the ATM based real time control network on JET. Initially, as a proof of principle, a real time plasma profile display was implemented. This system is now being extended to include several real time data sources which will feed their data back into the ATM network and on to the real time controllers. Looking forward, we anticipate extending the JET real time network with a purely ITER CODAC/SDN connected real time control system and provide a richer ITER CODAC interface to the JET CODAS to accommodate the possibility of ITER diagnostics testing and provide a real stress test for ITER archiving technologies.

Primary authors: Dr WATERHOUSE, John (United Kingdom Atomic Energy Authority); STEPHEN, Adam (UKAEA); PETRELLA, Nicoletta (UKAEA)

Presenter: Dr WATERHOUSE, John (United Kingdom Atomic Energy Authority)

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