Contribution ID: **569** Type: **Oral (Plenary Session)**

WestBox: an object-oriented software component for WEST CODAC

Monday, 13 May 2019 14:05 (5 minutes)

Control, Data Acquisition and Communication (CODAC) real-time software codes are key elements for the operation of a fusion device as they can play a key role both for the machine protection and for the optimization of the experiments. In 2013, following the WEST project (W -for tungsten- Environment Steady-state Tokamak) upgrade, the whole legacy acquisition system has been refactored.
The WEST CODAC framework which inherited the older implementations used over 20 years on TORE Supra has been cut into primary software pieces called components, corresponding to basic technical features, such as Database Access, Inter-process Communications, Real-time Device Management, Synchronization Network, States Machine, and Shared Memory Network. In addition, a new component has been developed to integrate non-native and cross-platform data acquisition hardware and software from guest collaborators.
The paper describes this software component named WestBox implemented in an object-oriented approach and based on Qt framework for enhanced code portability. This allowed using new standard software technologies, notably Web based, from industry. It includes a modular Message Oriented Middleware (MOM) interface based on the Internet of things (IoT) connectivity. It also provides support for the integration of National Instruments LabVIEW controllers using normalized WebSocket protocol. It will further propose a control panel for remote monitoring of the data acquisition units through a web browser and remote logging of events.
The WestBox software component has been successfully operated over two years on WEST experimental campaigns. Current developments aim at including support for ITER data storage standards as MDSplus, and IMAS inside the WEST CODAC framework.

Primary authors: CAULIER, Gilles (French Alternative Energies and Atomic Energy Commission); COLNEL, Julian (CEA-IRFM, F-13108 Saint-Paul-lez-Durance, France)

Co-authors: RAVENEL, Nathalie (CEA-IRFM, F-13108 Saint-Paul-lez-Durance, France); SANTRAINE, Benjamin (French Alternative Energies and Atomic Energy Commission)

Presenter: CAULIER, Gilles (French Alternative Energies and Atomic Energy Commission)

Session Classification: Minioral

Track Classification: Plasma Control