EPICS Collaboration Meeting

Report of Contributions

Contribution ID: **13**   Type: **Oral**

OPC UA Device Support - Update

Sunday, 8 October 2023 10:00 (20 minutes)

In a collaborative effort (ITER/HZB-BESSY/ESS/PSI), a Device Support for the OPC UA industrial SCADA protocol is under development. Goals, status and roadmap will be presented.

Topic

Other

Primary author: LANGE, Ralph (ITER Organization)

Presenter: LANGE, Ralph (ITER Organization)

Session Classification: EPICS Core and Device Support

Track Classification: Please click on session to see scheduled talks.: EPICS Core and Device Support

Contribution ID: 14   Type: **Oral**

EPICS Core Developments & Plans

Sunday, 8 October 2023 10:20 (20 minutes)

Recent developments and future plans for EPICS Base from the EPICS Core Developer's Group.

Topic

EPICS 7

Primary author: LANGE, Ralph (ITER Organization)

Co-authors: DAVIDSAVER, Michael (Osprey DCS); JOHNSON, Andrew (Argonne)

Presenter: LANGE, Ralph (ITER Organization)

Session Classification: EPICS Core and Device Support

Track Classification: Please click on session to see scheduled talks.: EPICS Core and Device Support

Contribution ID: **15**   Type: **Oral**

EPICS Documentathon report

Sunday, 8 October 2023 09:15 (15 minutes)

The talk will give an overview of the Documentathon: what was achieved and what are the plans moving forward.

Topic

Other

Primary author: KORHONEN, Timo (European Spallation Source ERIC)

Presenter: KORHONEN, Timo (European Spallation Source ERIC)

Session Classification: EPICS Organizational

Contribution ID: **16**   Type: **Oral**

Accelerator Control Development at iThemba LABS: Road to EPICS and beyond

Sunday, 8 October 2023 08:45 (15 minutes)

iThemba Laboratories for Accelerator Based Science (LABS) was established in the 1980s to support the nuclear physics research community and to produce radioisotopes for nuclear medicine applications. This paper outlines the development of the iThemba LABS accelerator control system from mini-computers running RTE and CAMAC instrumentation, through to a system based on a LAN of PCs running OS/2 and in-house developed SABUS instrumentation. In the late 2000s the accelerator control system was migrated to the EPICS platform. Several drivers were developed to interface with the existing CAMAC and SABUS hardware. In 2015, in order to meet the changing technology and user requirements, iThemba LABS adopted EtherCAT as its new industrial communication standard. A number of software and tools have been developed and several hardware modules integrated and tested. A new web-based framework, React Automation Studio (RAS), was also developed in-house for operation of control systems. Many of these tools are being used at the new South African Isotope Facility (SAIF). Various applications, challenges and the ongoing and future developments using EPICS are presented.
Keywords: iThemba LABS, control system, CAMAC, SABUS, OS/2, EPICS, EtherCAT, RAS, SAIF

Topic

Other

Primary author: ABRAHAM, Justin (iThemba LABS)

Co-authors: Mr ANDERSON, Hein (iThemba LABS); Mr CROMBIE, Amien; Dr DUCKITT, William (Stellenbosch University); Mr ELLIS, Cheslin (iThemba LABS); Mr HOGAN, Michael (iThemba LABS); Mr KOHLER, Ivan; Mr MOSTERT, Hendrik; Ms MVUNGI, Maria; Ms OLIVA, Camelia (iThemba LABS); Dr PILCHER, John; Mr STODART, Nieldane (iThemba LABS)

Presenter: ABRAHAM, Justin (iThemba LABS)

Session Classification: EPICS Organizational

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **17**   Type: **Oral**

EPICS Beamline Controls Strategy for the APS Upgrade

Sunday, 8 October 2023 13:45 (15 minutes)

<tbd>

Topic

Other

Primary author: SULLIVAN, Joseph (Argonne National Laboratory)

Co-authors: Mr GOETZE, Kurt (Argonne National Laboratory); Mr JEMIAN, Pete (Argonne National Laboratory); Mr LANG, Keenan (Argonne National Laboratory); Mr MOONEY, Tim (Argonne National Laboratory)

Presenter: SULLIVAN, Joseph (Argonne National Laboratory)

Session Classification: Project Reports

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **18**
Type: **Oral**

The decade long transition from a custom control system to EPICS

Sunday, 8 October 2023 13:15 (15 minutes)

The Karlsruhe Research Accelerator (KARA) at the Karlsruhe Institute of Technology in Germany has been in operation for over 20 years now. It originally started with a custom control system using custom hardware control boards. After adding a second independent control system to be able to handle PLCs, the arrival of new diagnostics for the accelerator with built-in EPICS support triggered the decision to fully migrate to EPICS. After a period of over 10 years the very last remaining parts of the original control system were switched off this year. This presentation will discuss the process of this decade long transition process.

Topic

Hybrid Systems

Primary author: BLOMLEY, Edmund (Karlsruhe Institut of Technology (KIT))

Presenter: BLOMLEY, Edmund (Karlsruhe Institut of Technology (KIT))

Session Classification: EPICS Upgrades

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **19**   Type: **Oral**

Running a major facility (almost exclusively) on pvAccess

Sunday, 8 October 2023 10:40 (20 minutes)

ESS has been moving towards using pvAccess (PVA) as its main EPICS protocol. For the commissioning round this spring, we switched the default protocol for our user applications (CS-Studio Phoebus) to PVA. The talk reports our experience of running almost exclusively on PVA, the (few) issues we encountered and comparing the experience with CA.

Topic

EPICS 7

Primary author: KORHONEN, Timo (European Spallation Source ERIC)

Presenter: ROSE, Simon

Session Classification: EPICS Core and Device Support

Track Classification: Please click on session to see scheduled talks.: EPICS Core and Device Support

Contribution ID: **20**   Type: **Oral**

Diamond-II Project and Controls

Sunday, 8 October 2023 14:00 (15 minutes)

The Diamond-II upgrade Project has been awarded funding from the UK Government. This talk will present the project and the impact on the control systems.

Topic

Other

Primary author: ROSE, Austen (Diamond Light Source)

Presenter: ROSE, Austen (Diamond Light Source)

Session Classification: Project Reports

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **21**   Type: **Oral**

Progress of the EPICS Transition at the ISIS Accelerators

Sunday, 8 October 2023 12:45 (15 minutes)

The ISIS Neutron and Muon Source accelerators have been controlled using Vsystem running on OpenVMS / Itaniums, while beamlines and instruments are controlled using EPICS. We outline the work in migrating accelerator controls to EPICS using the pvAccess protocol with a mixture of conventional EPICS IOCs and custom Python-based IOCs primarily deployed in containers on Linux servers. The challenges in maintaining operations with two control systems running in parallel are discussed, including work in migrating data archives and maintaining their continuity. Semi-automated conversion of the existing Vsystem HMIs to EPICS and the creation of new EPICS control screens required by the Target Station 1 upgrade are reported. The existing organisation of our controls network and the constraints this imposes on remote access via EPICS and the solution implemented are described. The successful deployment of an end-to-end EPICS system to control the post-upgrade Target Station 1 PLCs at ISIS is discussed as a highlight of the migration.

Topic

EPICS 7

Primary author: FINCH, Ivanfinch (STFC ISIS)

Presenter: FINCH, Ivanfinch (STFC ISIS)

Session Classification: EPICS Upgrades

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **22**   Type: **Oral**

Review of the open source EtherCAT Motion Control Framework

Sunday, 8 October 2023 15:00 (15 minutes)

The open source EtherCAT Motion Control (ECMC) framework originally developed at the European Spallation Source is a real-time Ethernet-based fieldbus system for distributed and synchronized systems. ECMC is built on top of the open source Etherlab master to communicate with and control EtherCAT devices, and is available as an EPICS module. The ECMC framework together with commercially available hardware is now in use at several light source facilities for digital and analog input/output and motion control for low to mid-performance applications. Here, we review the basic hardware and software requirements for a minimal EtherCAT system, the ECMC framework itself, the interface between ECMC and EPICS, and several supported motor operating modes. We will also review basic functionalities such as positioning, homing, limits, and PID loop tuning, and how more advanced features such as multi-axes synchronization, triggering, and interlocking can be used. Some recently added features will be presented as well.

Topic

Other

Primary authors: ACERBO, Alvin (Paul Scherrer Institut); SANDSTRÖM, Anders (Paul Scherrer Institut)

Presenter: ACERBO, Alvin (Paul Scherrer Institut)

Session Classification: Overflow and Discussion

Track Classification: Please click on session to see scheduled talks.: EPICS Core and Device Support

Contribution ID: **23**   Type: **Oral**

The Oxfordshire Series of EPICS Meetings

Sunday, 8 October 2023 09:00 (15 minutes)

A brief discussion of the Oxfordshire series of EPICS Meetings.

Topic

Other

Primary author: Dr MERCADO, Ronaldo (Diamond Light Source)

Co-author: ROSE, Austen (Diamond Light Source)

Presenter: ROSE, Austen (Diamond Light Source)

Session Classification: EPICS Organizational

Contribution ID: **24**   Type: **Oral**

Integrated Control System Architecture for STS Project

Sunday, 8 October 2023 14:15 (15 minutes)

STS Integrated Control Systems (ICS) provide integrated controls, data acquisition, computing infrastructure, and protection systems across all the STS technical areas. The development of ICS for the STS project builds on the existing SNS control system infrastructure that is based on the EPICS toolkit. This presentation will give an overview of STS control system architecture including software development environment, equipment management, device naming, and system integration.

Topic

Other

Primary authors: HARTMAN, Steven; KASEMIR, Kay; PEARSON, Matt (ORNL)

Co-author: YAN, Jay (ORNL)

Presenter: YAN, Jay (ORNL)

Session Classification: Project Reports

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **25**

Type: **Oral**

Current and future soft IOC usage at SIRIUS

Sunday, 8 October 2023 13:00 (15 minutes)

The SIRIUS synchrotron light source uses soft IOCs that extensively communicate with other IOCs and soft IOCs, in the accelerator itself and at the beamlines, to perform high level computations or orchestrations. Most of these soft IOCs are implemented in Python using the PCASpy library and, in some specific cases, the EPICS Sequencer module was also employed. This presentation not only aims to showcase these IOCs and our experience with them, but also to explore the future: our current solutions only work with the CA protocol, what are the options moving forward? Given the existence of solutions like Bluesky, which aspects of experiment control should happen in a soft IOC and which should happen somewhere else?

Topic

EPICS 7

Primary author: NOGUEIRA ROLIM, Erico (LNLS/CNPEM)

Presenter: NOGUEIRA ROLIM, Erico (LNLS/CNPEM)

Session Classification: EPICS Upgrades

Track Classification: Please click on session to see scheduled talks.: Projects using EPICS

Contribution ID: **26**   Type: **not specified**

SLAC Initiatives in Accelerator Cyber Security

Sunday, 8 October 2023 15:30 (20 minutes)

We describe a program at SLAC to truly understand accelerator cyber vulnerabilities as the exist at SLAC and similar facilities, improve accelerator cyber security generally, engage the U.S. Department of Energy in collaboration and funding and provide the concomitant upgrades to EPICS base for the accelerator community.

Topic

Cyber

Primary author: Mr WHITE, Gregory (SLAC)

Presenter: Mr WHITE, Gregory (SLAC)

Session Classification: EPICS and Cyber Security

Track Classification: Please click on session to see scheduled talks.: EPICS and Cyber

Contribution ID: **27** Type: **Oral**

Welcome

Sunday, 8 October 2023 08:30 (15 minutes)

Welcome from the organizers and EPICS Council. Day plan.

Topic

Other

Primary author: WHITE, Karen (ORNL)

Presenter: WHITE, Karen (ORNL)

Session Classification: EPICS Organizational

Contribution ID: **28**
Type: **Oral**

Plans to add TLS to EPICS

Sunday, 8 October 2023 15:50 (20 minutes)

This talk describes plans to add a Transport Security Layer (TLS) to EPICS.

Topic

Cyber

Primary author: MCINTYRE, George (Level N)

Presenter: MCINTYRE, George (Level N)

Session Classification: EPICS and Cyber Security