Controls Topics

Ralph Bär (GSI), Chris Roderick (CERN)

https://indico.cern.ch/event/1085228/

25-11-2021
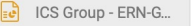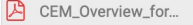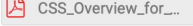
CERN-GSI Controls Collaboration in 2021

CERN & GSI have been collaborating for Controls since mid-2007

Significant CERN re-structuring from 2021
→ ½ day workshop in January to
(re)-establish areas of Controls collaboration
& main contacts / link persons

Various collaborative activities continue,
to varying degrees…

14:00 → 14:10	**Welcome & Introduction**
	Speakers: Chris Roderick (CERN) , Ralph Baer
14:10 → 14:30	**Insight into CERN-GSI Controls Collaborations**
	What (formal addendum Vs memorandums of understanding) and why
	Speaker: Ralph Baer
14:30 → 15:05	**Introduction to the GSI Controls Department (ACO)**
	Speaker: Ralph Baer
	📄 GSI_Org-ACO_short…
15:05 → 15:10	**Introduction to the CERN Controls Groups**
	Speaker: Rhodri Jones (CERN)
	📄 BE Controls Groups… 📄 BE Controls Groups…
15:10 → 15:35	**ICS Group**
	Speaker: Peter Sollander (CERN)
	📄 ICS Group - ERN-G… 📄 ICS Group - ERN-G…
15:35 → 15:45	Coffee Break
15:45 → 16:10	**CEM Group**
	Speakers: Alessandro Masi (CERN) , Javier Serrano (CERN)
	📄 CEM_Overview_for… 📄 CEM_Overview_for…
16:10 → 16:35	**CSS Group**
	Speaker: Chris Roderick (CERN)
	📄 CSS_Overview_for_…
16:35 → 17:00	**Wrap-up and discussion on next steps**

Areas of CERN-GSI Controls Collaboration

Areas of *Active Collaborations*

- Settings Management (LSA)
- Controls Middleware (CMW, RBAC)
- Timing (WR Network / Switches)
- Front-End Software (FESA, SILECS)
- Industrial Controls Framework (UNICOS)

Areas of *Technical Exchange*

- Controls Software Architecture
- UI Technologies, Application Services
- Sequencer
- Archiving / Logging System
- Interfaces for Python, C++, REST
- Software Engineering Tools & Practices
- Analogue Signal Acquisition
- Accelerator-Testing Framework
- Containerization
- Safety PLC
- Motion control framework
- Front-End Linux Platform

GSI & CERN BE-CSS: Accelerator Controls Software

Settings Management (LSA) *(regular meetings)*

- **Settings protection** *(CERN 2021 development, not used at GSI today, but GSI have similar requirements)*
- **Trim tags** *(CERN 2021 initiative, GSI have similar requirements → GSI participation in technical discussion)*
- **Java RMI communication replacement** *(GSI & CERN both investigating & should unify efforts for common aspects)*
- **Settings fetching optimization** *(GSI 2021 development, used at CERN)*
- **Update of JGraphT library** to work with parameter relations graph *(GSI 2021 development, used at CERN)*

Front-End Software (FESA, SILECS) *(regular meetings)*

- **FESA Framework** *(CERN 2021 development, used at GSI)*
- **FESA Eclipse Plug-in** *(GSI 2020/21 development, foreseen for future use at CERN)*
- **SILECS 2.0** *(CERN 2021 technical review and future plans, shared with GSI for feedback)*

Software Engineering Tools & Practices *(ad-hoc)*

- *Some knowledge sharing meetings for exchange of current practices, ideas, tool usage etc.*

GSI & CERN BE-ICS: Industrial Controls

Functional Safety *(meetings in October & November 2021)*

- *FAIR Personnel Access System (PAS)* *(see next presentation)*
  - *Analysis of work needed to formally verify PAS PLC code: Identified missing PLCverif functionalities*
  - *PLCverif software demo and subsequent discussion / feedback*
  - *Established principle of understanding: GSI to finance 6-12 months of a CERN FTE (e.g. PJAS), will work with other BE-ICS experts to perform formal verification of GSI safety PLC code"*

- *Further CERN→GSI consultancy on functional safety management foreseen in future*

UNICOS Framework for GSI Industrial Controls Use Cases

- *Foresee*
  - *CERN support for use of UNICOS at GSI*
  - *Eventual GSI contributions to further improve UNICOS*

- *Agreement pending establishment of Framework licensing* *(on-going)*
  - *Status: All authorship & 3rd-party dependency information handed to CERN KT*
  - *Tentative expected delivery: UNICOS Framework Licensed by Q1/Q2 2022*

Regular White Rabbit exchanges between GSI *(having operational experience for Timing)* & CERN *(in the early phases of deploying WR for operations)*

Dietrich Beck (GSI) presented the Bunch-to-Bucket transfer for FAIR & WR operational experience in a recent <u>WR workshop</u>.
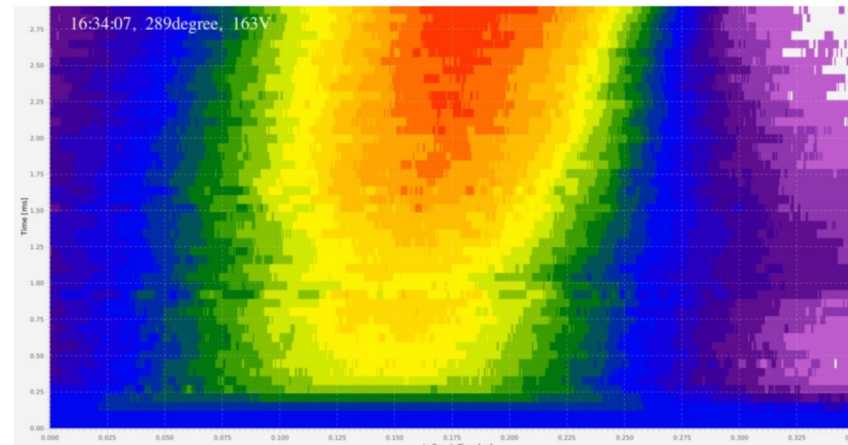
Bunch to Bucket transfer in operation. Source: D. Beck

GSI ready to participate in a common pool (10kCHF/year) for the <u>WR Collaboration</u>. *Detailed discussion to be held in the coming weeks.*

Summary

CERN & GSI have been collaborating for Controls since mid-2007.

No formal collaboration addenda today. Idea to put in place:

- *An overarching MoU (Memorandum of Understanding), covering general aspects related to CERN-GSI collaborations on Controls.*

- *Individual addenda for very specific aspects, where considered necessary.*

In the meantime, *active & effective collaboration in multiple Controls domains.*

→ *All set to* *continue going forwards, together!*