EEE* integration and IOC

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Overview

- FC system is expected to be based on ESS standard platform (MicroTCA)
- ESS choice of control system is EPICS (7)
- Prefer ESS supported software support for standard platform and its constituents (if stable)
- Application specific software is expected to be developed by ESS AD/BI section
- Platform specific software and support is expected to be delivered by ESS ICS

Faraday cup system SW

- EPICS IOC shall be concerned with:
  - Digitizing analog signal
  - Motion control
  - High voltage bias control
  - Event receiver interface (timing system)
- Use LEBT FC software as basis (not the Catania one)
- Possible multiple FC systems per single EPICS IOC (due to the nature of the hardware modularity)

Digitizer

- Need to digitize analog signal at MSps rate
- Pulsed mode, ~3 ms long pulse
- BI has following planned for LEBT FC:
  - AMC Struck SIS8300 (max 125 MSps, 16 bits)
  - RTM Struck SIS8900 (DC coupled)
  - EPICS support available in house (BPM, BCM, WS)
- ICS is working on another solution:
  - AMC IFC1410 + FMC????
  - Possible candidate for DTL FC?

Motion control

- Ethercat based control using digital and analog I/O
- Need to trigger the movement and monitor limit switches
- Simple pneumatic based motion (no motors)
- ESS support for Ethercat available
- Partially demonstrated EPICS support for this candidate with lab setup (switches)
- MPS/BIS interface?

High voltage bias control

- Ethercat based control using digital and analog I/O
- Need to control and monitor voltage and current limit
- Simple analog protocol (not using USB)
- Partially demonstrated EPICS support for this candidate with lab setup

Event receiver

- AMC MRF EVR-300-MTCA
- Need timing events, triggers, data timestamping (and clocks)
- Community and ESS EPICS support available
- Partially demonstrated EPICS support for this candidate with lab setup (need to test latest additions to the EVR software)
- MPS/BIS interface?

Outlook

- Pretty good idea what to do .. but lots of assumptions and open questions to iron out
- Re-use proven solutions if possible (LEBT FC)
- Use ESS ICS supported modules (Ethercat, EVR)
- Provide modular FC system software (ready for integration into ICS EPICS environment)
- By CDR be ready to hand over to ESS ICS

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Questions ?