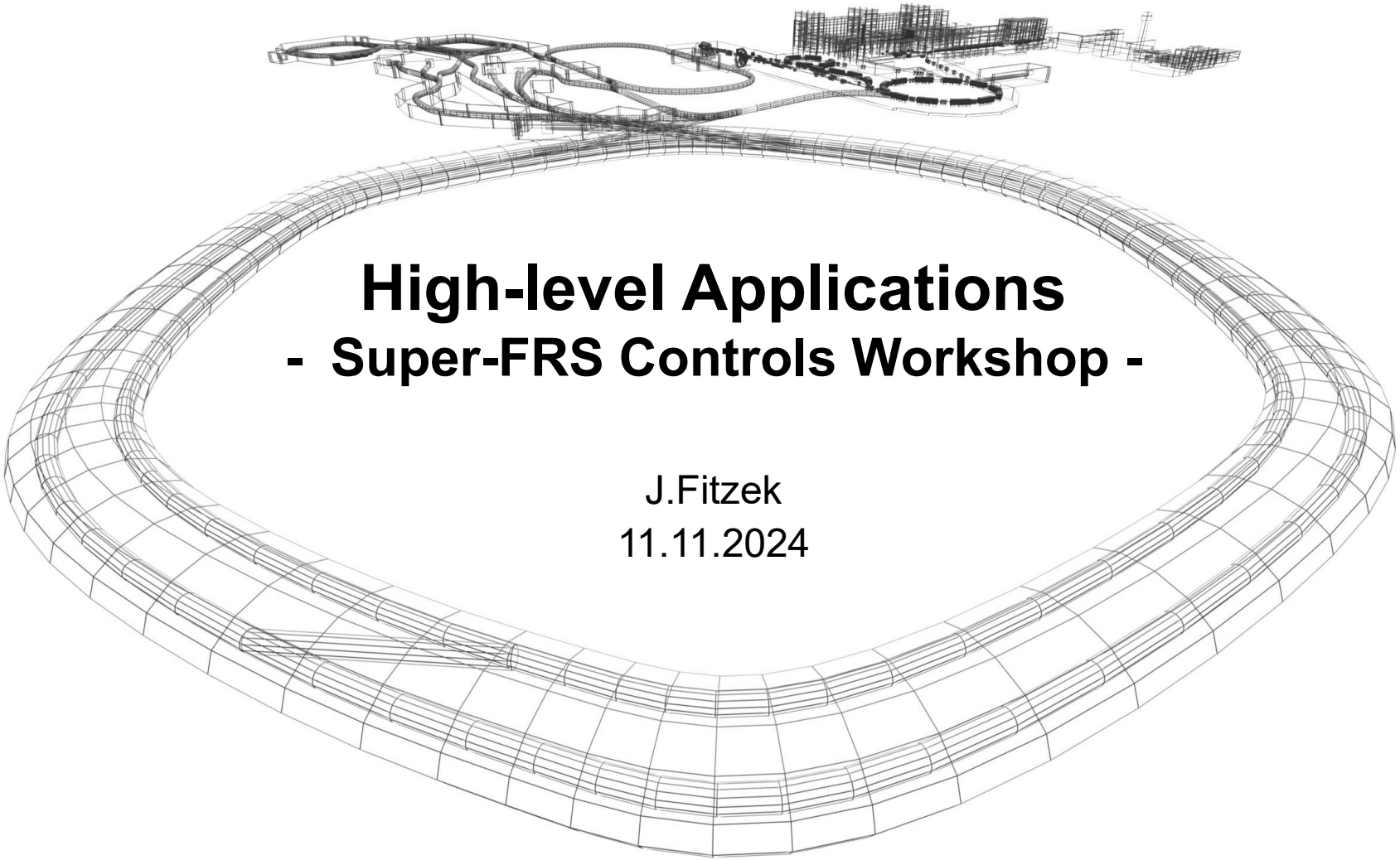


High-level Applications

- Super-FRS Controls Workshop -

J.Fitzek

11.11.2024

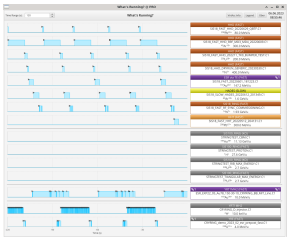
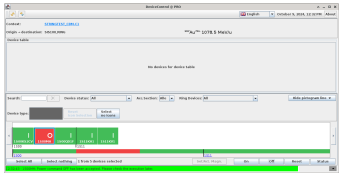
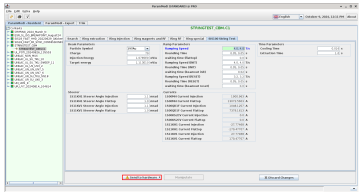
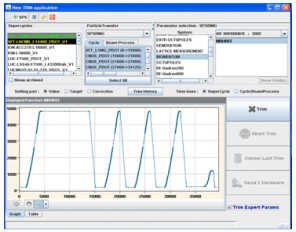
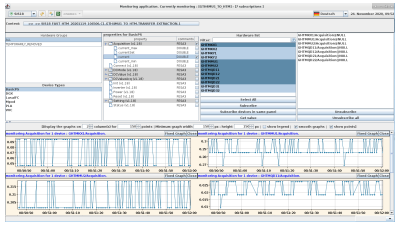
Agenda

- Applications
  - Overview: Applications by the APP group
  - SchedulingApp
  - BSS Control
  - ParamModi
  - DeviceControl
  - SequencerApp (ACO/OPE)
  - MASP GUI (APS)
  - Further Applications

Applications by the APP group

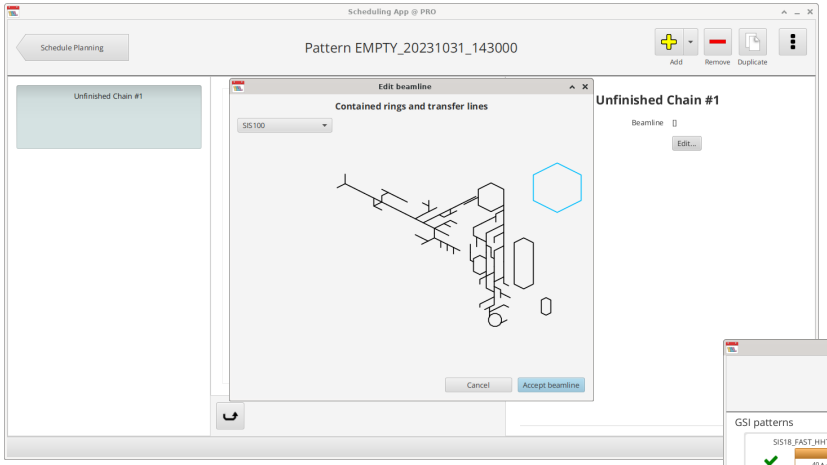
Applications provided by APP will cover all standard operation software for controlling the accelerators used in the central and local control rooms of FAIR

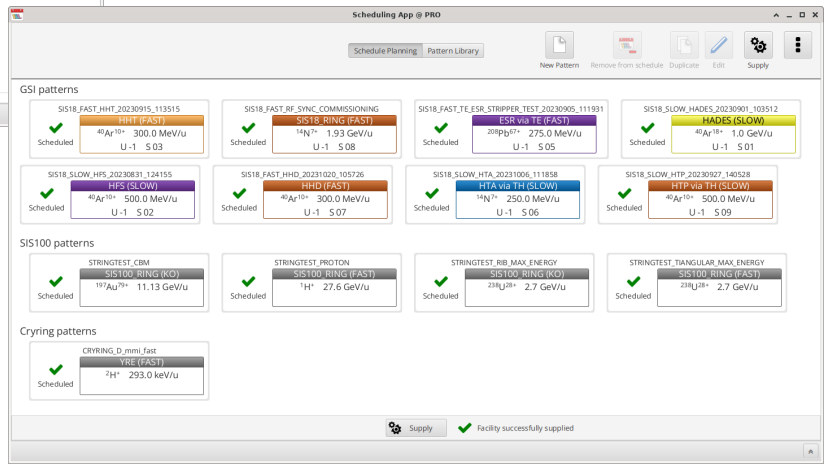
- modular and distributed SW architecture
- all processes are data driven
- separation of concerns, MVC, logic in central or distributed services
- usage of code templates, libraries, widgets, prefilled components
- Java with JavaFX as GUI technology

SchedulingApp

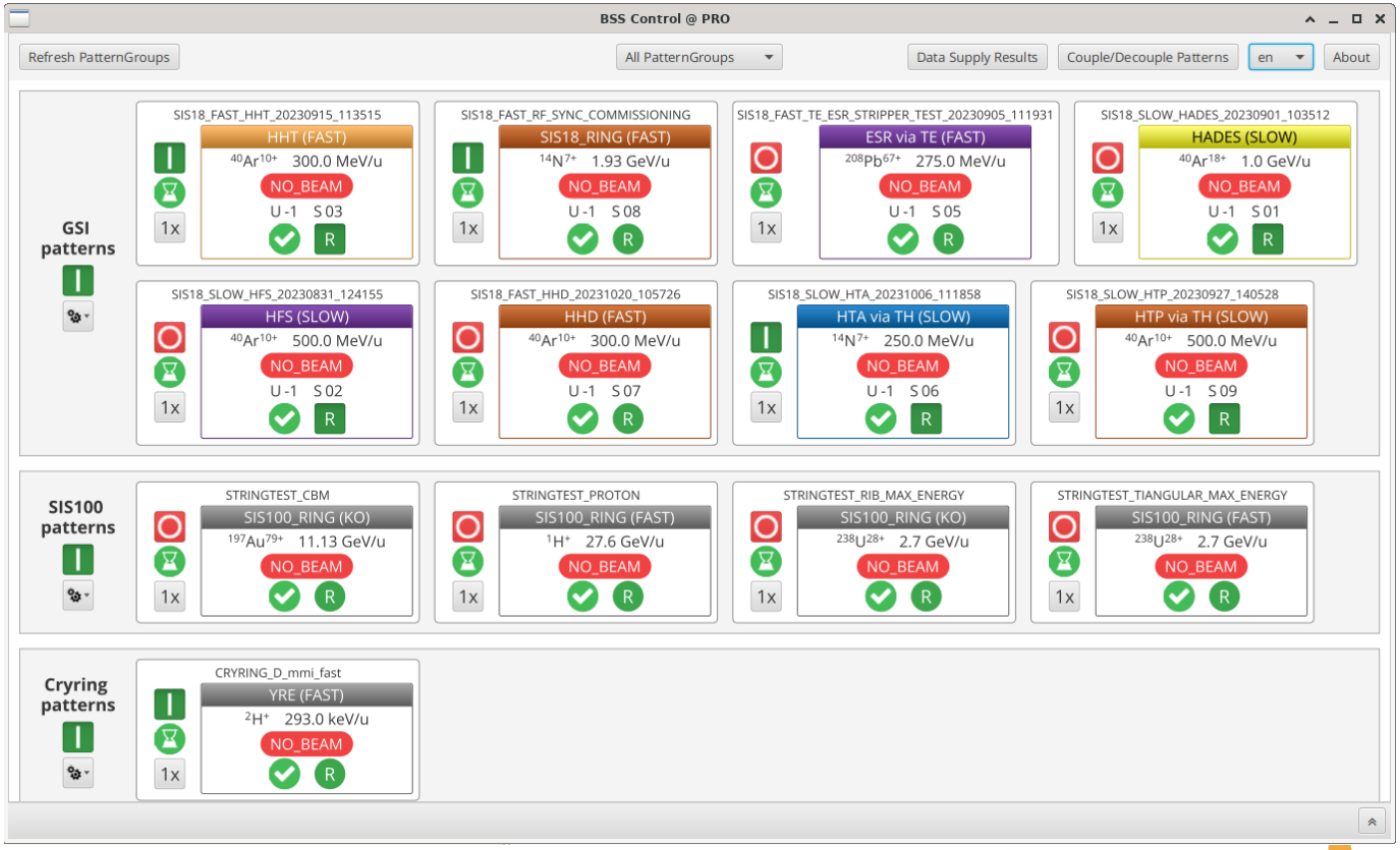
- Used to create and schedule Patterns and BeamProductionChains





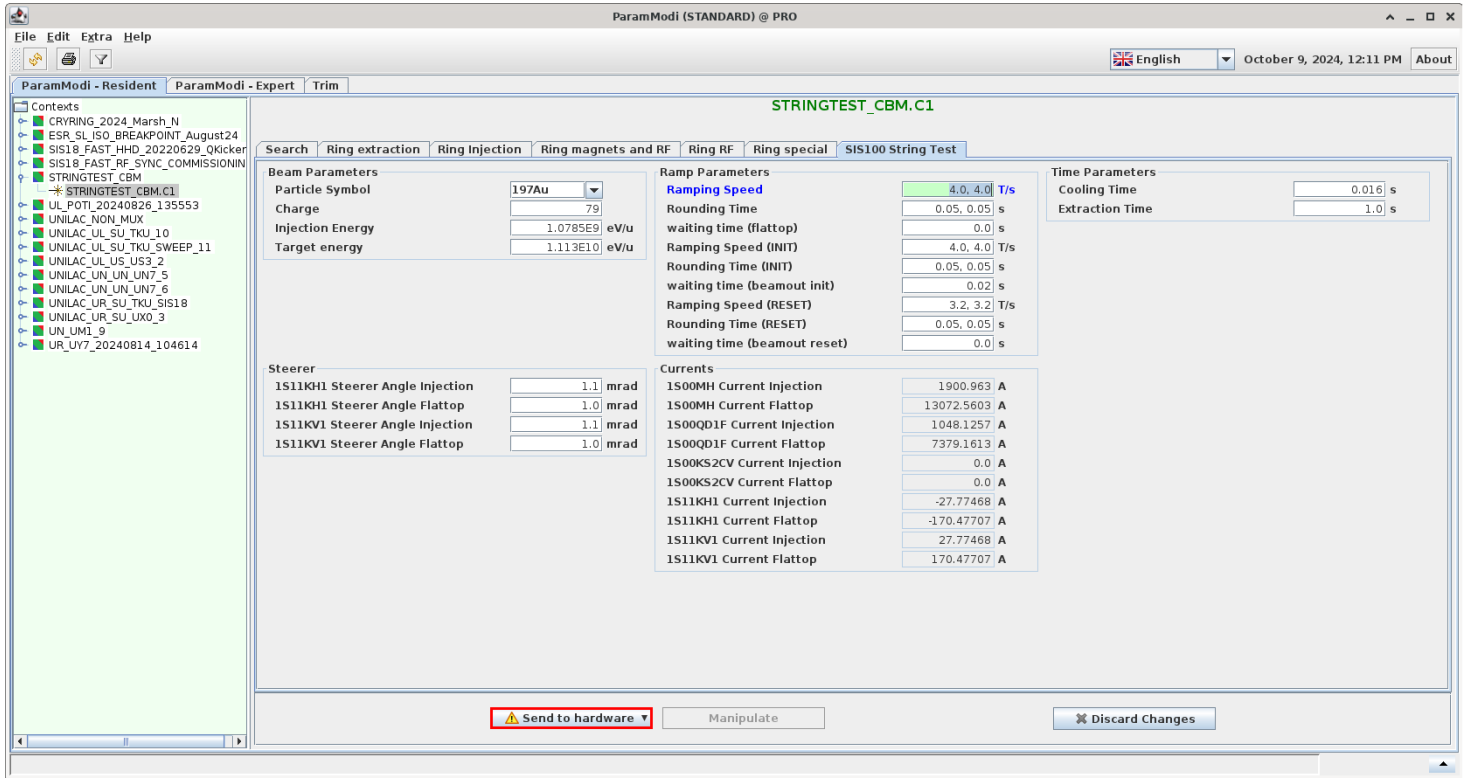
BSS Control

- Overview of scheduled beams and their execution status
- Switch Beam execution on/off



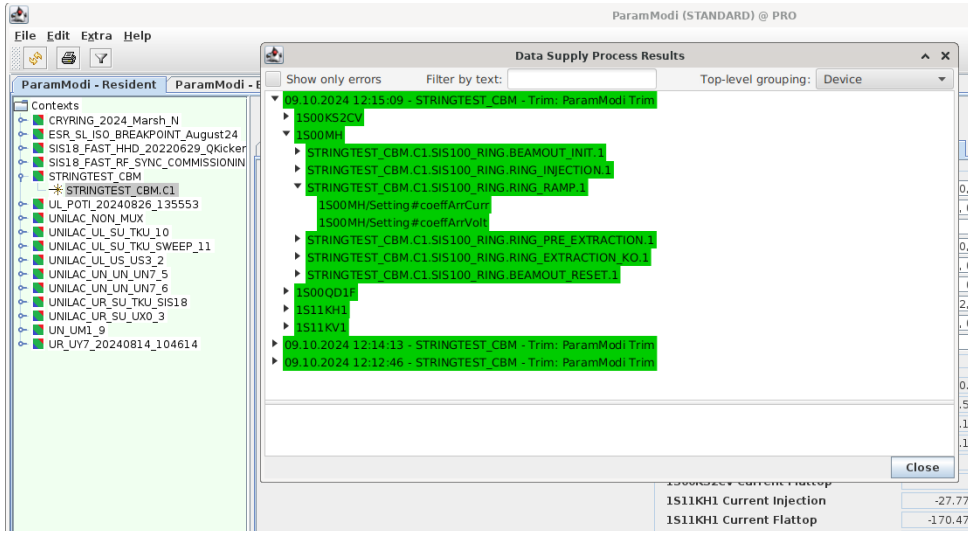
ParamModi 1/3

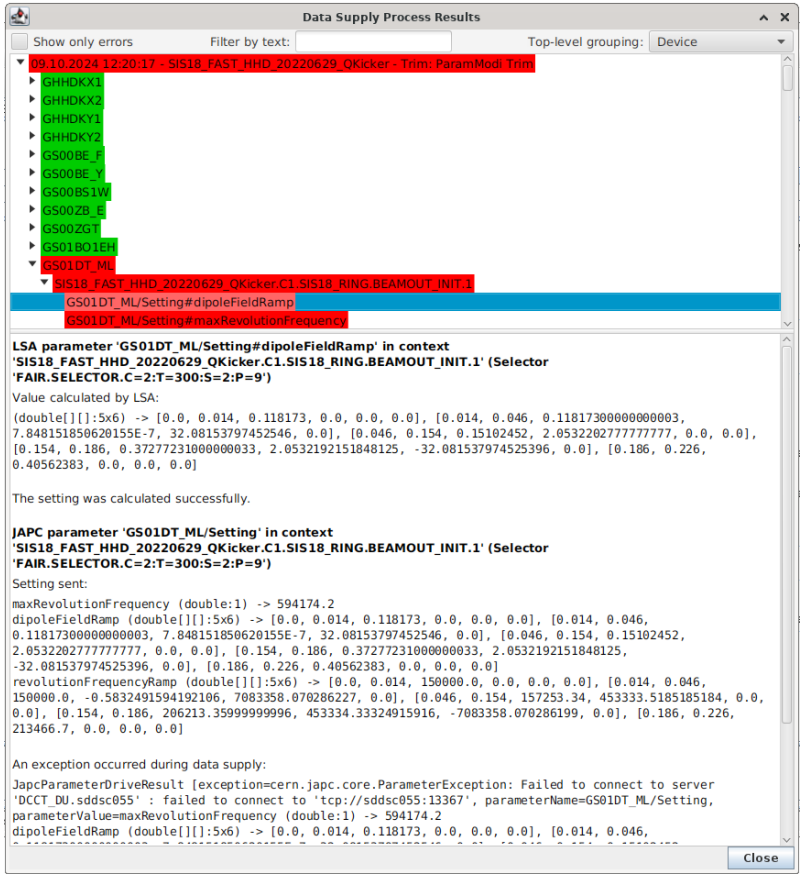
- Trim settings
- Data supply of devices, but also of central systems (BSS, MASP, ..)



Screenshots: ParamModi 2/3

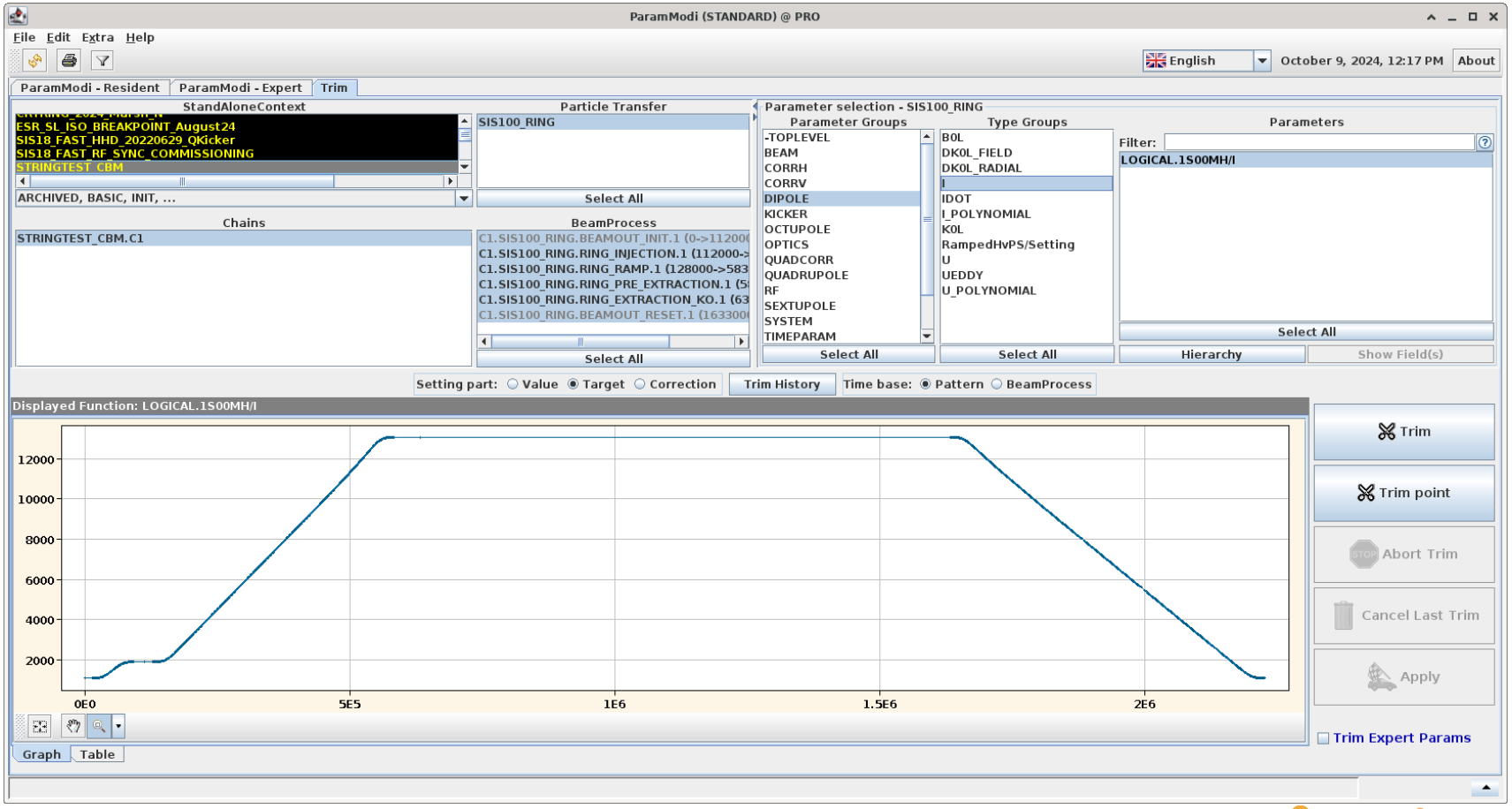
Screenshot: Menu -> Extra -> Show Data Supply Results





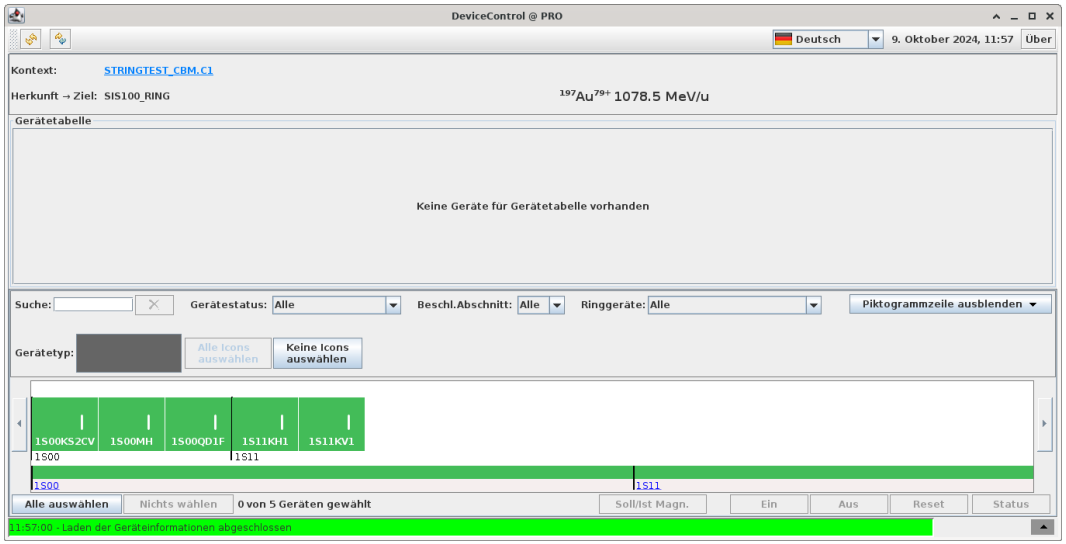
Screenshots: ParamModi 3/3

Screenshot: Trim Tab – Show Settings on all levels of the hierarchy



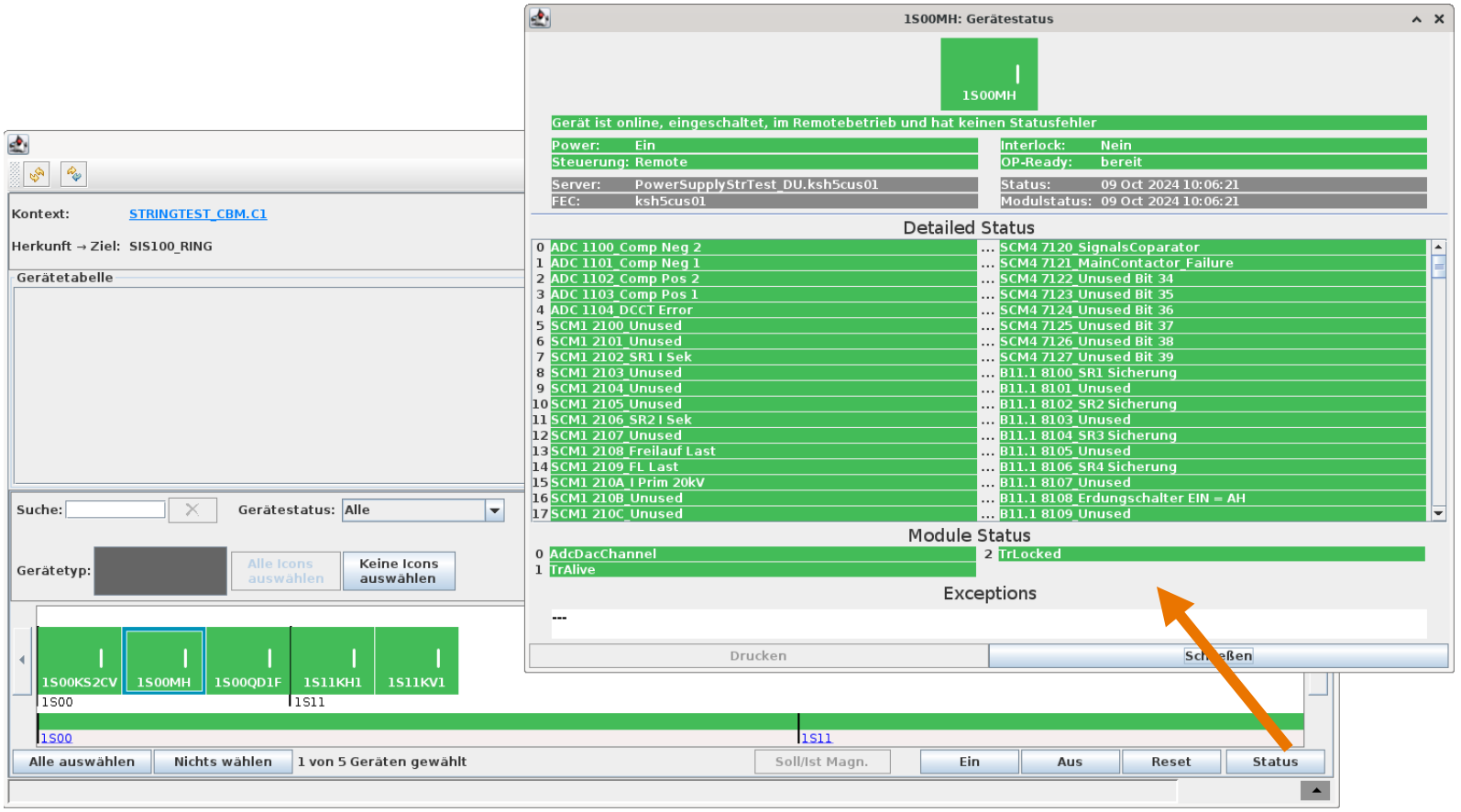
DeviceControl 1/3

- Control on device level
  - Reading status
  - Switching devices on / off
  - (Driving step motors, etc.)



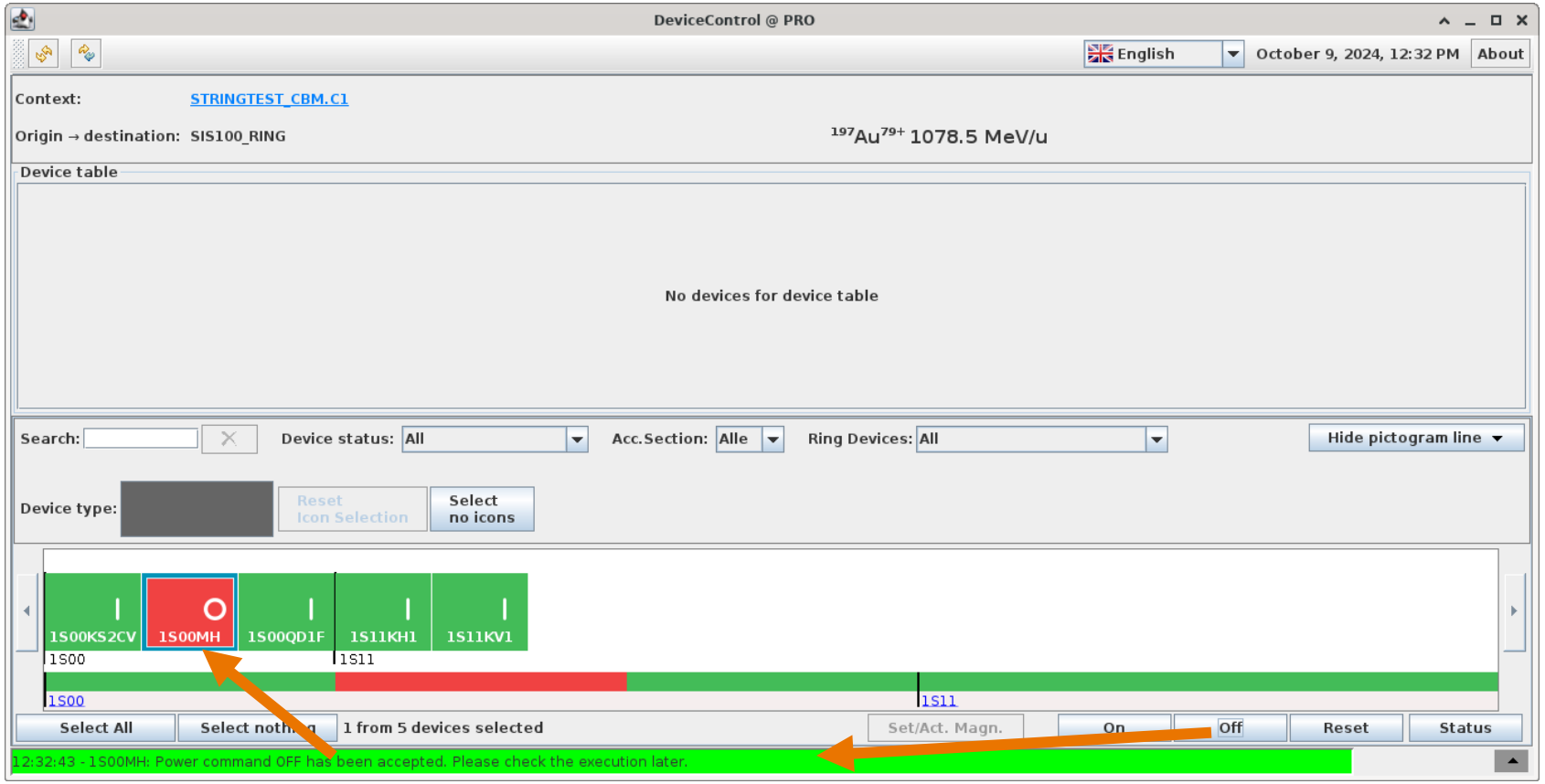
DeviceControl 2/3

Screenshot: Show the Detailed Status Window of a device



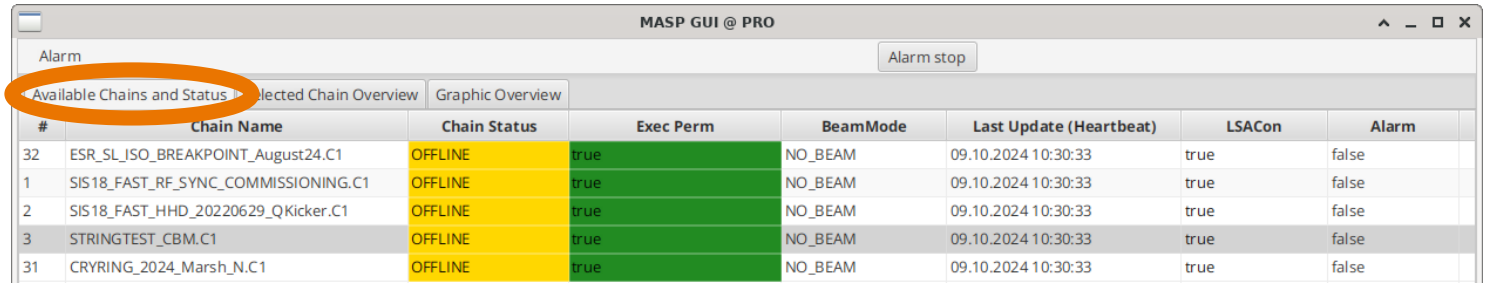
DeviceControl 3/3

Screenshot: Switching Devices on/off, performing reset

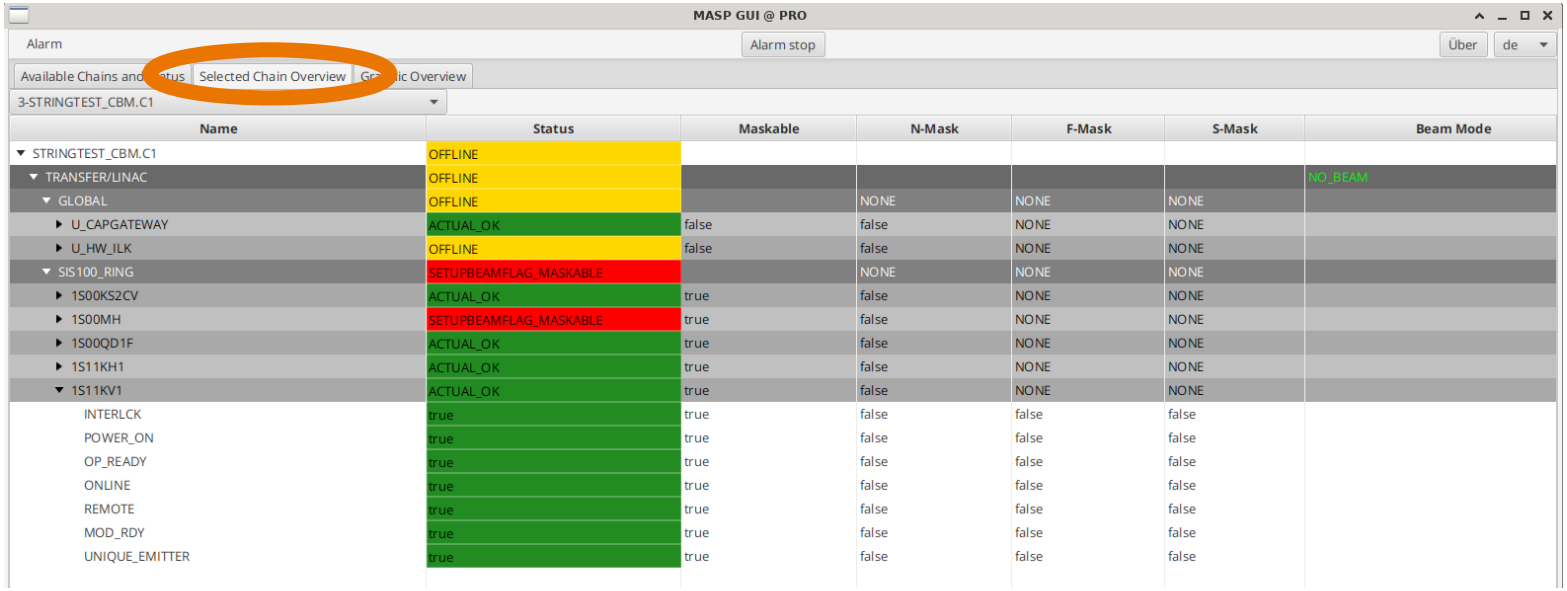


MASP GUI (by APS)

- Display Interlocks and execution permission



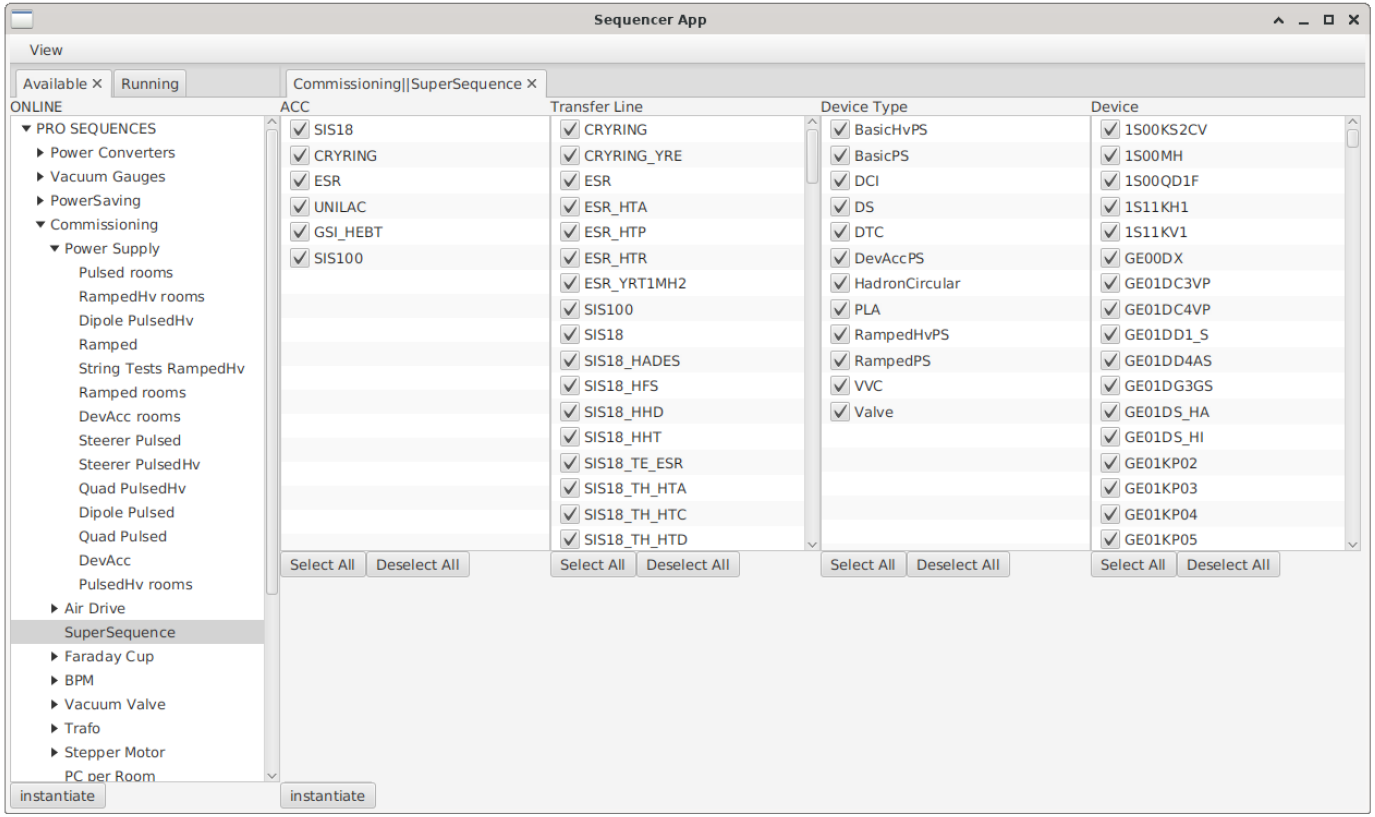
#	Chain Name	Chain Status	Exec Perm	BeamMode	Last Update (Heartbeat)	LSACon	Alarm
32	ESR_SL_ISO_BREAKPOINT_August24.C1	OFFLINE	true	NO_BEAM	09.10.2024 10:30:33	true	false
1	SIS18_FAST_RF_SYNC_COMMISSIONING.C1	OFFLINE	true	NO_BEAM	09.10.2024 10:30:33	true	false
2	SIS18_FAST_HHD_20220629_QKicker.C1	OFFLINE	true	NO_BEAM	09.10.2024 10:30:33	true	false
3	STRINGTEST_CBM.C1	OFFLINE	true	NO_BEAM	09.10.2024 10:30:33	true	false
31	CRYRING_2024_Marsh_N.C1	OFFLINE	true	NO_BEAM	09.10.2024 10:30:33	true	false



Name	Status	Maskable	N-Mask	F-Mask	S-Mask	Beam Mode
STRINGTEST_CBM.C1	OFFLINE					
TRANSFER/LINAC	OFFLINE					NO_BEAM
GLOBAL	OFFLINE		NONE	NONE	NONE	
U_CAPGATEWAY	ACTUAL_OK	false	false	NONE	NONE	
U_HW_ILK	OFFLINE	false	false	NONE	NONE	
SIS100_RING	SETUPBEAMFLAG_MASKABLE		NONE	NONE	NONE	
1S00KS2CV	ACTUAL_OK	true	false	NONE	NONE	
1S00MH	SETUPBEAMFLAG_MASKABLE	true	false	NONE	NONE	
1S00QD1F	ACTUAL_OK	true	false	NONE	NONE	
1S11KH1	ACTUAL_OK	true	false	NONE	NONE	
1S11KV1	ACTUAL_OK	true	false	NONE	NONE	
INTERLCK	true	true	false	false	false	
POWER_ON	true	true	false	false	false	
OP_READY	true	true	false	false	false	
ONLINE	true	true	false	false	false	
REMOTE	true	true	false	false	false	
MOD_RDY	true	true	false	false	false	
UNIQUE_EMITTER	true	true	false	false	false	

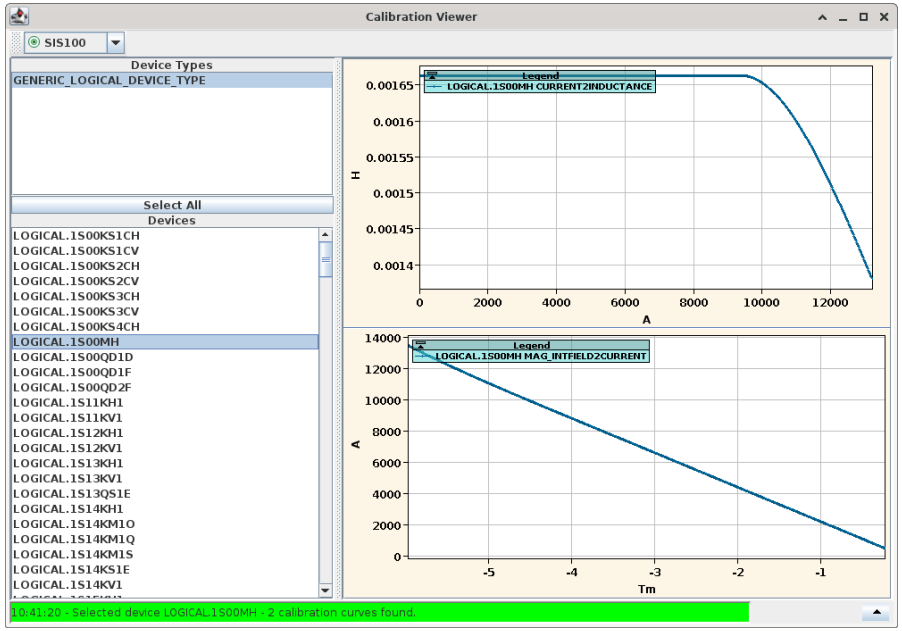
SequencerApp (by ACO-SER and OPE)

- Execute sequences of tasks on device level,
  used typically for commissioning, testing, but also for operational tasks



Other Applications

- Other Applications that might be of interest
  e.g. Calibration Viewer, EquipState / FESA Explorer, DAVE (Archiving), …



CalibrationViewer

Thank you!

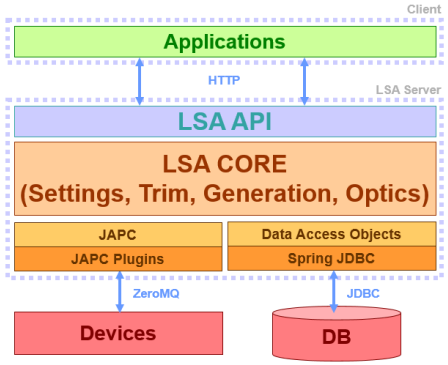
Agenda

- Backup Slides: LSA Framework

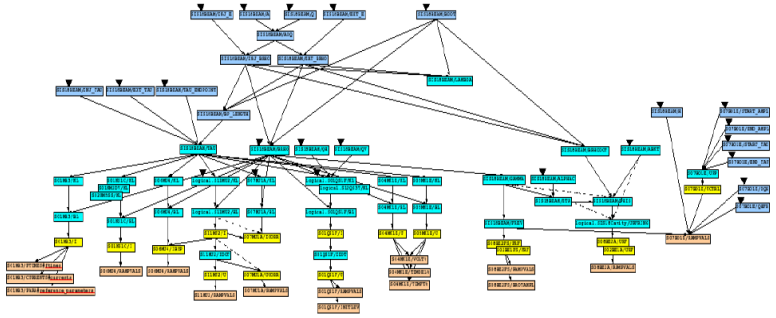
Settings Managment System: LSA

LSA (LHC Software Architecture): Settings Management System

- well developed framework for CERN accelerators, now maintained and enhanced in collaboration
- highly data driven
- DB is the master, contains optics, devices, cycles, etc. for all accelerators



- parameters are organized in hierarchies (from physics to HW)
- consistent settings management on all levels
- devices are accessed using an abstraction layer that hides middleware



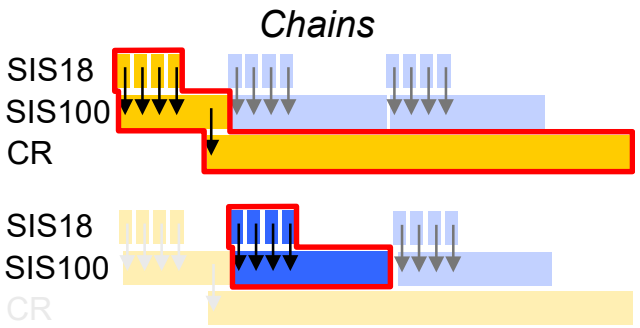
- => APP provides the framework FAIR-DV and others the physics model

Terminology 1/2

- Beamline
  - Path along the facility, e.g. through HEBT
- Particle Transfer
  - pieces of a Beamline, between junctions
- Accelerator Zone
  - Sub-division of Particle Transfer where beam properties change, e.g. at choppers
- Device
  - Physical representation of Equipment in the Control System
- Parameters (“Hardware” Parameters)
  - Property-Field combination of a device, e.g. Setting/current

Terminology 2/2

- Beam Production Chain (BPC)
  - Organizational structure to manage parallel operation and beam transfer through FAIR accelerator facility
  - Defines the beam line and contains the settings for the parameters
- Pattern
  - Grouping of Beam Production Chains



- Parameter and Setting
  - A setting is a scalar/function for a parameter depending on a context (i.e. BeamProcess)