



ICARUS (SBN-FD) Detector Control System

Geoff Savage

ICARUS Collaboration Meeting

12-Sep-2019

DCS Architecture

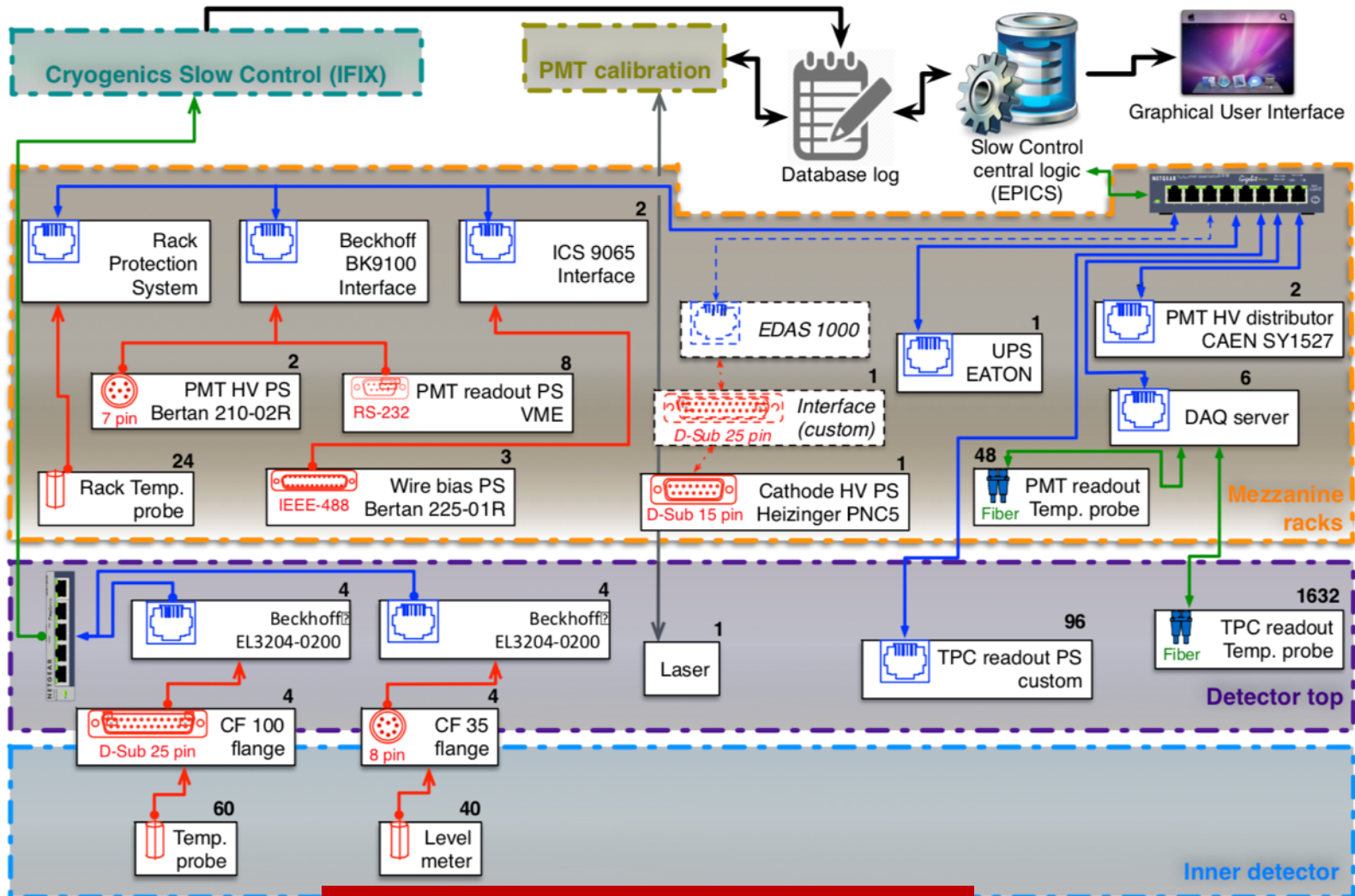
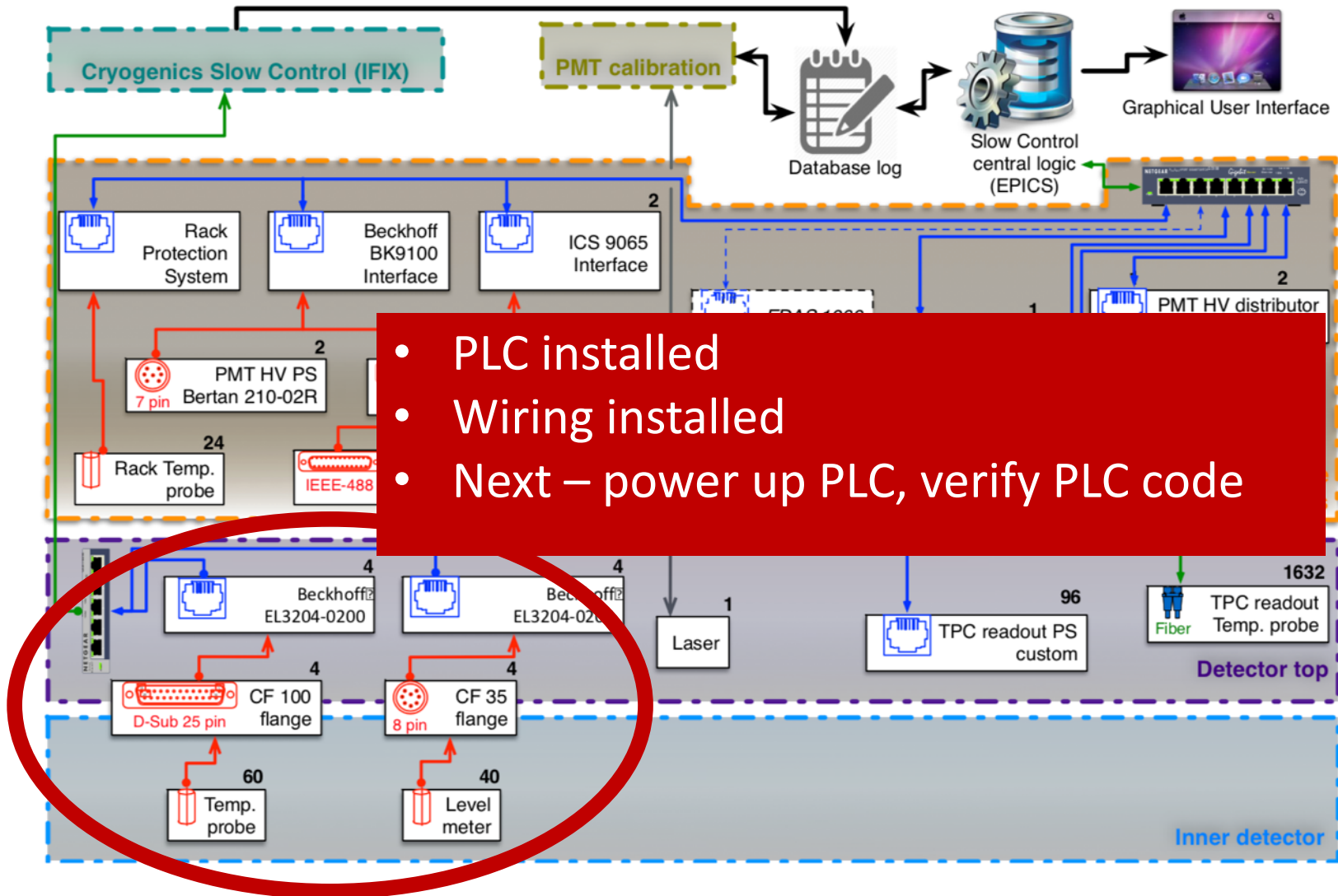


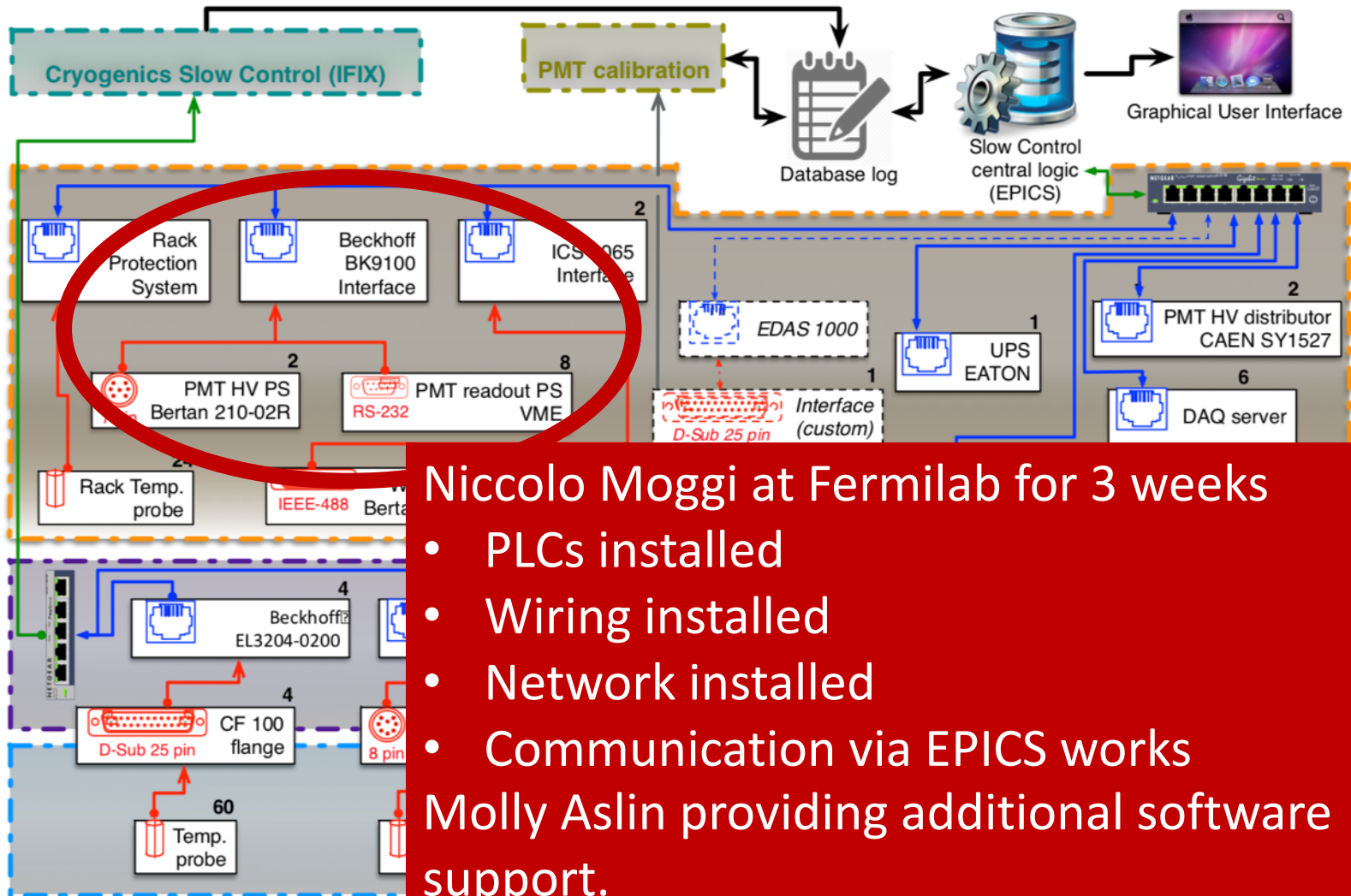
Diagram From Angela Fava.

Inner Detector – Temperatures and Levels



- PLC installed
- Wiring installed
- Next – power up PLC, verify PLC code

PMT on East Mezzanine



Niccolo Moggi at Fermilab for 3 weeks

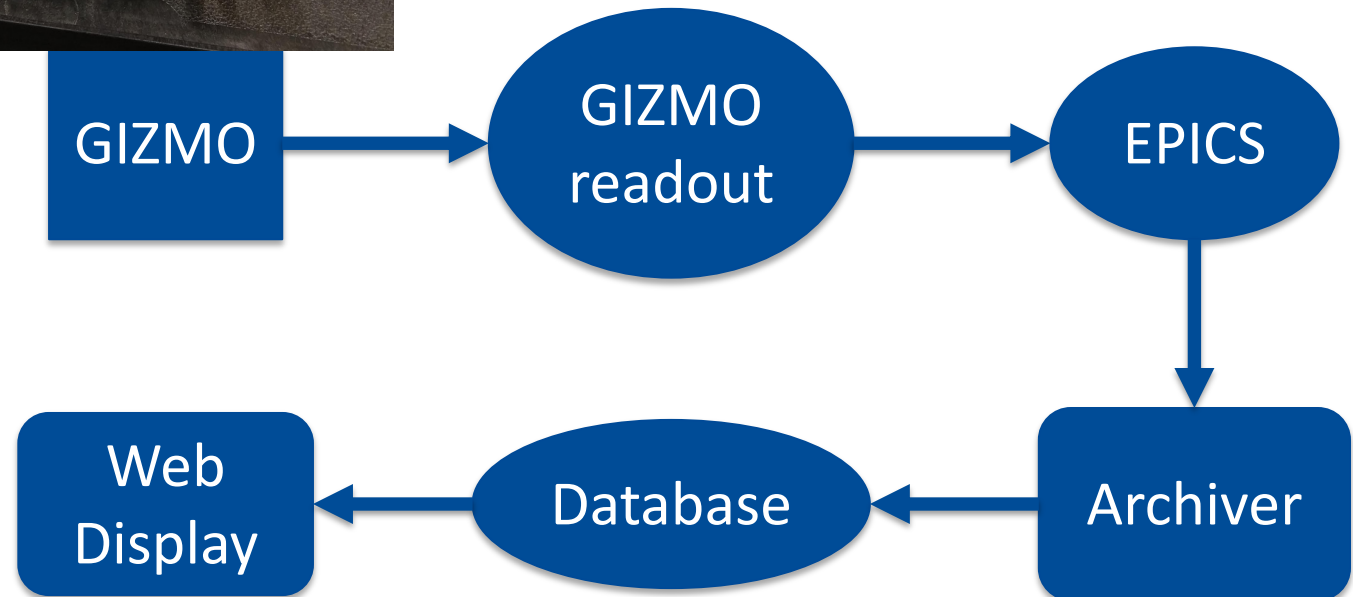
- PLCs installed
- Wiring installed
- Network installed
- Communication via EPICS works

Molly Aslin providing additional software support.

GIZMO Readout



- Monitor Impedance between detector and building ground
- Tells you if you have a “short”



Web Display



SBND Monitoring

Raw Data ▾

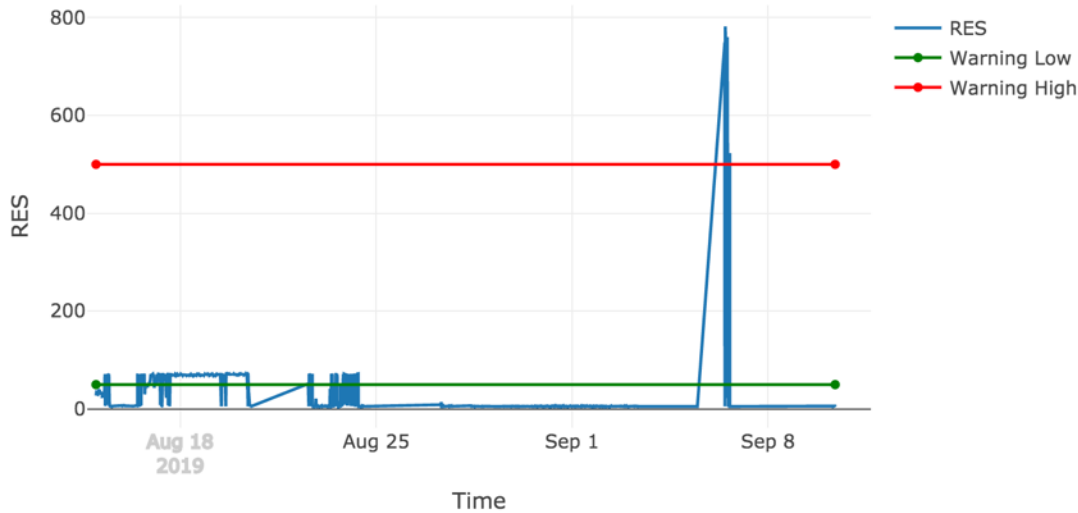
Wire Plane View

Example Metric

Example Group

DAQ

ICARUS EPICS



Display Options

Start Time

End Time

[Download Data](#)

https://sbn-online.fnal.gov/cgi-bin/minargon/minargon.wsgi/pv_multiple_stream/epics/ICARUS_gizmo_0

Web Display



SBND Monitoring

Raw Data ▾

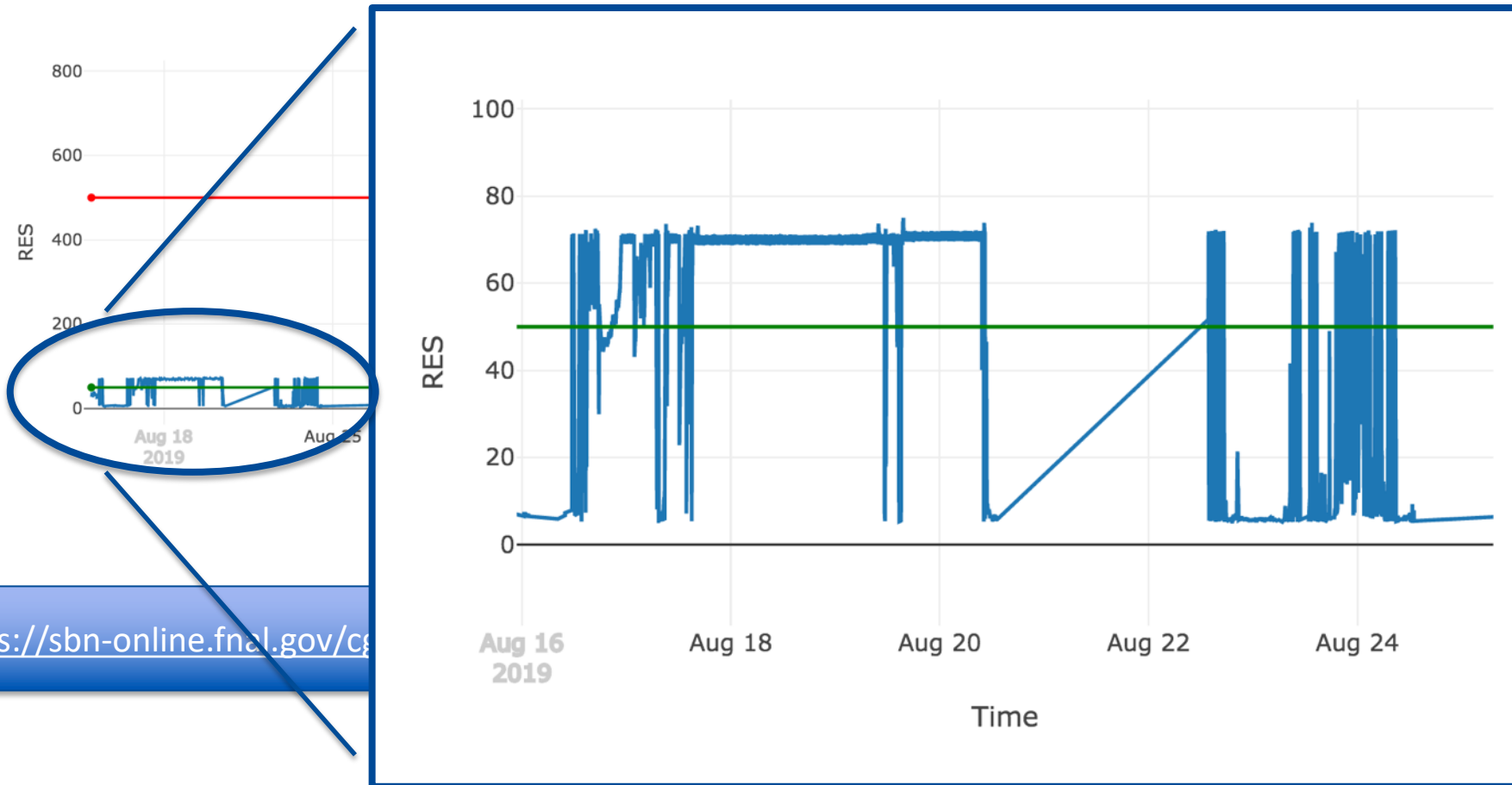
Wire Plane View

Example Metric

Example Group

DAQ

ICARUS EPICS



<https://sbn-online.fnal.gov/cs>

SBN Common Support

- Items that are needed by all SBN experiments
- Databases - Andrew Mogan, Gray Yarbrough
- EPICS archiver and alarm server database - Ivan Lepetic
- Trevor Nichols – Cryogenic controls (IFIX)
- IFIX to EPICS – Wei Tang, Bill Badgett
- GIZMO – Bill Badgett
- Ifbeam – Wei Tang
- Web displays – Krishan Mistry, Gray Yarbrough
- Management – Sowjanya Gupta, Angela F., Geoff Savage

Distribution of Effort for ICARUS DCS

- Readout of inner sensors —> Trevor
 - Temperatures and levels
- Bertan PS for wire biasing —> Dennis
- TPC readout crate PS —> Dennis
- Bertan PS for PMT's —> Niccolo'
- CAEN SY1527 for PMT's —> Niccolo'
- PMT VME crates —> Niccolo'
- Drift (cathode) HV —> Zack
- PMT calibration system —> Maurizio
- CSS GUI —> Giuseppe
- Integration – Geoff Savage

Summary

- GIZMO monitoring working
- We have decided on a naming convention – use the same naming convention as uBoone
- LAr level meters and temperature sensors in the cryostat (Trevor Nichols)
 - PLC in place and wired
 - Power and programming are next
- Niccolo Moggi was at Fermilab for 3 weeks.
 - PMT vme crate power
 - PMT Bertan power supplies
 - Support on site from Molly Aslin
- Test stand at DAB (Dennis Nicklaus)
 - TPC wire bias
 - TPC mini crates
 - Working on this now
- SBN team in place to support common DCS items

What a shifter sees at microBoone

Example: Operator interface, alarms and archiving

CSS based applications are used for providing status displays and panels, alarms and archiving

Alarm area panel

Standard MicroBoone Slow Controls display page

Overview panel

Alarm table

Alarm Tree

ALARM Panel Color Scheme

- INVALID
- MAJOR
- MINOR
- Acknowledged, any state (in alarm windows only)
- OK (no alarm)

Important note to Shifters:
Acknowledgement affects only alarm windows on display panels (like this one), the high severity alarm color is always shown, even if the alarm is acknowledged.

PV	Description	Alarm Time	Current Sev	Current Sta	Alarm Seve	Alarm Stats	Alarm Value
uB_PCStatus_PCXX	MINOR alarm: percent usage of /data via C	2015/09/23 11:58:03	MINOR	HIGH_ALAR	MINOR	HIGH_ALAR	70
uB_RackTemps_TP	MINOR alarm: Temperature probe 2 uB_Rt	2015/09/23 11:16:552	MINOR	HIGH_ALAR	MINOR	HIGH_ALAR	32.0
uB_RackTemps_DA	MINOR alarm: Temperature probe 2 uB_Rt	2015/09/23 11:02:274	MINOR	HIGH_ALAR	MINOR	HIGH_ALAR	32.0

PV	Description	Alarm Time	Current Sev	Current Sta	Alarm Seve	Alarm Stats	Alarm Value
uB_Cryo_IFIX_1_0F	major-ack'd alarm: V Pump - P2 vacuum	2015/09/23 09:14:133	MAJOR	HIHI_ALAR	major-ack'd	HIHI_ALAR	863.475
uB_OnDetPower_TP	major-ack'd alarm: Channel read current	2015/09/21 21:37:609	MAJOR	HIHI_ALAR	major-ack'd	HIHI_ALAR	0.000016
uB_PMTHV_TRPM	minor-ack'd alarm: PMTHV State uB M4	2015/09/21 19:25:845	MINOR	STATE_AL	minor-ack'd	STATE_AL	Off
uB_PMTHV_TRPM	minor-ack'd alarm: PMTHV State uB M5	2015/09/21 19:17:149	MINOR	STATE_AL	minor-ack'd	STATE_AL	Off