2x2 Slow Controls Software Status Update

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2x2 DAQ/Computing Meeting | Thursday 30, November 2023

2x2 Slow Controls

- Used to **setup and monitoring** hardware that is not time-critical such as high voltage modules, temperature sensors, etc.
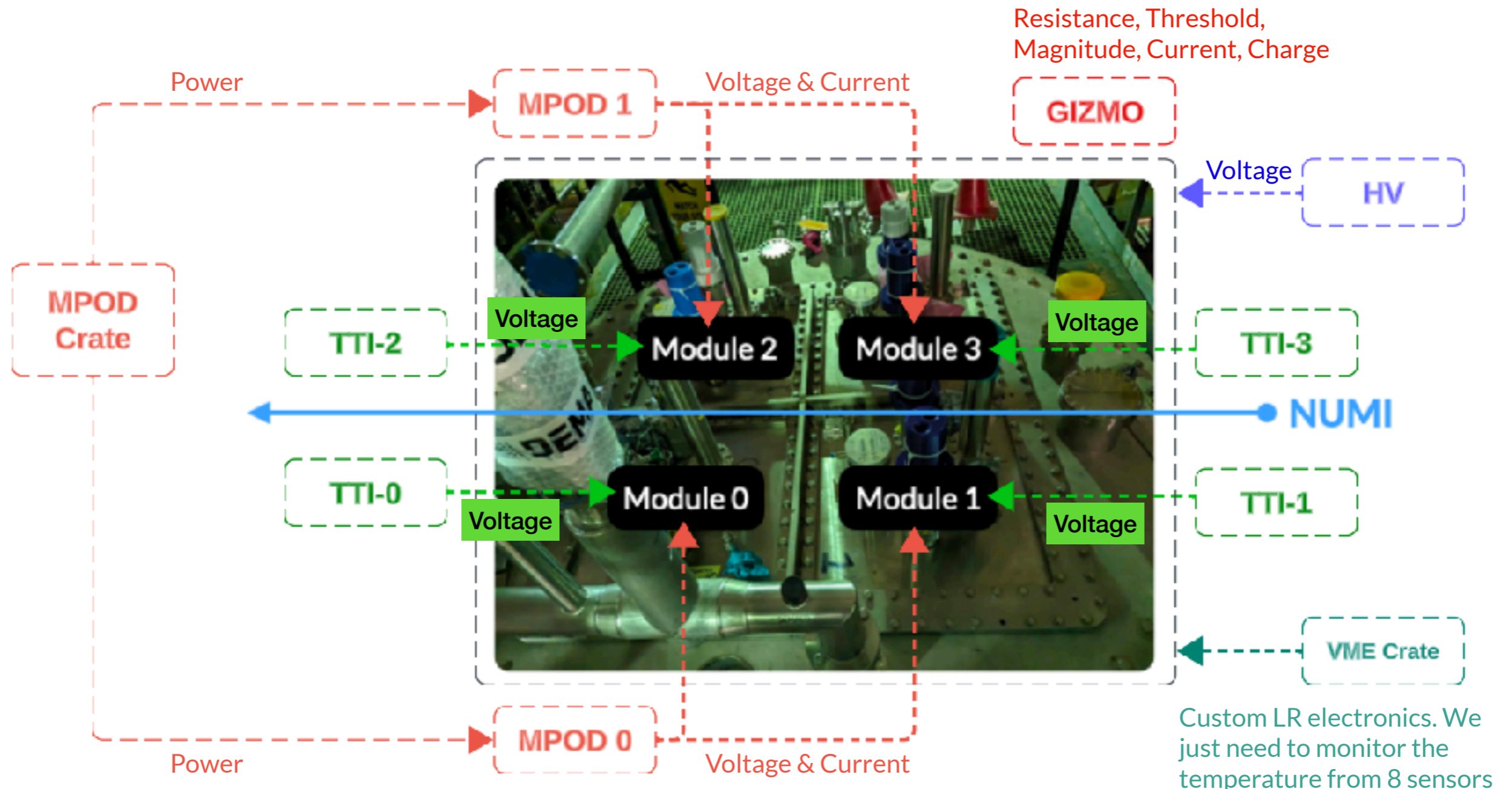
- **For 2x2:**

UNIT/RACK	DEVICE	DESCRIPTION	MODEL	MANUFACTURER
DC-PS				
	MPOD 0	Supplies power to VGAs, PACMAN, Fans, and RTDs	MPOD-Minicrate LV/HV	Wiener
	MPOD 1	Supplies power to VGAs, PACMAN, Fans, and RTDs	MPOD-Minicrate LV/HV	Wiener
	HV	eSL high voltage power supply	SL50N300/ESL/220	Spellman
Light ADC				
	TTI 1-4	SiPM Bias Power Supply	DC Power Supply	TTI
	VME crate	Light readout	UEP 6021	Wiener
GIZMO				
	Impedence monitor	Alerts us if there is a grounding issue	N/A	N/A

Complete hardware list (Tom Murphy): https://docs.google.com/spreadsheets/d/1aNzR8r_UhzkgPsY9iWxDw_4_dzqNc-IH_rS6GaFEPds/edit

- **Goal:** Develop a software to remotely setup and monitor these devices.

- **In summary:** Make a GUI.

Slow Controls Summary

- Two different 'kinds' of units:
  - ▸ **Directly connected to module(s):** MPOD and TTI.
  - ▸ **Independent of an specific module:** GIZMO, MPOD Crate, HV, VME Crate

2x2 DAQ/Computing Meeting | Thursday 30, November 2023
2x2 Slow Controls Software Status Update

GUI Current Version

- **Requirements:** Single screen, make it easy for shifters.
- Version 1.1 already deployed on srv04: /home/acd/acdemo/SLOW-CONTROLS-GUI
- To run it **(as root)** just do: *docker compose up --build*

Should we create a new repo on the DUNE GitHub with the source code and documentation?
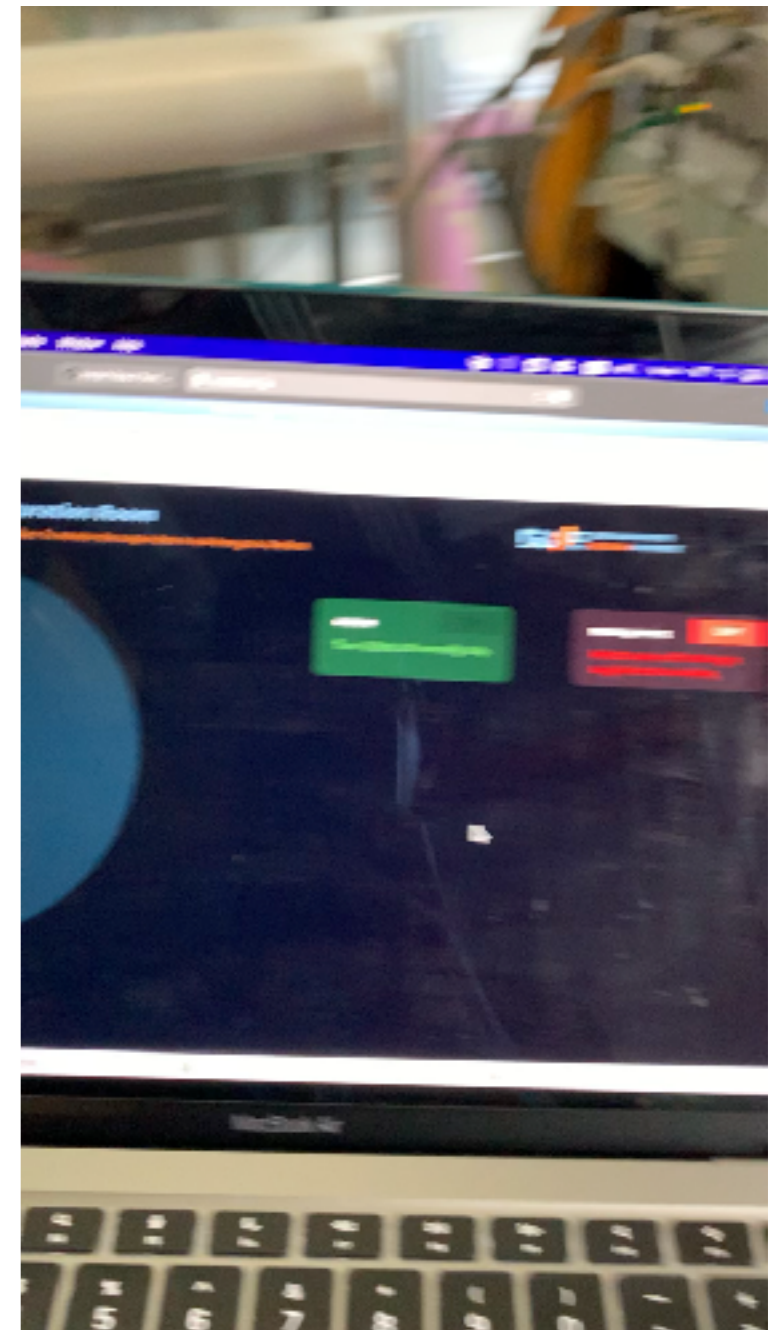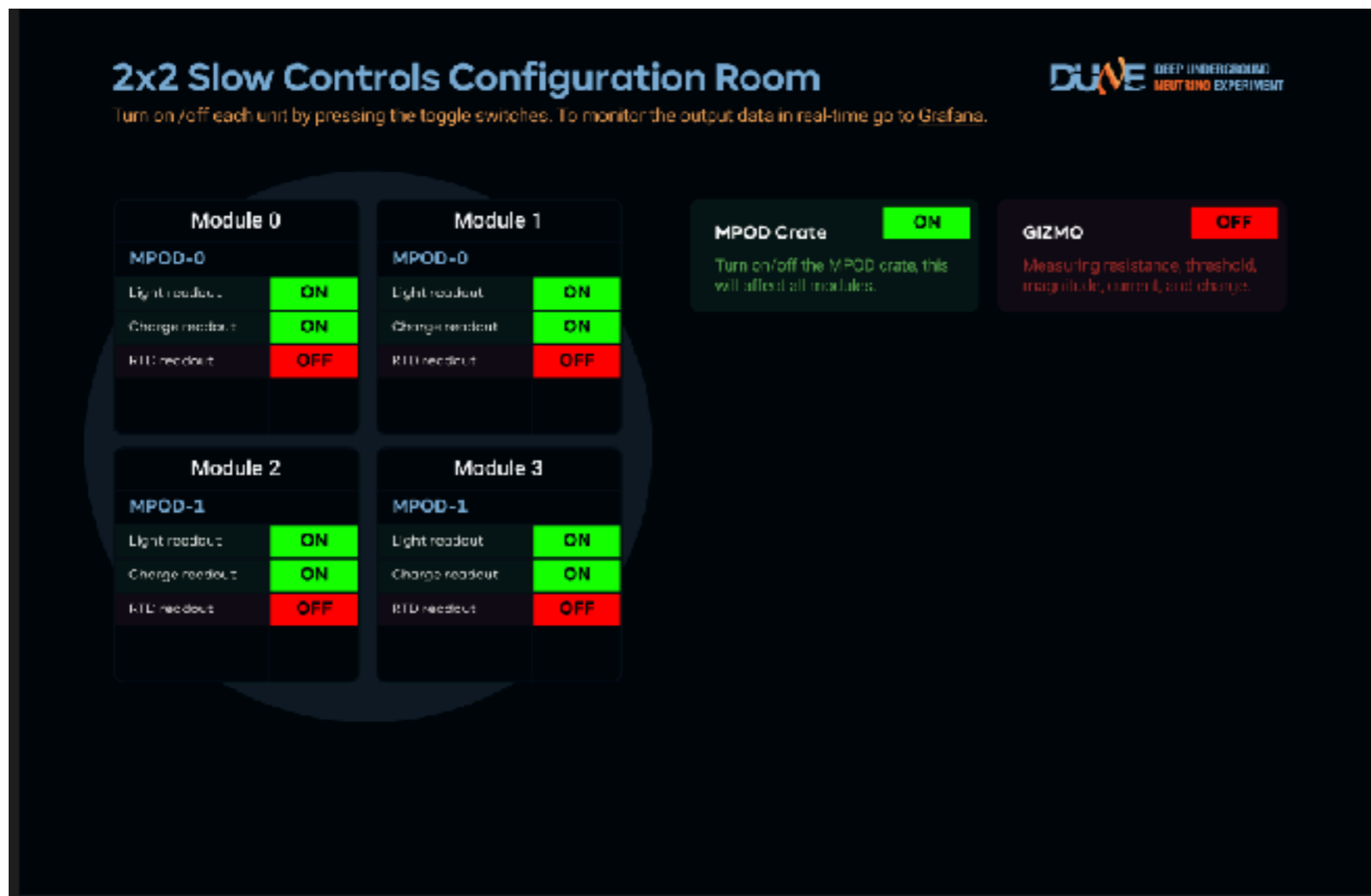
GUI Current Version

- Only Gizmo is being monitored. This is working and taking data in real-time as we speak.

  ssh -L 11443:acd-srv04.fnal.gov:443
  acdemo@acd-gw04.fnal.gov

- To see it go to noVNC04, open a Browser (if not open) and go to:

  ▸ localhost:3000 (Grafana)
  ▸ localhost:3006 (GUI)

- I just need all the ip addresses from the other units to deploy them too.
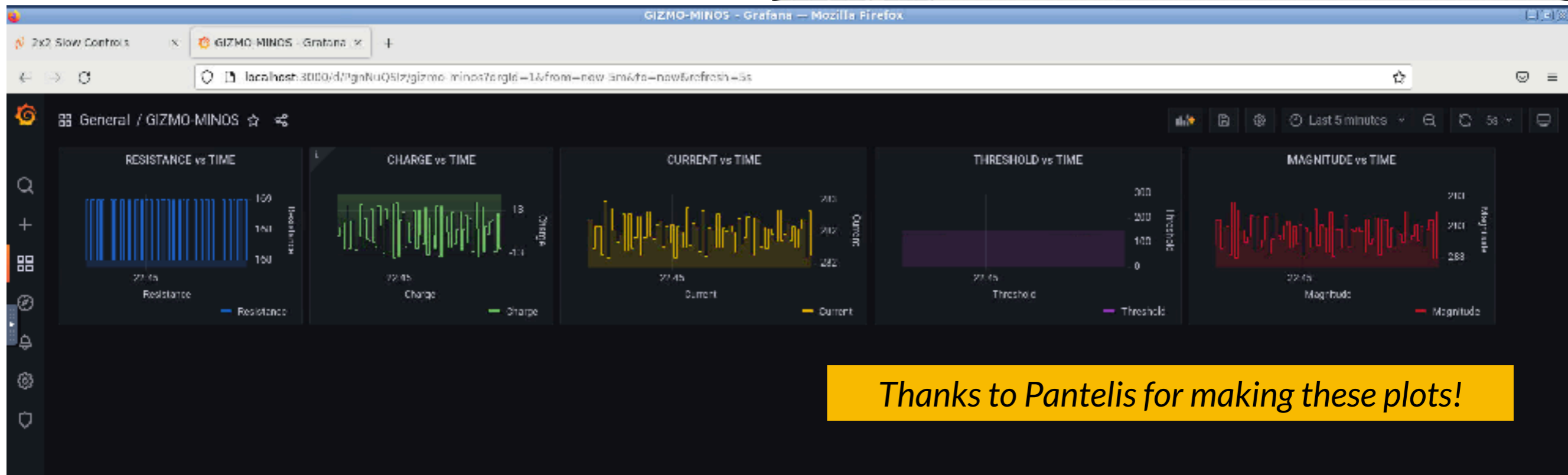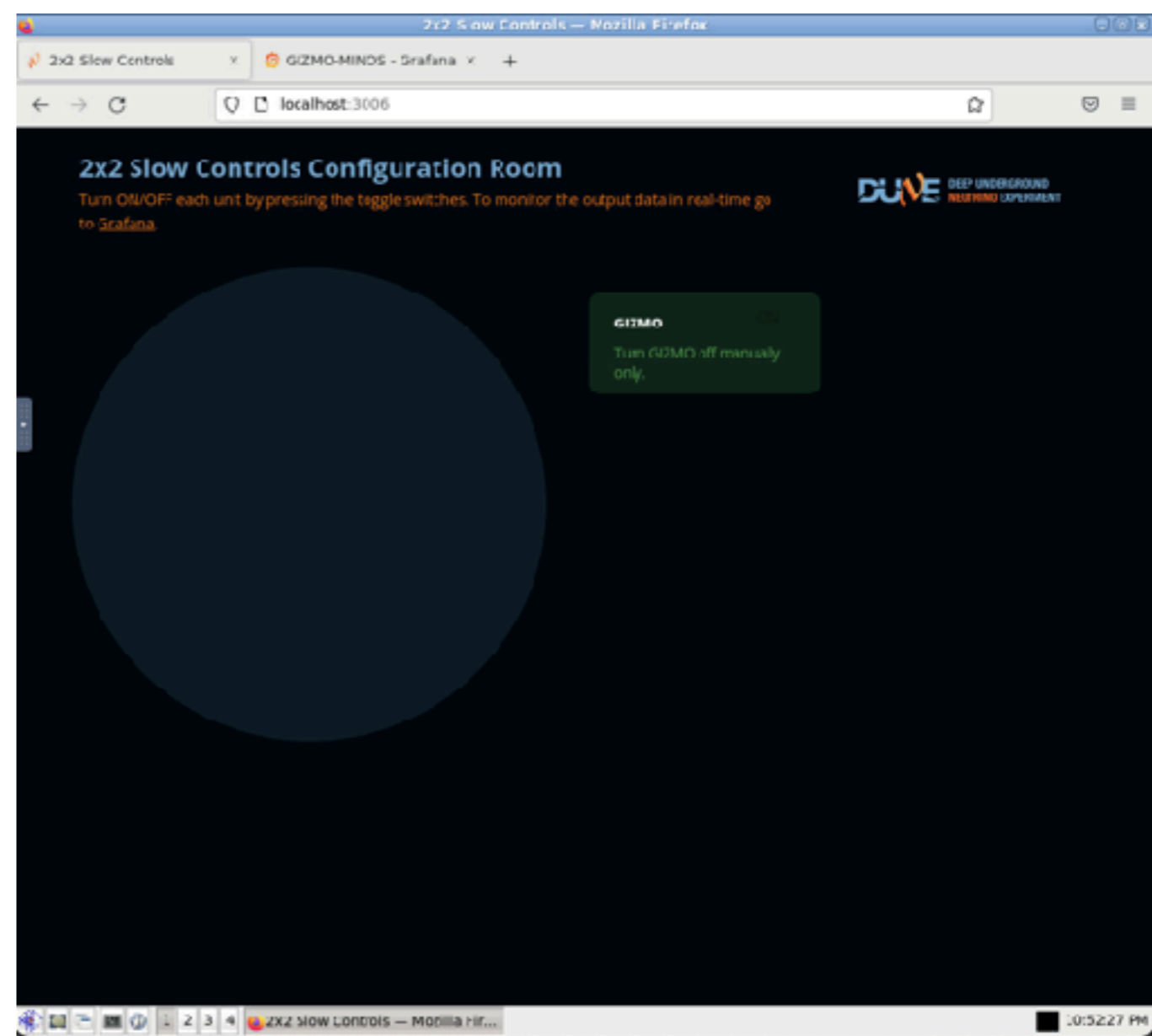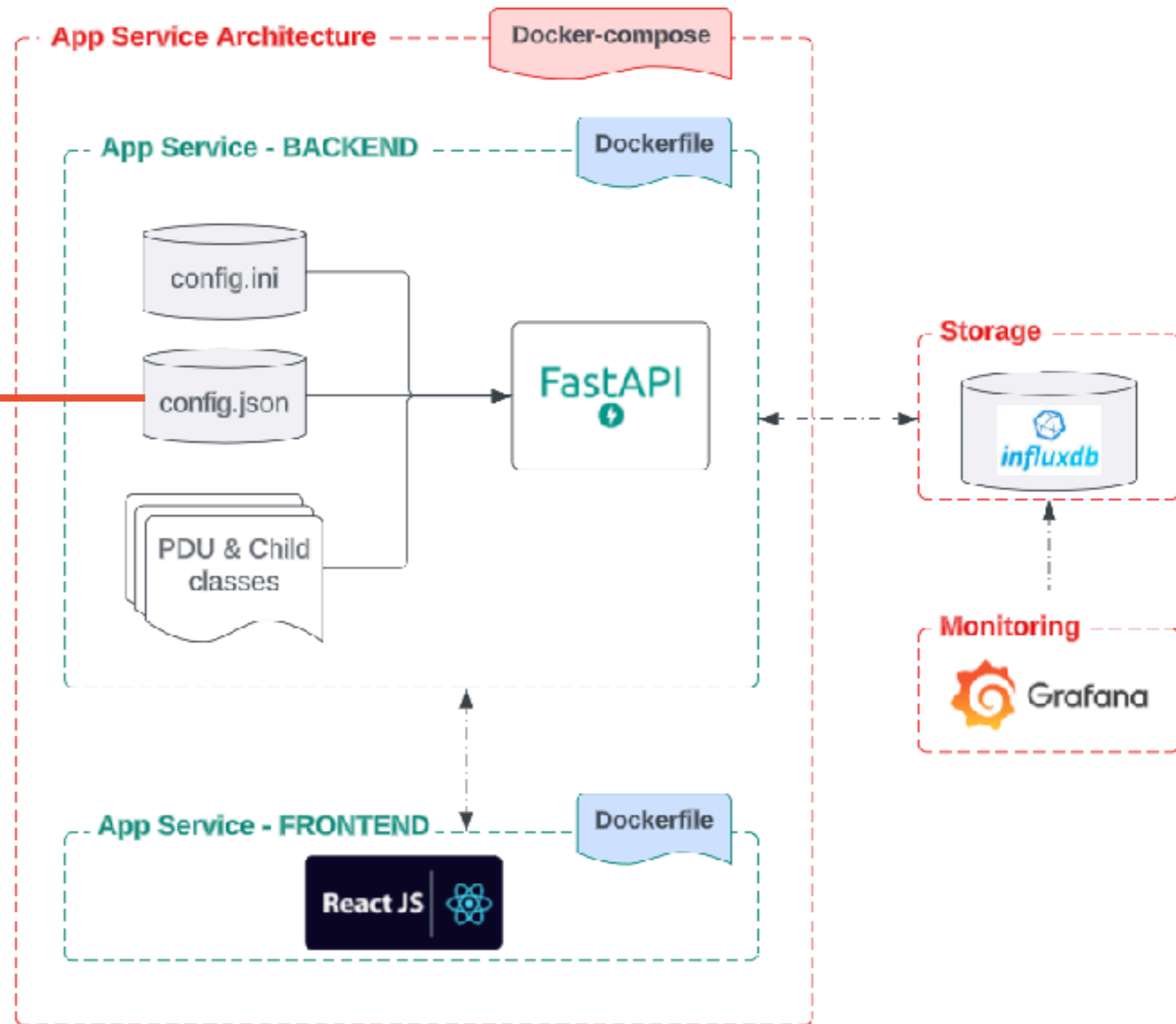

Thanks to Pantelis for making these plots!

GUI Current Version

- The architecture:

```
[acdemo@acd-srv04 SLOW-CONTROLS-GUI]$ pwd
/home/acd/acdemo/SLOW-CONTROLS-GUI
[acdemo@acd-srv04 SLOW-CONTROLS-GUI]$ ls
Backend   compose.yaml   Frontend
```

GUI Next Version

Note:
- HV will probably have its own separate GUI.
- Final setup will have 3 VME crates (One for ADCs and two for VGAs)

- **New requirements:** Integrate with Grafana in a single screen.
- Version 2.0 (Ready to start developing this if no feedback):

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2x2 Slow Controls Software Status Update

GUI Next Version

- **Future requirements:** Add alert system for failure use cases.
- Version 2.1 (Design proposal only)

Backup Slides

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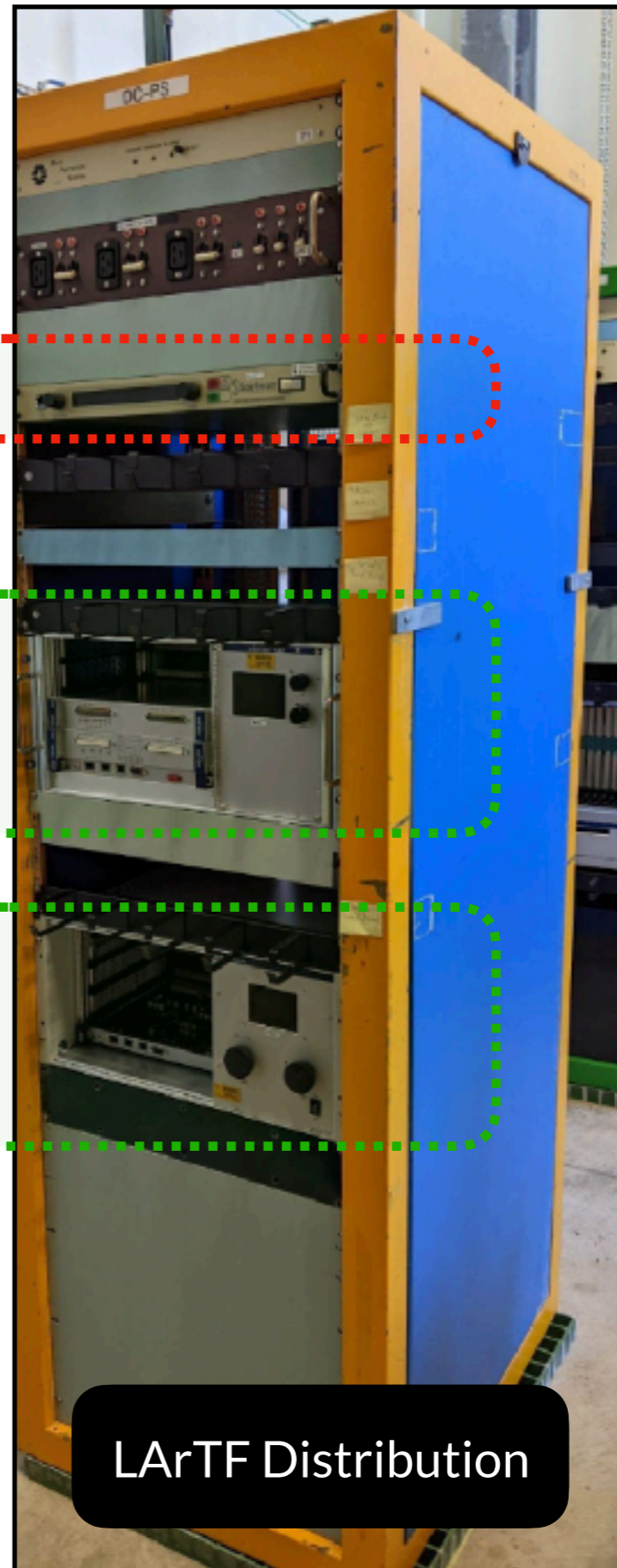**2x2 Slow Controls Software Status Update**

DC-PS

- Host components distributing DC power to other racks and detector sub-systems:

  ▸ **Spellman HV:** High voltage power supply.

  ▸ **MPOD 1 & 2:** Supplies power to VGAs, PACMAN, Fans, and RTDs.
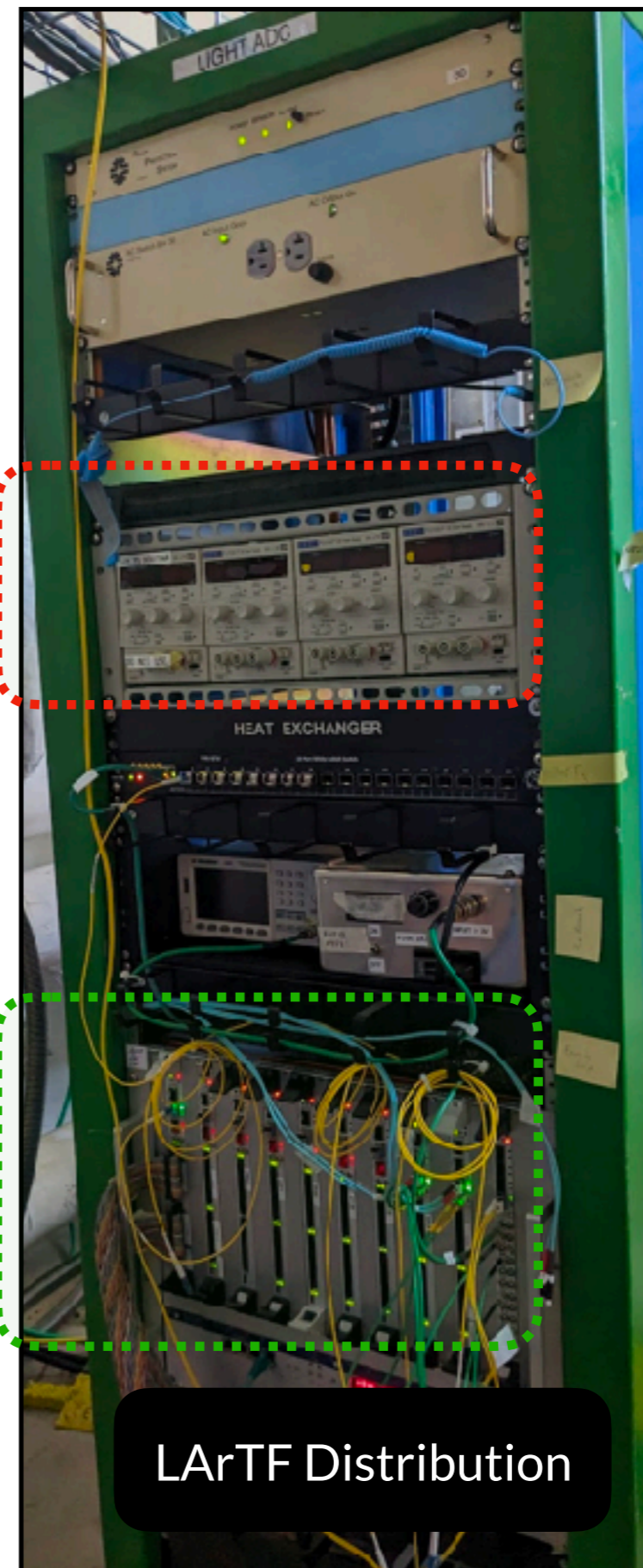

MINOS Currently

LArTF Distribution

MINOS Distribution

Light ADC

- Carries power supplies and a VME crate to host custom design light readout electronics:

  ▸ **TTI:** SiPM bias power supply
  ▸ **VME Crate:** Light readout electronics.

MINOS Currently

LArTF Distribution

| RPS |
| Space |
| Switch Box 30 |
| Cable Brush Strip (missing) |
| Cable Dressing |
| Network Switch |
| Cable Brush Strip |
| SiPM bias power supplies 4x TTI PLH 120-P in RM460 rack mount |
| Blank |
| White Rabbit switch |
| Cable Dressing |
| Blank |
| Pulser |
| Blank |
| Cable Brush Strip |
| Cable Dressing |
| VME Crate |
| Cable Dressing |
| Cable Brush Strip |
| MINOS Distribution |

2x2 DAQ/Computing Meeting | Thursday 30, November 2023
2x2 Slow Controls Software Status Update

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