UPGRADING AND ADAPTING TO CS-STUDIO PHOEBUS AT FACILITY FOR RARE ISOTOPE BEAMS

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INTRODUCTION

- FRIB is transitioning to CS-Studio Phoebus. This paper details the efforts made at FRIB to adapt and migrate to the upgraded CS-Studio Phoebus.
- Major redesign of the CS-Studio software architecture replacing Eclipse RCP & SWT with JavaFX, SPI, etc.

ALARM SYSTEM

- FRIB deploys over 20 instances of the CS-Studio alarms.
- Observed a much faster performance with the importing time of the alarm tree configuration with Phoebus.
- New features for logging the history of alarm states for all PVs and the history of alarm configuration updates.
- Additionally, it includes a mode to disable email notifications for alarms temporarily.
- Alarm system's authorization mechanism has been extended to have authorization rules set on a per-alarm-server instance basis.

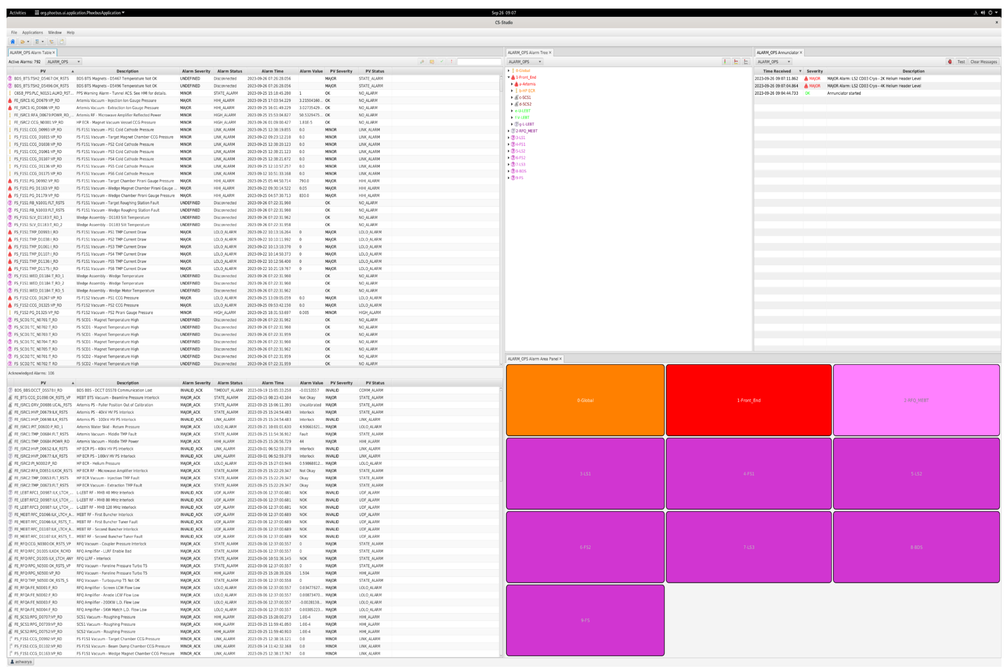

Figure 1: Alarm System View in Phoebus showing alarm table (left), alarm tree (top center), annunciator (top right) and area panel (bottom right).

SAVE-AND-RESTORE

- Tool to take snapshots of PVs at a specific time and write values of a snapshot back to PVs at a later time.
- Backend for Phoebus Save-and-Restore is designed with Elastic Search for the storage for savesets and snapshots.
- Git migration tool with the Phoebus Save-and-Restore service to migrate hundreds of savesets and snapshots.

Figure 5: Migrated Save-and-Restore.

OPERATOR INTERFACE DISPLAYS

- Utilized the auto-conversion tool provided with Phoebus to convert displays.
- Auto-conversion tool's advantages :
  - Converted most widgets without needing any modifications.
  - Reported through warnings about missing widget, property, or script API.
  - Corrected widget types when used in wrong context in the old BOY display.
- FRIB users utilized script for bulk-fixing the common issues in converted files.
- User effort required in re-creating the old CS-Studio's perspectives with the new Phoebus equivalent "Layouts".
- Manual effort is restricted to fixing scripts with new APIs and plot widget type.

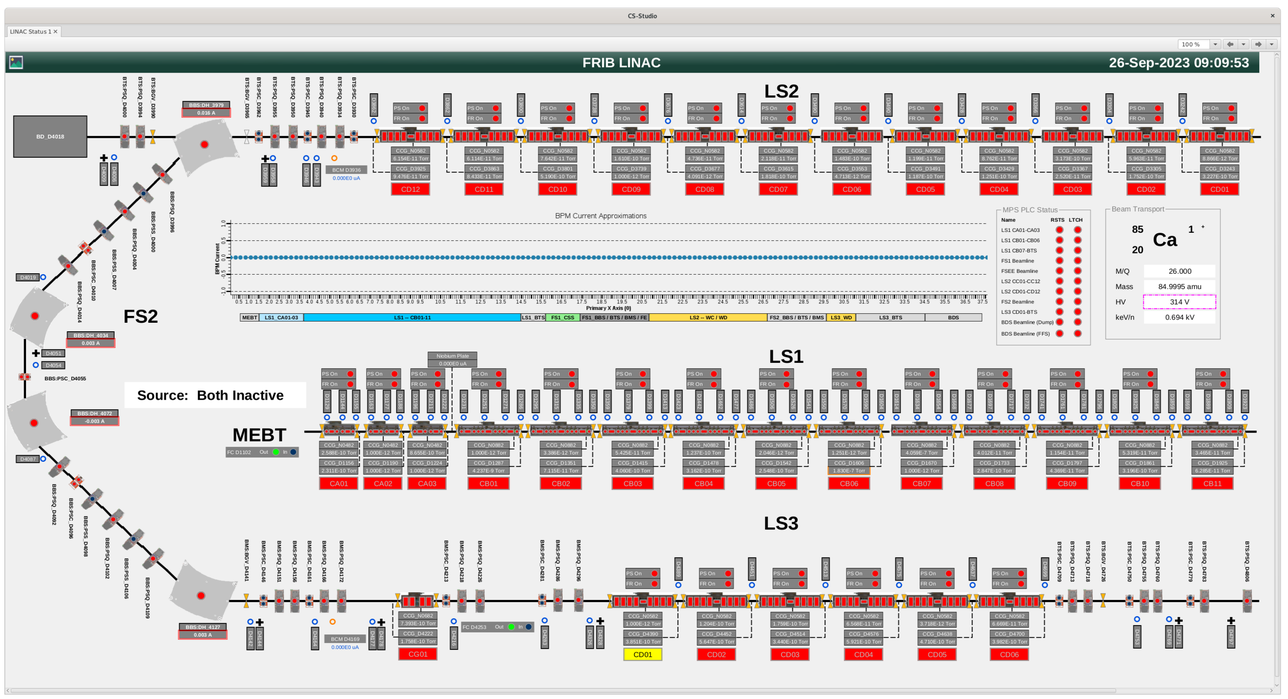

Figure 3: FRIB LINAC West in Phoebus Display Runtime.

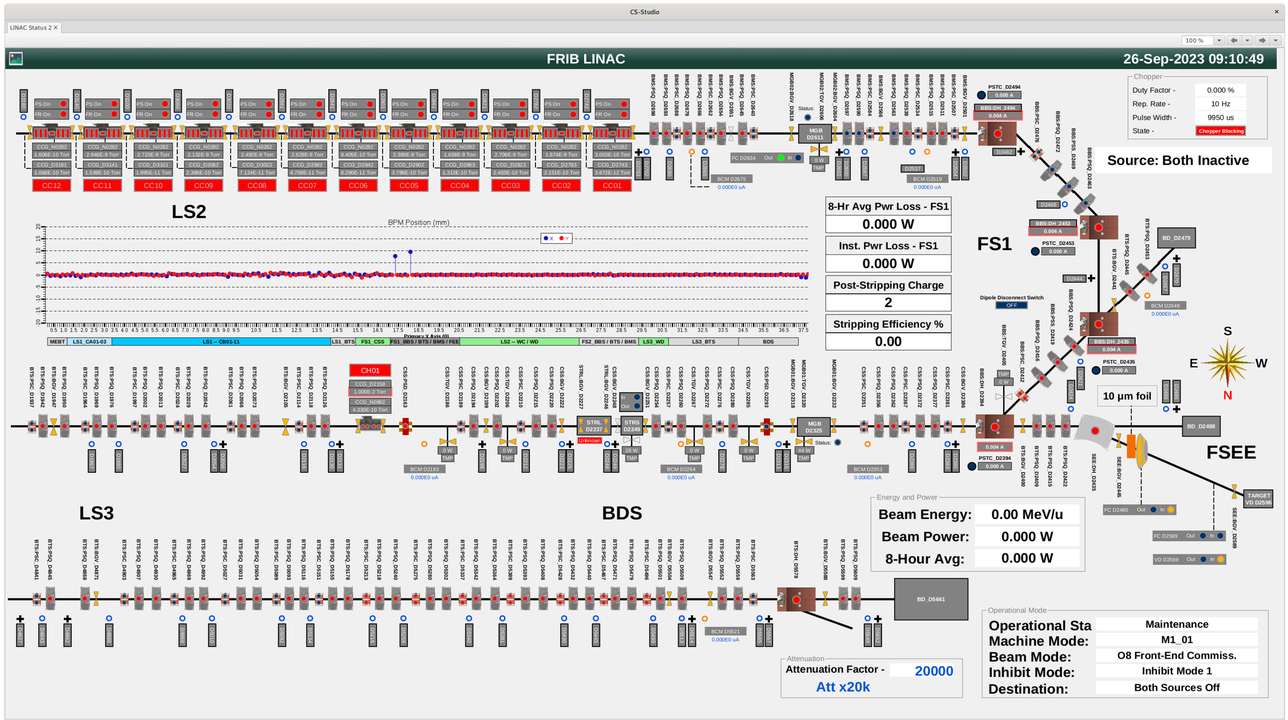

Figure 4: FRIB LINAC East in Phoebus Display Runtime.

SUMMARY

- FRIB is in the process of transitioning to the upgraded CS-Studio Phoebus.
- Utilizing a combination of auto-conversion tool, user scripts and manual testing to migrate our large number of displays to Phoebus Display Builder.
- Deployed multiple instances of the Phoebus alarm server across the FRIB beamline that has been robustly providing the alarm monitoring to the FRIB Operations and various engineering groups.
- In coming months, plan to transition all our displays to Phoebus for all the FRIB beamlines and decommission the old CS-Studio and its services entirely.

ACKNOWLEDGEMENTS

- We thank the CS-Studio collaboration for their contributions towards the development, maintenance, and education of CS-Studio Phoebus.
- We thank the FRIB operators and engineers who have contributed towards the conversion efforts, provided feedback, and led the acceptance of the new CS-Studio.

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