



Roundtable Discussion: Opportunities for Improving Operational Efficiency

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Ops Staytreat, 06/30/16

Why?

Any time shaved out of individual processes may be allocated to the accelerator program; for which there is finite annual time/funding.



Goal

Have a genuine discussion with all parties involved about perceived opportunities for improvements in efficiency via tool (re)design, process automation, etc.

The desire is not to attack or alienate, but rather try to offer constructive criticism and have a healthy discussion which can lead to future improvements for all of us.

Known Limitations:

- Oversubscription of projects relative to the available pool of labor.
- Higher impact projects require prioritization from management. (The degree of impact to the user on some time scale is required input for this process.) [e.g. getting the most bang for your buck...] Caveat: Please make prioritization + rationale transparent to non-developers.

(Frustration can develop among users that projects which are potentially easily accomplished (low hanging fruit) are not readily seized upon – Example C100 integration into RF fast reset/All RF on applications)

- Operator/Part-time developer projects (with clear requirements; use tool kits when possible – Python, Root, etc.)
- Don't reinvent the wheel: Search conference proceedings/tech notes for related projects and make use of professional relationships for input.
- Management Decision: Contract it out (e.g Cosylab etc.)
- Document all work well now so it is not spaghetti code that requires a rewrite later.
- Communication (and possible lack of requirements or feedback mechanisms).

Types of Improvements

(An Incomplete List...)

Type of Improvements

Creation/Automation : A tool does not presently exist, could be created.

Ergonomics: Interface/design improvements, better I/O (Sometimes a standalone GUI is not the most desirable option.)

Functional Refinements: Improving what's under the hood (e.g. Better/Quicker Algorithms)

Scope Expansion: Putting the magnifying glass on the Swiss Army knife...

Integration: Plays well with other tools/users or their paradigm. (e.g. Some users want to work through the EPICs paradigm exclusively, some like GUIs, some like Shell scripts/executables, or perhaps there are prohibitions on certain programming languages...)

Repair / Resurrection: A tool is having difficulty functioning as desired in a given environment, or has ceased function entirely and requires reimplementation.

Full Rewrite: Code not maintainable, or more cumbersome to maintain than coding again. Spaghetti code is not delicious...

Successful Past Examples

Emittance Measurements:

- Manual Acquisition/Data Processing
- Multi-harp Utility (Automate Process)
- Zig-zag Data Acquisition (Process Improvement)
- qsUtility (Automate new process + Analysis/Interface Improvements)

Saving all of the IOCs:

- Save Individually (or take hourly saves by time stamp)
- Save All IOC Script (Serialized) (Automation)
- Archiver-based IOC Save/Restore (Save timestamp vice data set) (Process Improvement)
- **Next:** Parallelize Process? (Possible Process Improvement?)



Possible Opportunities

(Another Incomplete List...)

Possible Opportunities:

Creation/Automation: Requirements Document (Dynamic Setting of the Ion chambers based on target and delivered current set point + calibrations/functional tests; or perhaps calibrated frame grabber SLM images + measurement of the effect discrete phase changes and application of an algorithm for phasing.)

Ergonomics: Interface/design improvements or better I/O (e.g. ATLis, EDM screens for BELS & MO(Mod))

Functional Refinements: Improving what's under the hood (e.g. Better/Quicker Algorithms; orbit lock calibration routine)

Scope Expansion: More functions on the pocket knife...

- Jwalk/ViewerWalk: Could have an option automatically take snapshots of inserted viewer image and then prompt user to push to logbook.

Integration: Plays well with other tools/users or their paradigm.

- PSS console alarm system and lack of specific I/O point alarm discrimination

Repair / Resurrection: A tool is having difficulty functioning as desired in a given environment, or has ceased function entirely and requires reimplementation.

- Autosteer, Krest/Phaser, etc.

Full Rewrite: Code not maintainable, or more cumbersome to maintain than recoding.

- Orbit Locks (Transitioned away from Tcl language, which is slowly being deprecated – as w/ energy locks → Transition to unified lock server?)

Candidates

Survey taken of Operators (Several Identified):

- **Alarm Handler** [Auto-expanding trees, Intelligent signal blinding (e.g. Cycling magnets/Magnet off), Roll Up of Present Alarms, Short-period Latching, etc.]
- **PSS Console System** [No way to tell what is in alarm, latching not helpful for this reason, good candidate for redesign...]
- **Viewer Walk (JWalk replacement)** [Auto-logging of Viewers Cycled through]
- **30Hz/Aperture Check System** [Trust Issues WRT functionality – AC vs. DC, No Health Checking in System, Do screens have correct PVs, Display issues with BPM EPICs Record Fields, Addition of AA/BL/XD regions, etc.]
- **Ion Chamber System** [Automate data acquisition and analysis, Automate dynamic set point change with changes in position of target ladder, Transparent Simplistic Monitoring of what chambers are set for and why, etc.]
- **Global RF Toolkit** [All Tuners zeroed/manual/Auto, caput all GSETs to 3, etc.]





Discussion

Discussion Questions

What processes do you feel there is inefficiency in?

Do you have ideas for new tools or processes streamline operations?

What makes you feel like you're trying to dig a hole with a screwdriver instead of a shovel?

What can we (collectively) do more efficiently for our experimenters?

FIN

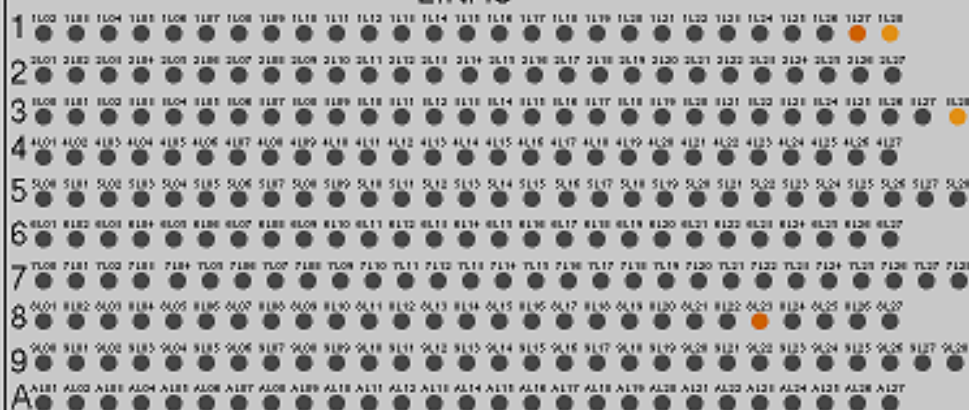


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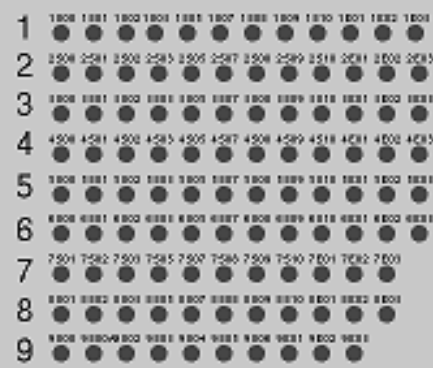
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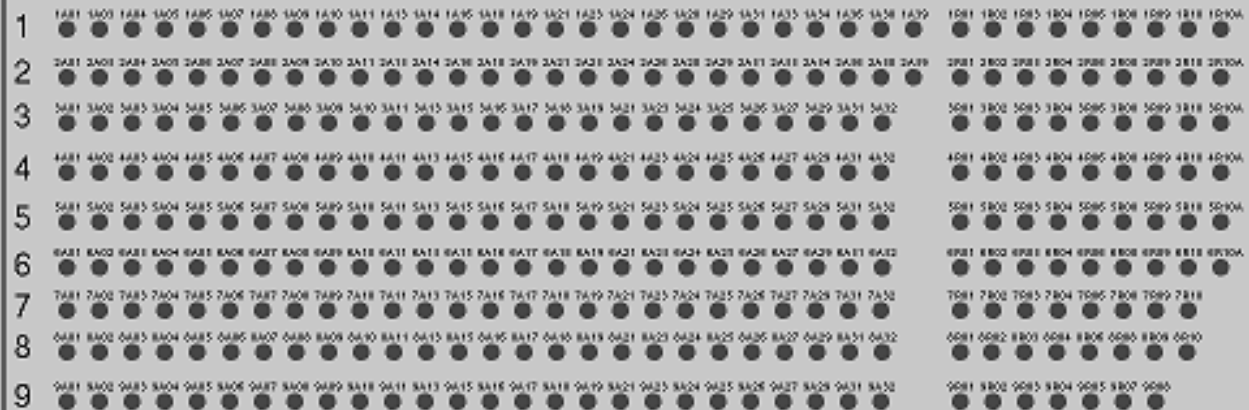
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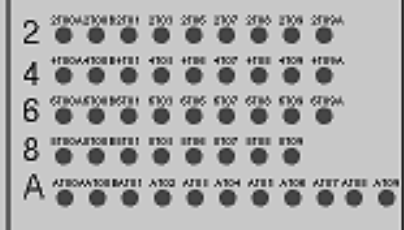
S-E



ARC / RICIRC



Transport



MMS Pass Setup
 Hall A Pass 4
 Hall B Pass 2
 Hall C Pass 1

Hall 30Hz Component: All Systems OFF Amp: 0.000
 Absolute Amplitude: [] Freq: 30.0
 Relative Setup: 30 Hz 0.000 Gen Mode: OFF/PAUSE Offset: 0.000

Hall



the

LINAC

S-E

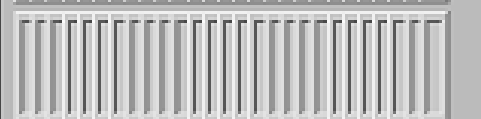
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ARC / RICIRC

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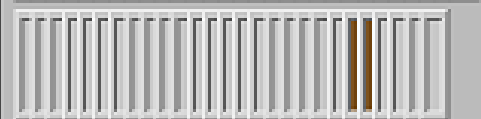
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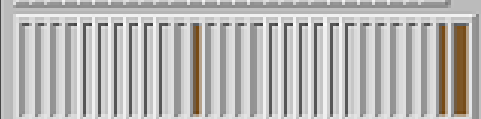
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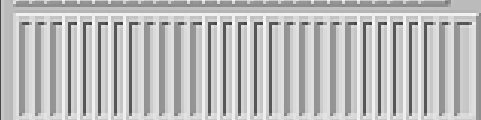
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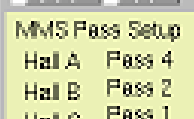
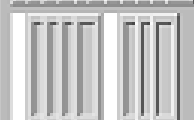
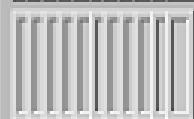
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9



A



MMS Pass Setup
 Hall A Pass 4
 Hall B Pass 2
 Hall C Pass 1

30Hz Pass 1

Absolute

Relative



30Hz Pass 2

Absolute

Relative



30Hz Pass 3

Absolute

Relative



30Hz Pass 4

Absolute

Relative



30Hz Pass 5

Absolute

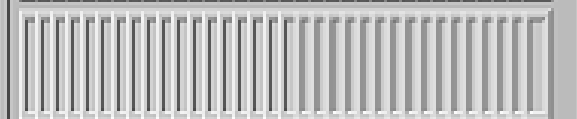
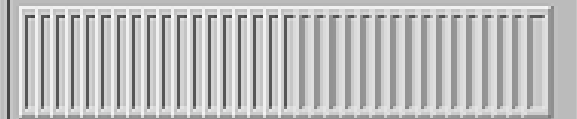
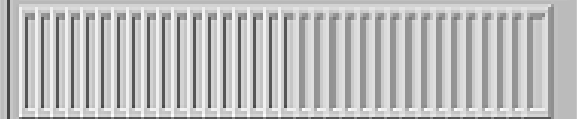
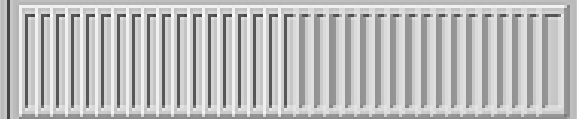
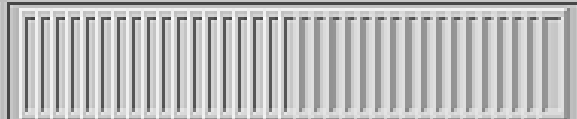
Relative



A

B

C



Hall 30Hz Component: All Systems OFF Ampl: 0.000
 Absolute Amplitude: [Slider] Freq: 30.0
 Relative Setup: 30 Hz 0.000 Gen Mode: FF TRUE

1

2

3

4

5

6

7

8

9

A



/cs/opshome/edm/Rf12

C100-Renaissance 16Nov15 22:23:55 TLC 0.0 uA RF Combo 0L04

E I A OFF ON Aux
 OFF ON Fil 600
 OFF ON Hv
 HPA Reset 15.0 Set (kV)
 GSET.DRVH
 CAV History

IOC HB
 HPA
 INTLK
 Tuner
 RF Master Reset
 Twiddle
 ! Tuner Turbo ON
 ! Tuner Turbo OFF

Ganged PSET
 -180 -70.0 180
 -70.0

ODVH RF GSET GMES CRFP PSET PMES RF Off
 1 16.00 14.247 14.250 1.61e+00 151.465 -185 151.47 185 112.363 1

