TRIUMF

Canada's national laboratory for particle and nuclear physics
Laboratoire national canadien pour la recherche en physique nucléaire
et en physique des particules

Configuration Management for Beam Delivery at TRIUMF/ISAC

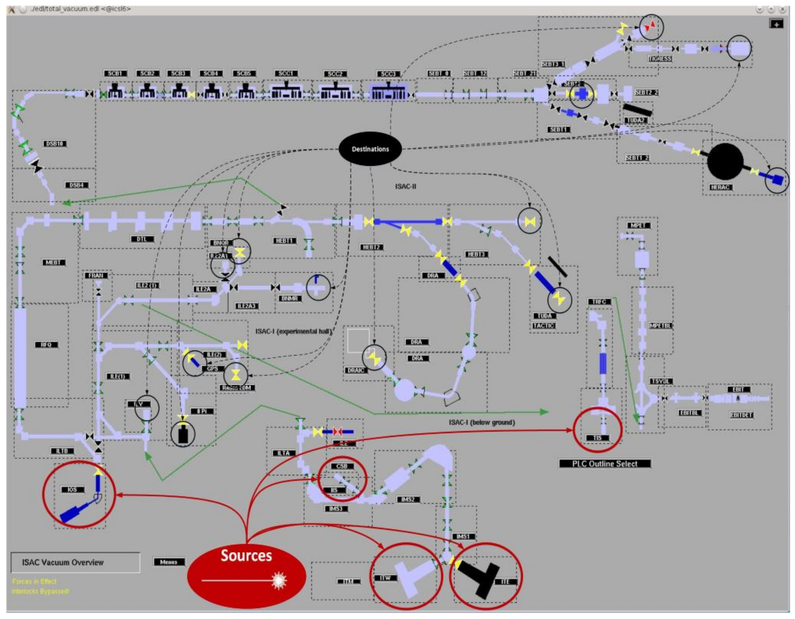
J. Richards, K. Ezawa, and R. Keitel

ISAC Configuration Management Challenge

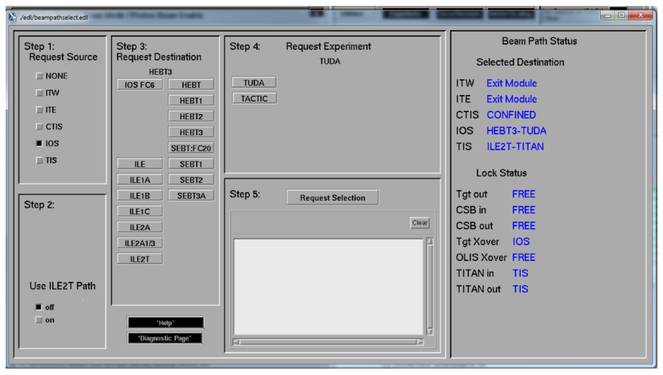
- Multiple ion sources
- Multiple experiment destinations
- Simultaneous beams
- Branching structure of beamline sections
- Possible conflicts between beams

Configuration Management Scope

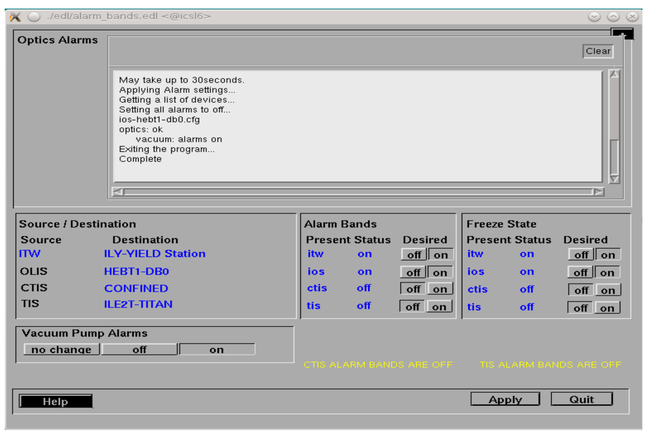
- Beam path selection from each ion source to a destination with optional sub-paths
- Detect and avoid beam path conflicts
- Automatic setting of critical devices (eg benders) for selected beam path
- Monitoring of all selected beam paths
  - operator alarms
  - beam abort
- Save/restore of beam tunes
- Comparison of present beam tune to previous tunes
- Scaling of beam tune to different beam energy and particle mass
- Generation of beam path specific operator displays



Beam Path Selection

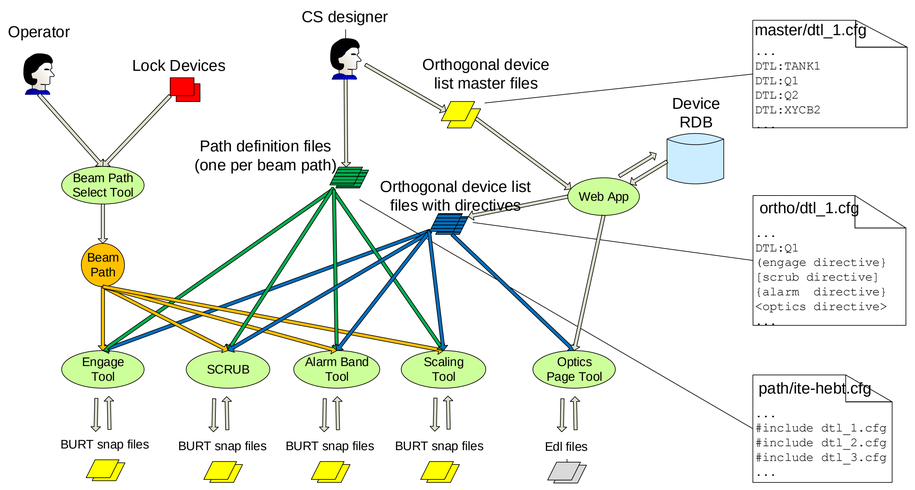


Alarm Band Operation

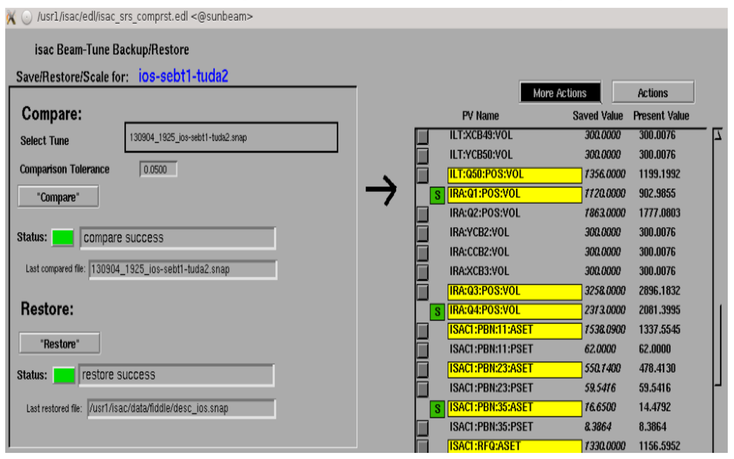


Configuration Management Implementation

- Beam path defined as ordered list of beam optics and beam intercepting devices
- Device lists segmented in orthogonal master files based on branching and display page layout.
- Device specific alarm band, scaling, display configuration maintained in RDBMS.
- Web application generates orthogonal device files with embedded configuration directives using RDB info.
- Lego-like assembly of orthogonal files into beam-path files to match delivery paths
- Path selection uses lock control of critical sections to prevent beam collisions
- EPICS ALH, EDM, BURT applications used together with Perl tools for
  - Beam path selection
  - Beam path engage
  - Alarm band operation
  - Save, Compare, Restore Using Burt (SCRUB)
- Web application + Python tools for generating beam optics displays



Save, Compare, Restore, Scaling



Future extensions

- more experimental stations
- two more simultaneous beams from future ARIEL sources

Will be easily accommodated!

Beam Optics Page Generation