

Qt Applications at TRIUMF

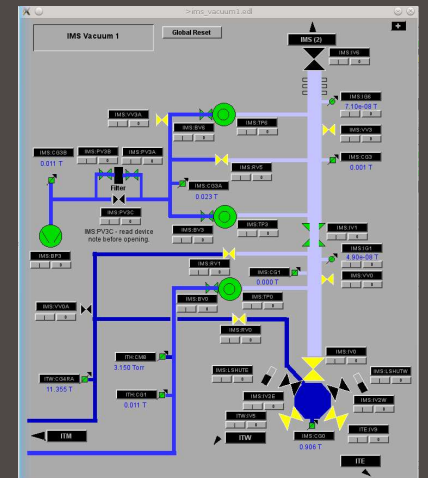
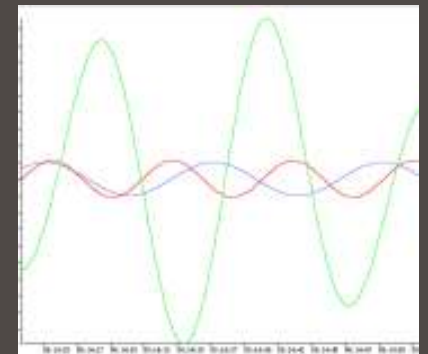
- an update -

Virtual Epics Collaboration Meeting – July 2021

Rolf Keitel

Accelerating Science for Canada
Un accélérateur de la démarche scientifique canadienne

Owned and operated as a joint venture by a consortium of Canadian universities via a contribution through the National Research Council Canada
Propriété d'un consortium d'universités canadiennes, géré en co-entreprise à partir d'une contribution administrée par le Conseil national de recherches Canada



Motivation: Replace Motif Applications

- Decisions:
 - stay with C++
 - Motif → Qt
 - full backward compatibility
- Applications
 - alarm handler: alh → TAlh
 - charting: StripTool → TChart
 - display manager: edm → edmq

Alarm Handler TAlh

- Functionality
 - Implements all alh features
 - new:
 - configuration editor (add/remove/modify alarms)
 - "channel monitors" – on-the-fly alarms on PV values
 - no IOC record severities involved
 - alarm logging by plug-in
 - File → like alh
 - PSql → to PostgreSQL relational database
- Status
 - used in production at TRIUMF for the last two years.
 - (still File logging)

TRIUMF Alarm Handler Handler1 Rev 0.95 (editing enabled) - global - - active - - logging - (C:/Users/rolf/.alh/test.alhConfig)

File Edit Options Info Help

Hierarchy (inactive: 1 disabled: 1)

Group	Severity	Acks	Status	Value
MainGroup	INVALID	INVALID		
Analog	MAJOR	MAJOR		
Phase 1 Cold Box System Fault	NO_ALARM	NO_ALARM		
Phase 1 Compressor Speed Out of Range	NO_ALARM	NO_ALARM		
Bottom Temperature Out of Range	NO_ALARM	NO_ALARM		
Bottom Temperature Out of Range	NO_ALARM	NO_ALARM		
Centre Temperature Out of Range	MAJOR	MAJOR	HIHI	130
Left Temperature Out of Range	MINOR	MINOR	HIGH	75
Right Temperature out of Range	NO_ALARM	NO_ALARM		
Digital	INVALID	INVALID		
Phase 2 Cold Box System Fault	NO_ALARM	NO_ALARM		
Phase 2 Compressor OFF	MAJOR	NO_ALARM	STATE	on
Phase 2 Turbine 1 Speed Out of Range	NO_ALARM	NO_ALARM		
Phase 2 Turbine 21 Speed Out of Range	INVALID	NO_ALARM	not connected	0
Rest	INVALID	INVALID		
Pitiful	INVALID	INVALID		
TESTP1	INVALID	NO_ALARM	not connected	0
TESTP2	INVALID	NO_ALARM	not connected	0

Unacknowledged (silenced 1 hr)

Event Time	Channel	Severity	Status	Type
2016-05-14 14:07:27	Centre Temperature Out of Range	MAJOR	HIHI	alarm
2016-05-14 14:06:56	Left Temperature Out of Range	MINOR	HIGH	alarm

Silence 1 min Silence 10 min Silence 1 hour

Acknowledged (3 unconnected not shown)

Event Time	Channel	Severity	Status	Type
2016-05-14 14:06:32	Phase 2 Compressor OFF	MAJOR	STATE	alarm

PV TEST:AREC7 Alias: Left Temperature Out of Range Event Time: 2016-05-14 14:06:56

Severity: MINOR Ack State: MINOR

Status: HIGH Value at event time: 75

Runtime Configuration

Enable

Silence

Disable

Ack Yes

ACKT Yes

Log Yes

Show Guidance

Acknowledge Execute Command Cancel

Alarm Hierarchy

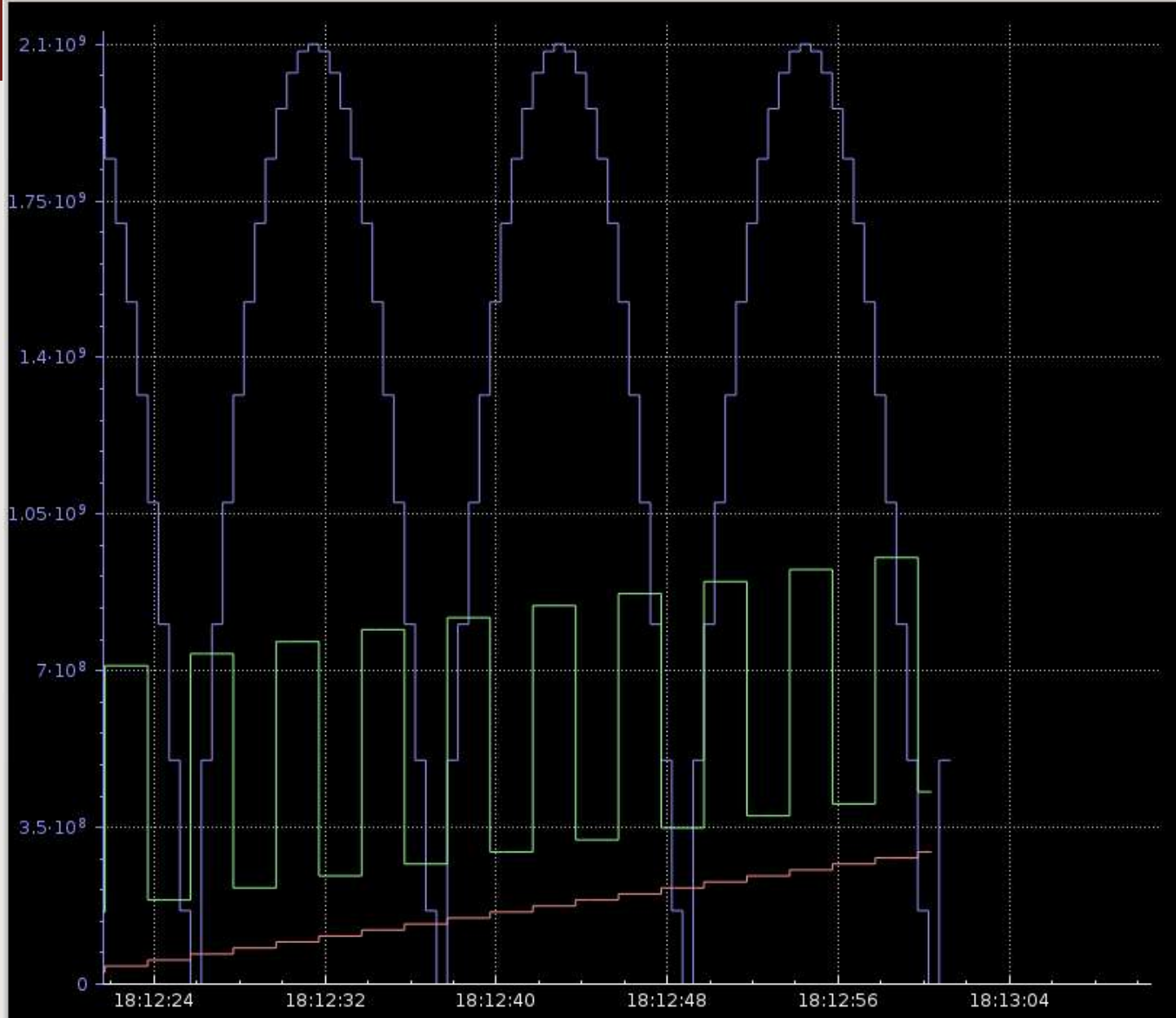
Unacknowledged

Acknowledged

Operator

Strip-Charting: TChart

- **Functionality**
 - Compatible with StripTool configuration files
 - uses monitor subscriptions, not synchronous CA gets
 - optionally writes data to file (all – not just display buffer)
 - retrieves and displays
 - saved TChart data
 - saved traces from different TChart instances
 - retrieves and displays archived data via plug-in
 - pan from live strip-chart into archived data
 - use retrieved archive data as background
 - uses QCustomPlot Widget (<http://qcustomplot.com/>)
- **Status**
 - functional, some cleanup in the works
 - slow operator take-up



TEST:BOUNCE
[0, 2.1e+9]
8.04e+8 units

TEST:INC
[0, 16.0]
2.2 units

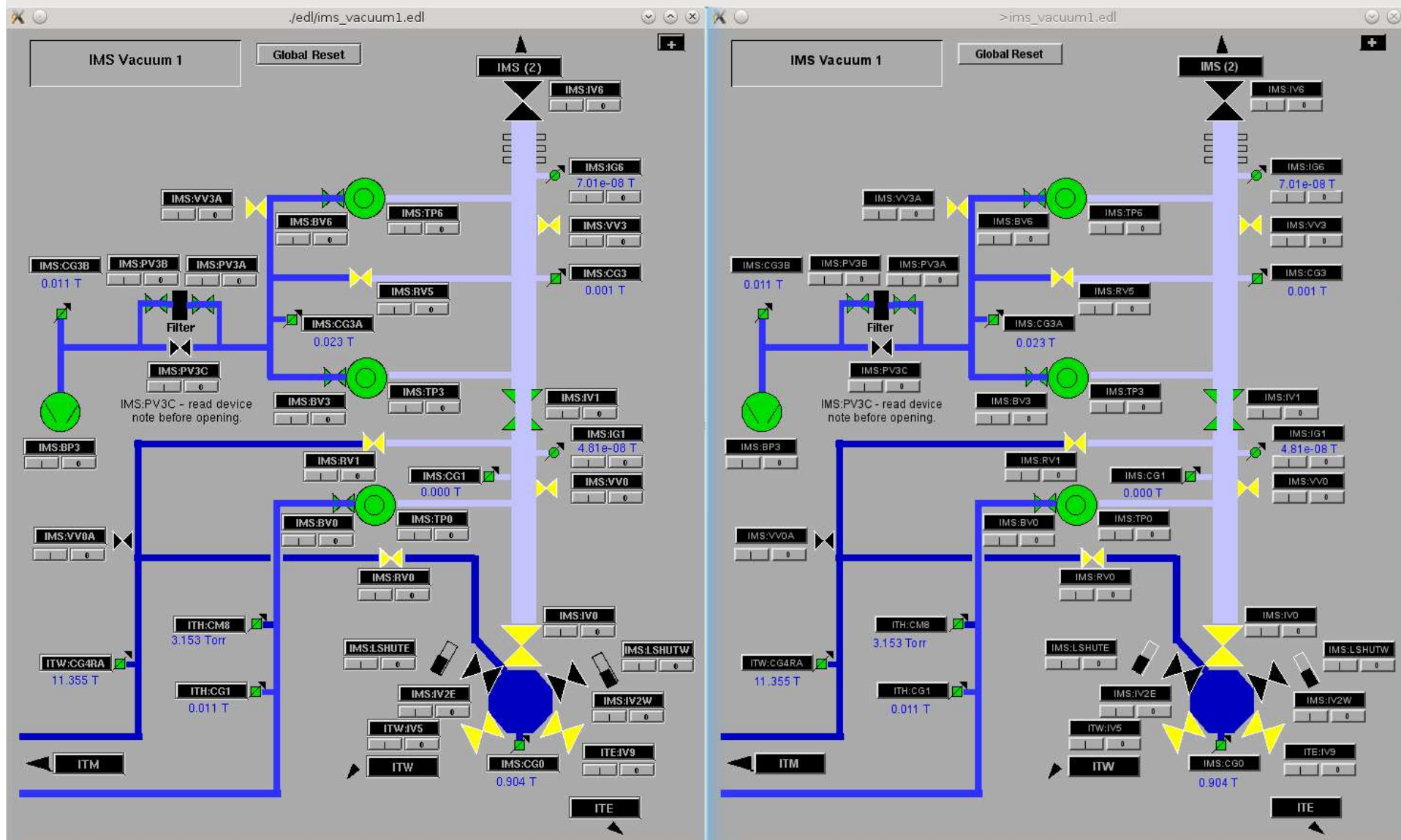
TEST:STEP
[0, 16.0]
3.20 units

2021-05-25
10:23:51
no data

Display Manager/Editor: edmq

- **Functionality**
 - fully backward compatible with edm, uses the same .edl files
 - uses Qt, but not based on Qt
 - implements all widgets of basic edm distribution
 - no slaclib, diamondlib
 - hooks for site specific widget libraries
 - new features
 - scaling of displays
 - widgets
 - 2D slider (x,y mouse movement controls two PVs)
 - process (spawned process can exchange data with \LOC variables)
 - Performance: slightly slower display startup than edm – not significantly slower
- **Status**
 - release candidate for Linux
 - could us more testing
 - recent working version for Windows
 - needs more work / testing

edm and edmq screen shot



- email
 - Rolf Keitel: rolf@triumf.ca
 - Roberto Armenta: rarmenta@triumf.ca
- on-line help
 - <http://isacwserv.triumf.ca/epics/TAlh/>
 - <http://isacwserv.triumf.ca/epics/TChart/>
 - <http://isacwserv.triumf.ca/epics/edmq/html/>
- doxygen documentation for edmq
 - <https://isacwserv.triumf.ca/epics/edmq/doxygen/html/>
- Repositories
 - Presently Mercurial → Git (near future)



Thank you -- Merci

