



SOLARIS  
NATIONAL SYNCHROTRON  
RADIATION CENTRE

# Vue.js & TangoGQL at SOLARIS

...or "How we invested many hours of our lives and hopefully you will too"

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## Agenda:

1. Why PyQt may not be the best solution
2. Why web apps may be a better solution
3. Examples of web apps at SOLARIS
4. What does the future hold?

## Why PyQt may not be the best solution

- It's slow
- ...like **really** slow
- Customisation with insufficient knowledge may cause disturbance in ~~the~~ GUI performance
- Separate instance required at every working station
- Tweaking layout, colours etc is painful (especially with MATE) and PyQt has its limits

## What we use for TANGO web apps at SOLARIS

- Vue.js (ver 2)
  - Vuex
  - Sass
  - Bootstrap
- TangoGQL
- Apollo for Vue.js to handle TangoGQL easily
- for deployment:
  - k8s
  - Ansible
  - AWX

## Why TangoGQL & Vue.js (or React) may be good...

- They're objectively fast (with enough resources for k8s they perform multiple fetch queries in a blink of an eye)
- Only one instance needed, albeit often needed to suit multiple beamlines
- TangoGQL is a ready-to-use solution, no need for a separate backend (like a REST api)
- Tons of libraries/components and (almost) limitless customisation possibilities

## ...although not perfect

- TangoGQL only communicates with TANGO device servers/facades, so queries/mutations have to be heavily configured or new DSes/facades implemented
- When package versions collide, fixing npm installation is much more painful than pip/yum/apt installation
- Basic design skills are needed, CSS coding also takes time
- JS is not Python - another language to be learnt

Now onto some examples

# Interlock GUI - web version

Locations

Categories

Beam line

0 / 4 Interlocks active

Frontend bending magnet

0 / 53 Interlocks active

Frontend insertion devices

1 / 71 Interlocks active

Klystron Tunnel

1 / 77 Interlocks active

Linac Tunnel

0 / 57 Interlocks active

Room

0 / 8 Interlocks active

Storage Ring

0 / 561 Interlocks active

Storage Ring Gallery

0 / 186 Interlocks active

Unknown

1 / 2 Interlocks active

## Resets

Global Reset

04FEBM

04FEID

05FEID

06FEID

10FEBM

12 01 VAC  
RESET

IRF RESET ALL

IVAC RESET

K00CAB02 CTL  
RPS

MAG RPS ALL

SGA MAG  
RESET

SGDCAB12 CTL  
RPS

SHG1 WATRF  
RESET

SHG1 WATRF  
SGDCAB11 RF  
ARCDR1 RESET

SHG2 WATRF  
SGDCAB11 RF  
ARCDR2 RESET

TLCAB03 CTL  
RPS



## Interlock GUI

Wednesday, September 8th 2021, 6:30 pm

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### SECTION 04-05 interlocks




PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBM_AIR_PSW1_A	Pressure switch #1
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBM_WAT_FSW01_A	Flowswitch #01
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBM_WAT_FSW02_A	Flowswitch #02
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBM_WAT_FSW03_A	Flowswitch #03
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC04_DIA_TCO02_H_A	Thermocouple #02
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC06_DIA_TCO03_H_A	Thermocouple #03
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC09_DIA_TCO04_H_A	Thermocouple #04
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO05_H_A	Thermocouple #05
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO06_H_A	Thermocouple #06
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO07_H_A	Thermocouple #07
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO08_H_A	Thermocouple #08
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC04_DIA_TCO02_HH_A	Thermocouple #02
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC06_DIA_TCO03_HH_A	Thermocouple #03
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC09_DIA_TCO04_HH_A	Thermocouple #04
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO05_HH_A	Thermocouple #05
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO06_HH_A	Thermocouple #06
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO07_HH_A	Thermocouple #07
PLC/R1-04FEBM/BOOLEAN	B_R1_04FEBMVC10_DIA_TCO08_HH_A	Thermocouple #08

### Resets

Global Reset	
04FEBM	04FEID
05FEID	06FEID
10FEBM	12 01 VAC RESET
IRF RESET ALL	IVAC RESET
K00CAB02 CTL RPS	MAG RPS ALL
SGA MAG RESET	SGDCAB12 CTL RPS
SHG1 WATRF RESET	SHG1 WATRF SGDCAB11 RF ARCDR1 RESET
SHG2 WATRF SGDCAB11 RF ARCDR2 RESET	TLCAB03 CTL RPS



# PANIC web app



**SOLARIS**  
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PANIC Alarm System


Tuesday, September 7th 2021, 9:32 am

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Add alarm

<b>CTL</b> 3 / 17 alarms active	<b>DIA</b> 5 / 15 alarms active	<b>MAG</b> 0 / 4 alarms active
<b>PLC</b> 0 / 0 alarms active	<b>PSS</b> 0 / 2 alarms active	<b>RAD</b> 2 / 6 alarms active
<b>RF</b> 0 / 3 alarms active	<b>VAC</b> 0 / 4 alarms active	

# PANIC web app

 **SOLARIS**  
NATIONAL SYNCHROTRON  
RADIATION CENTRE

PANIC Alarm System

Tuesday, September 7th 2021, 9:33 am

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Add alarm

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DIA alarms:

R1_DIA_LIBERA_AGC	AGC is false	Aug 20 2021, 15:50	<a href="#">Reset Alarm</a>
I_TL_DIA_CAM_RUN	Camera is acquiring the signal but YAG is EXTRACTED in TL	Aug 20 2021, 16:59	<a href="#">Reset Alarm</a>
R1_DIA_LIBERA_EVR	EVRxMcLocked is false	Aug 30 2021, 13:25	<a href="#">Reset Alarm</a>
R1_DIA_LIBERA_ILEN	Interlock Enabled	Aug 20 2021, 15:50	<a href="#">Reset Alarm</a>
DIA_BEAMCORRECTION_FROZEN	Beam correction frozen	Aug 27 2021, 09:51	<a href="#">Reset Alarm</a>
I_TL_DIA_LIBERA_TEMP	Temperature too high (over 75) in any of LSPE in TL		
I_S00_DIA_CHOPPER_APT_OUT	Aperture in GUN section is extracted while chopper is ON		
R1_01S_DIA_SCRP_IN	Scraper in the SR inserted below physical aperture, lifetime measurement or possible beam loss		
R1_01S_DIA_DCCT_FAIL	Beam current readout failure		
DIA_PINHOLE_EMITTANCE_ALARM	PINHOLE emittance calculations are frozen or in error state		
R1_DIA_LIBERA_PM	Post Mortem notified		
I_TL_DIA_LIBERA_ILK	Interlock notified on any Libera in TL		
I_S00_DIA_CHOPPER_OFF	I-K00 is in TRIG mode and Chopper is off		
I_DIA_LIBERA_ILK	Interlock notified on any Libera in Linac		

# PANIC web app



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PANIC Alarm System

Tuesday, September 7th 2021, 9:34 am

Logged in as Tomasz Noga [Logout](#)

Tag

Tag should be short and descriptive. Use capital letters, e.g. ALARM\_DIA\_TEST

Description

Severity

Receivers

Should be formatted as: Firstname Lastname, address@uj.edu.pl. If two or more receivers, every one of them should be separated by comma and a whitespace

Phone number

Should be typed in without any spaces, commas or hyphens

System

Subsystem

Logbook Report

[Go back](#) [Go to formula creation](#)

Current

0.00 mA

Energy

0.00 GeV

Lifetime

0.00 h

I-T product

0.00 Ah

ID Beamlines

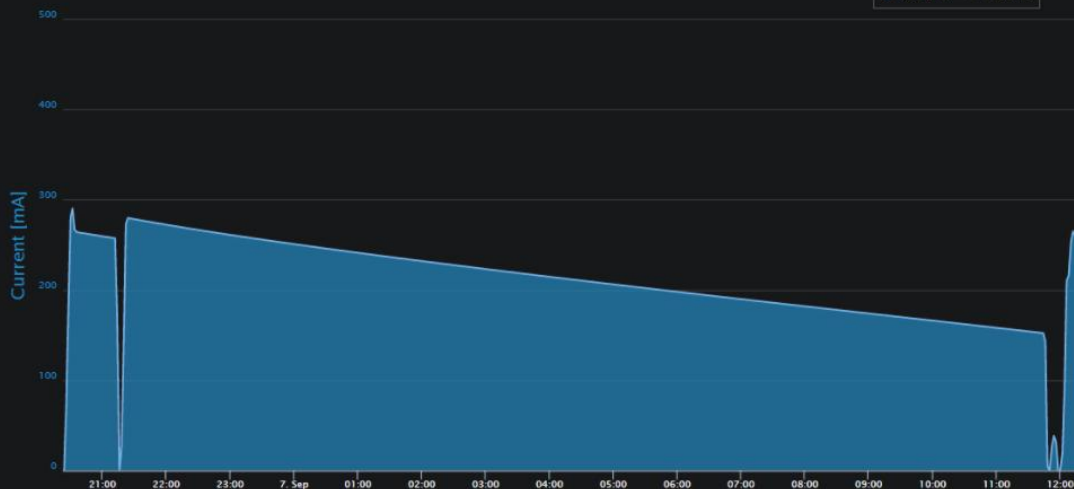
Name	Gap	State
<u>PHELIX</u>	200.00 mm	CLOSED
<u>UARPES</u>	200.00 mm	CLOSED
<u>DEMETER</u>	288.00 mm	CLOSED
SOLCRYS	N/A	under construction

BM Beamlines

Name	State
<u>XAS</u>	CLOSED
SOLABS	under construction
SOLAIR	under construction
POLYX	under construction

4H 8H 12H **16H** 24H 48H 72H

● Current — Lifetime



Storage Ring Status: **Ring Standby**

Operation Mode: **Machine Day**

Next injections:

8:00 am, 3:00 pm and 9:00 pm during User Operation mode

**OPERATOR MESSAGE**

21-09-06 21:33

BL04ID undulator FF table measurement



## Some future plans

- Spock component for Vue.js, based on some terminal library (status of the project is worse than pre-alpha, so no screenshots available)
- ...and maybe more Sardana stuff as Vue components
- ...and maybe some Taurus-like widgets for Vue apps
- Test graphql-resquest to replace Apollo
- Migration of more GUIs to Vue.js apps

Thanks!

If you have any questions, e-mail me at [tomasz.noga@uj.edu.pl](mailto:tomasz.noga@uj.edu.pl)

