

# A STRUCTURED APPROACH TO CONTROL SYSTEM GUI DESIGN FOR THE SOLARIS LIGHT SOURCE

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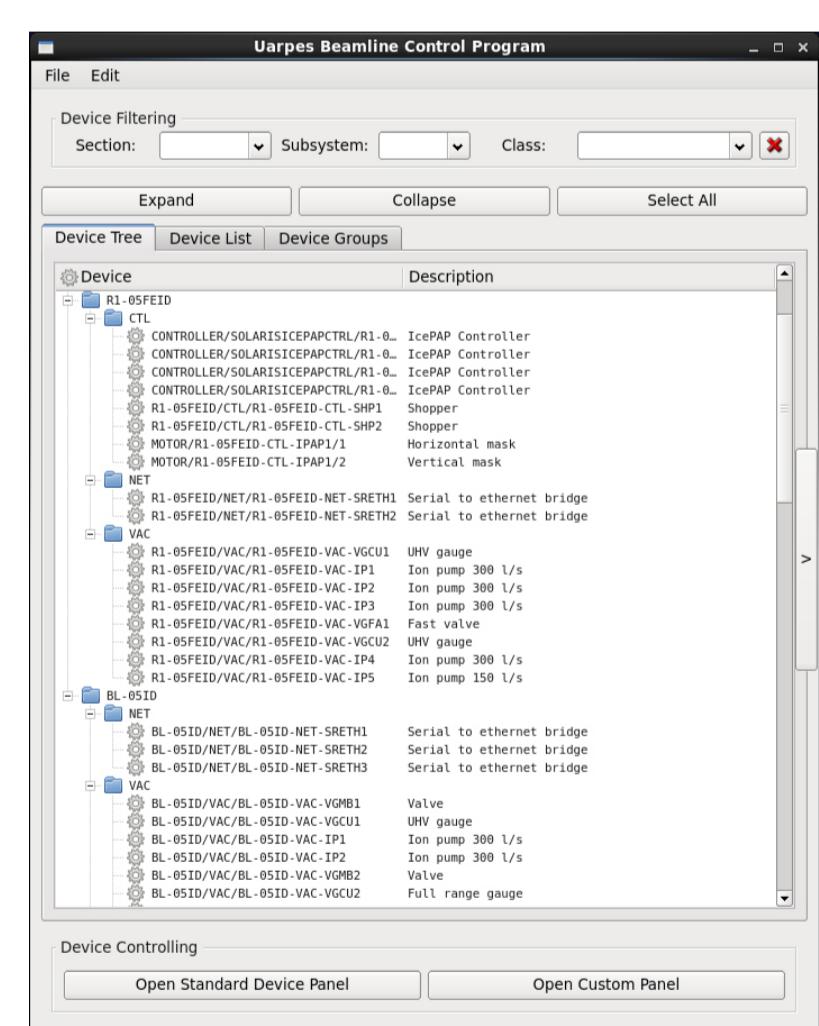
## Abstract

In the framework of delivering control system services to the Solaris synchrotron light source, Krakow, Poland, Cosylab realized a comprehensive set of controls GUIs, using a structured approach. The goals of using this architecture are threefold. The first is to achieve reliable, predictable and consistent behaviour of the controls software. The second is that it is easy to deploy and maintain through scripting. The third is that it is futureproof by providing extensibility, using dedicated templates. The system is based on a configuration database, populated with devices, device specifics and device groups (clusters of devices performing specific operations). The GUIs are dynamically generated from this configuration. For the synoptic views, TANGOstandard JDraw and its configuration are integrated into the framework. Existing GUIs, written in PyTango can be easily adapted to function as part of this system. The compelling user benefits are high usability and lifetime management through controlled upgrade and extension. For new big physics projects this GUI control program offers a customizable solution for any TANGO based control system..

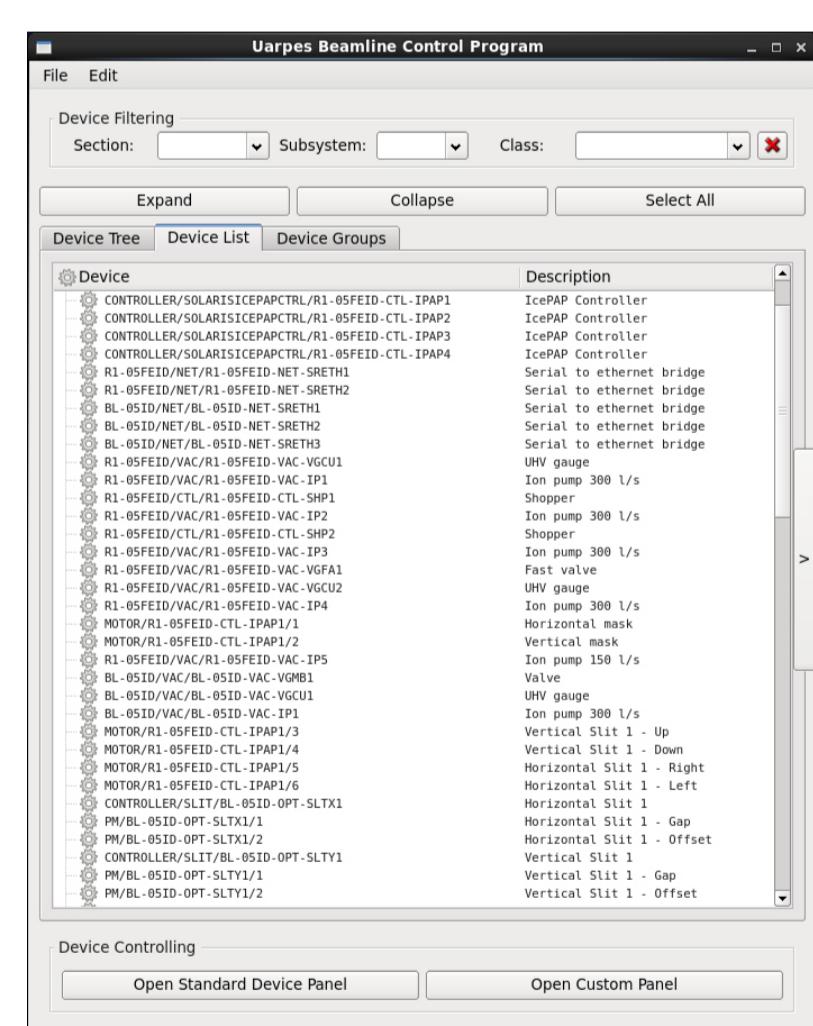
## A TurnKey solution

A TurnKey solution for Tango lightsources:

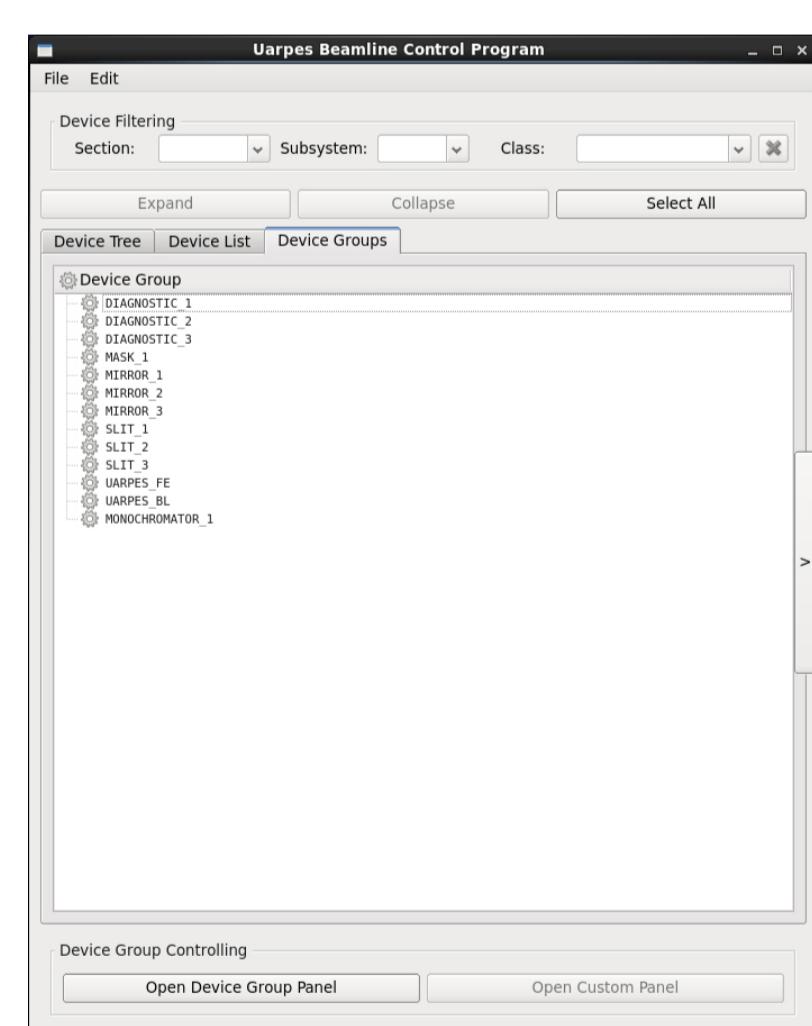
- Control of the facility
- Consistent and predictable behaviour, transparent and convenient use
- Single entry point for all required operations
- Provided a set of functionalities and features for operator and expert use
- Configuration based
  - Control program is populated according to configuration
  - Dynamic panel generation according to configuration
  - Device groups are created and populated according to configuration
  - Prepared generic (configuration driven) group panels for different operation aspects
- Easily extensible
  - Templates provided for easy development of new extensions
  - Support for external applications
- Fast, script-based deployment using GUI runner utility
  - Update manager
  - Instance manager



Device Tree View



Device List View



Device Groups View

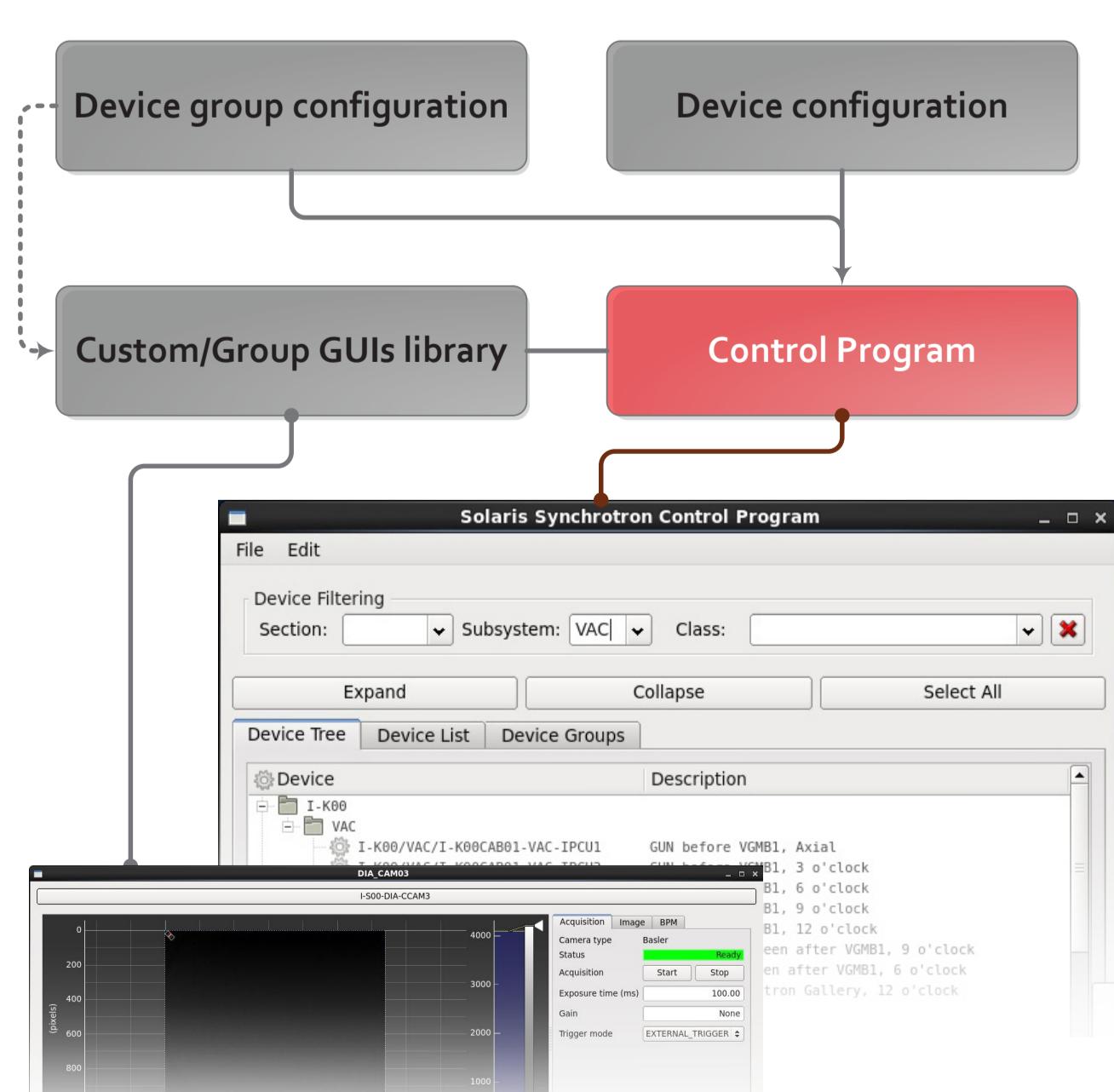
## Software structure

Configuration:

- Device configuration
- Device group configuration

Control Program:

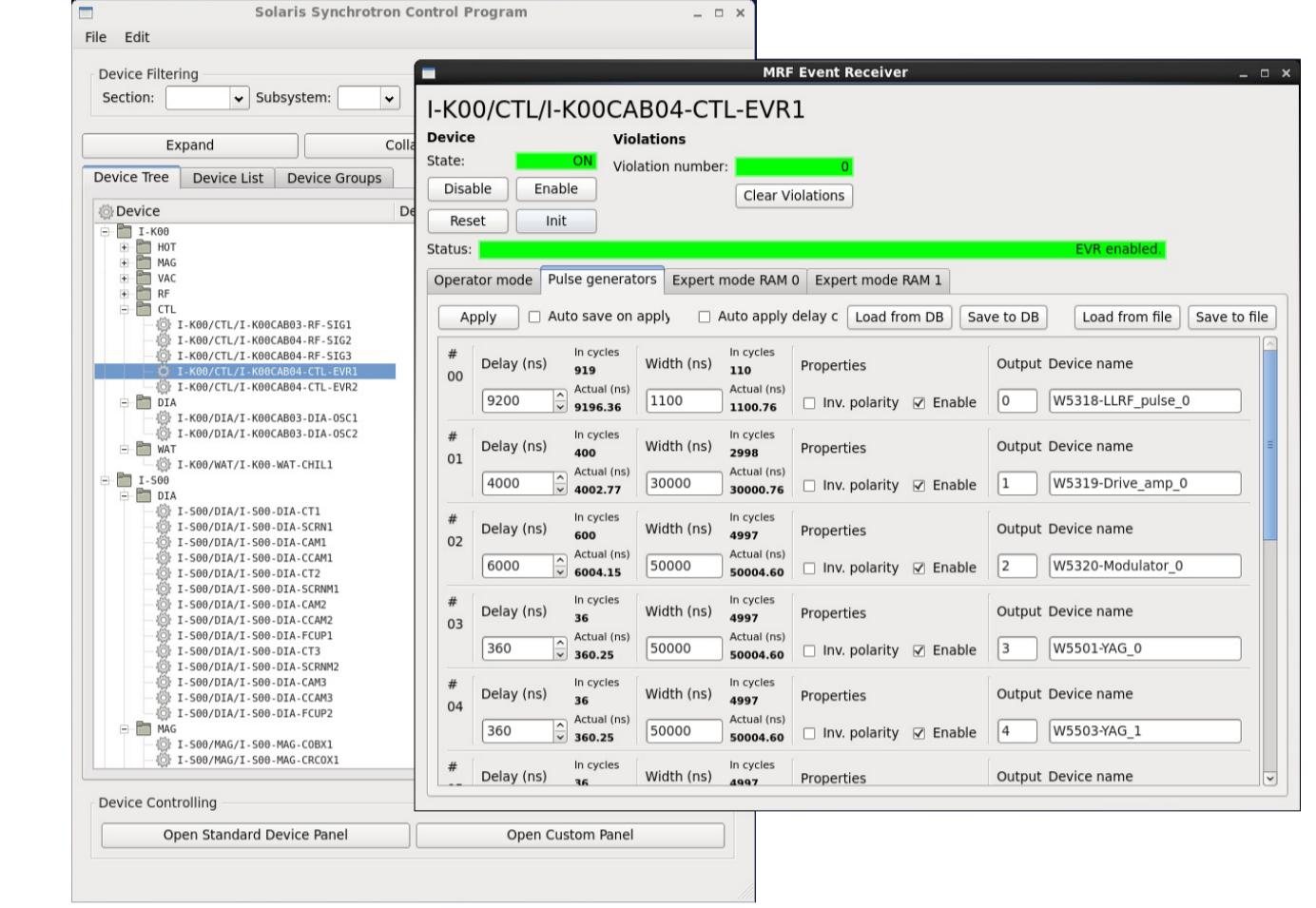
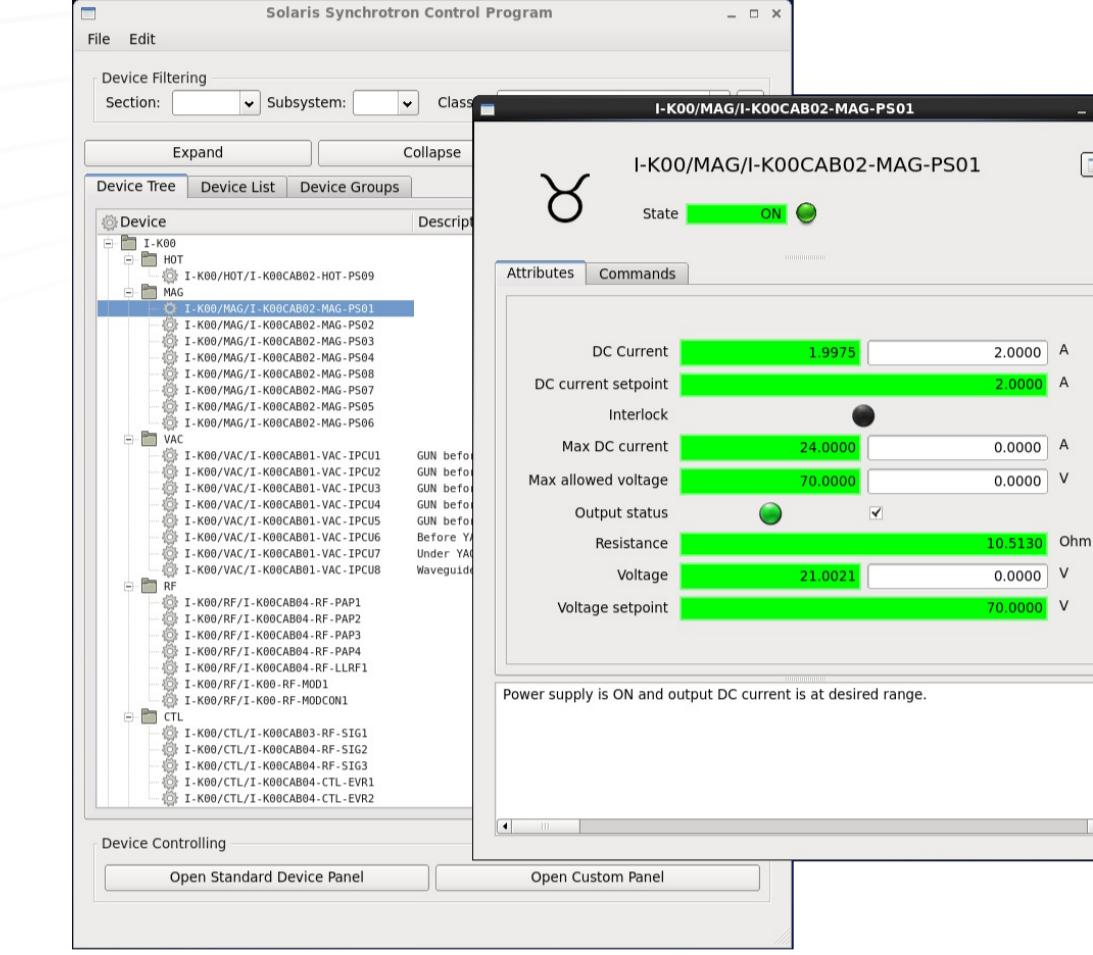
- Standard functionality
  - Default device panels
  - Device filtering options
  - Profile management
  - State monitoring
- Custom GUI library
- Custom device panels
  - Device group panels



## Features

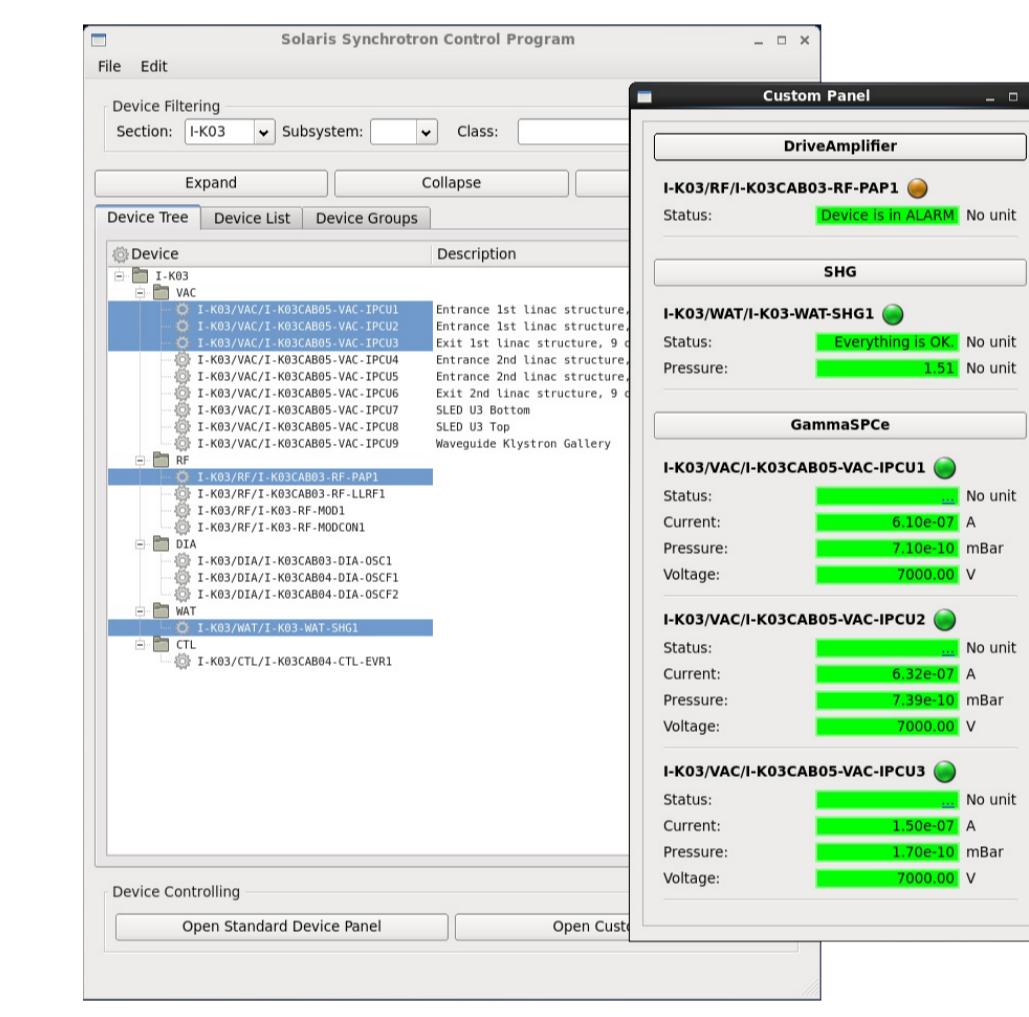
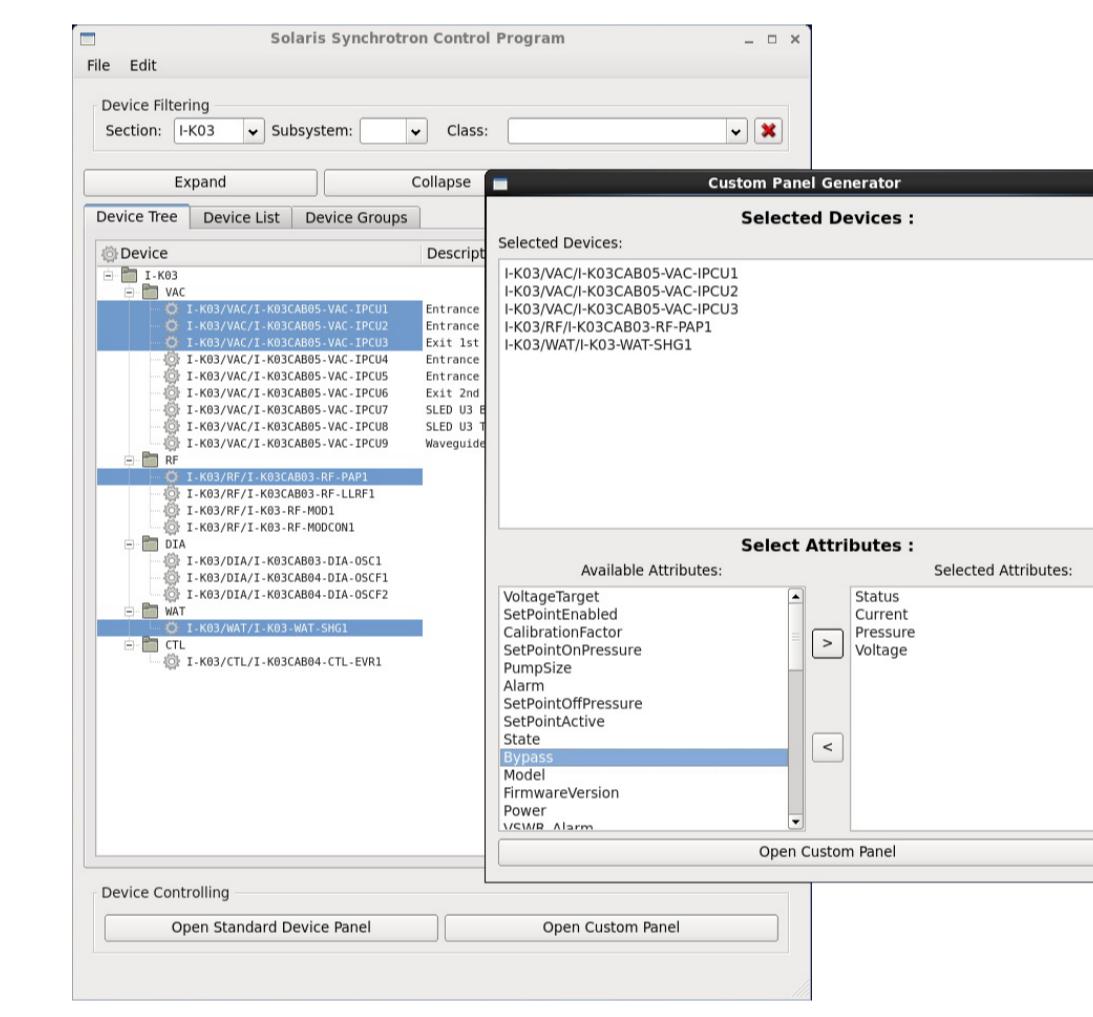
### Device overview:

- Taurus device panels, specialized custom device panels
- Organized access to devices, various filtering options
- Browsing with respect to facility structure



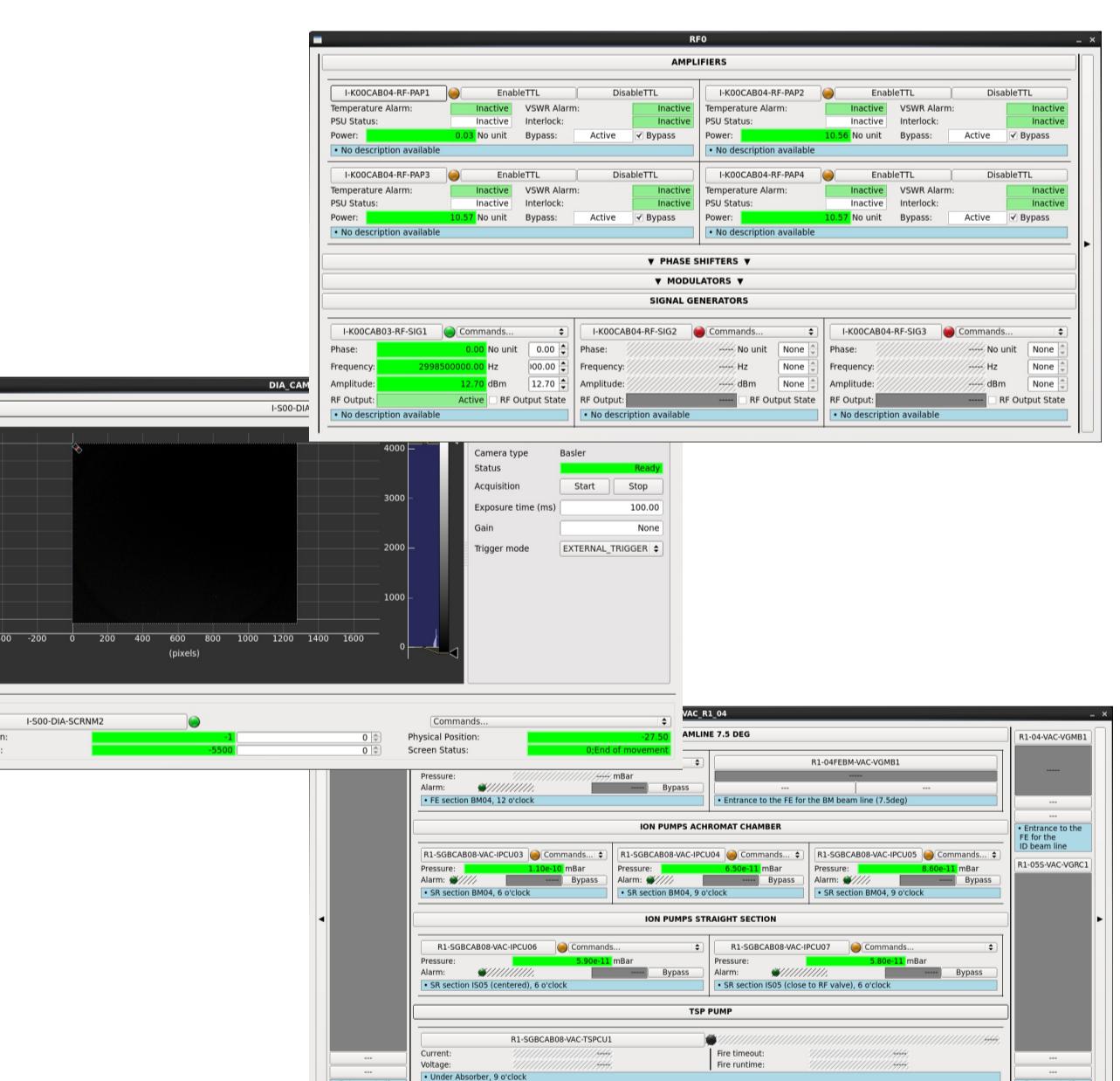
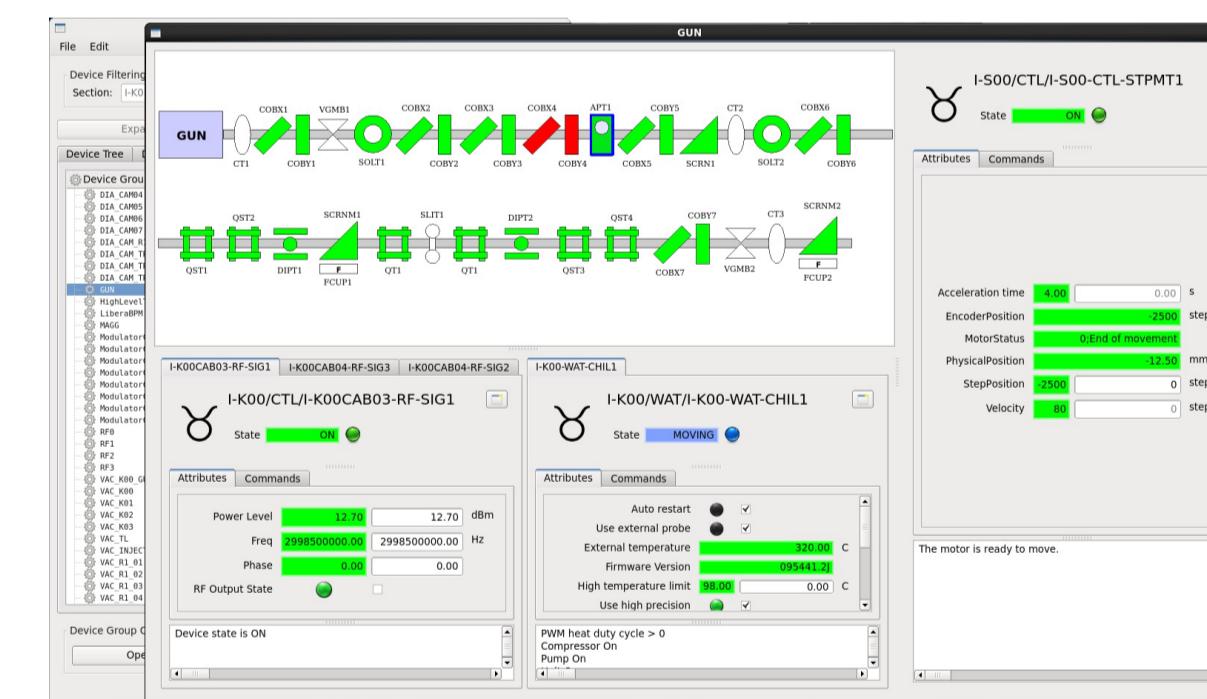
### Custom generated panels:

- User input
  - A set of devices and a set of attributes
- Dynamically generated panel according to user input



### Device groups:

- Panels aggregating multiple devices
- Easy operation using dedicated screens
- Transparent overview of subsystems

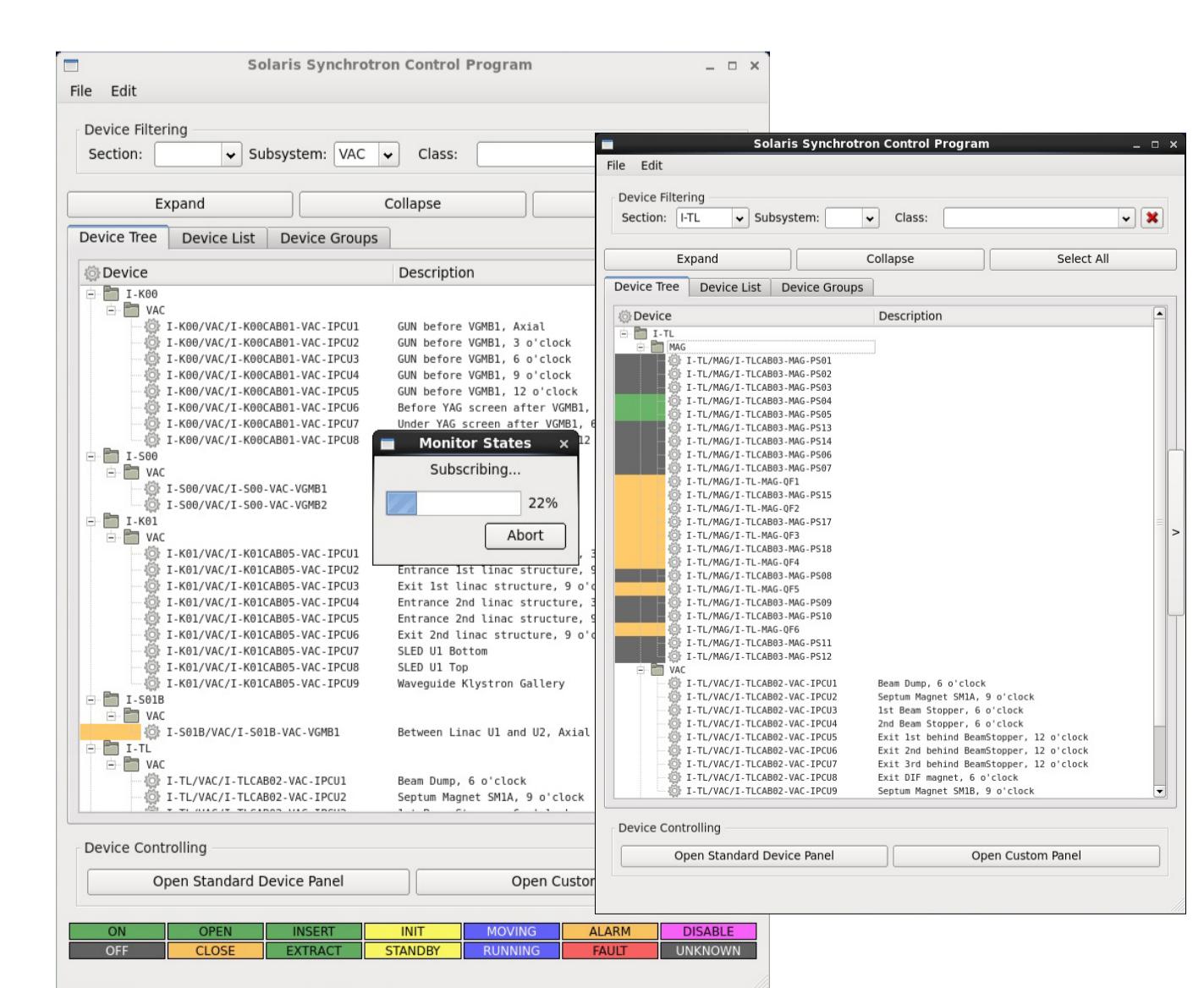


### Profile management:

- Save and load the state of ControlProgram
- Open/generate same panels
- Maintain position in screen
- Easy access and management
  - panels in frequent use

### Device state monitoring:

- Full overview of device states
  - Monitor states for all devices
- Selective overview of device states
  - Monitor states for selected devices
  - Subsystem device state monitoring
- Color state indicator
  - Color legend



## Reusability

Easily adaptable to any Tango based facility

- Configuration based
- Easily extendible