

ALARN SYSTEMS IN TANGO **Evolution and Convergence**



PANIC is a distributed Alarm System for TANGO, developed at **ALBA Synchrotron**. It evaluates user-friendly Rules stored in the Tango DB, executing Actions if needed.

In collaboration with Elettra Sincrotrone, it has evolved to adopt IEC62682 norm and combine existing Tango Alarm Systems, from few alarms to several thousands.

PANIC is currently in use at ALBA, MAX IV, Solaris and SKA institutes, as well as in several private companies.

ALARM = My/Control/System/Temperature > My/User/Setting/Setpoint ACTION(alarm:command,bl/ct/spkr/Talk,"Temperature is High!"))

What's an Alarm System?

IEC 62682:2014 "Management of



Alarm Systems for the Process *Industries*" definition:

- Alarm Systems function is to notify abnormal process conditions and support the operator response.
- The Alarm System is **NOT** part of the protection or safety systems, but complementary to them.
- The Alarm System is part of the Operator Response and the HMI (even if non-graphical).

Tango Alarm Systems continuously monitor control variables; evaluating formulas on them and triggering state changes and annunciators for alarm activation, acknowledge and recovery (following IEC 62682).





The PANIC Ecosystem

PANIC API is build on top of two device servers: **PyAlarm** (ALBA, Python, versatile, polled) and AlarmHandler (Elettra, C++, fast, event-based). Each device connects to the attributes specified by its rules, triggering actions and on each alarm state transition.

The PANIC API exports the alarm system as a whole and enables external services via TANGO commands: logging, snapshoting, SMS, speech, email, pop-ups and automated response actions amongst others.



Rub Sergi



RADIATION

synoptic views (Taurus)



PANIC

BL00/VC/VGCT-01

ol29/ct/eps-plc-01/fe_control_disabled PANIC A bl29/ct/eps-plc-01/fe_open r/eps/al sr/pss sr/pc/ sr/pss/al mach/alarm/ sr/eps/ See Alarm Details 2017-09-26 11:36:53 sr/eps/ BL29 BK BL29 BK ELOTEC 2017-09-26 11:36:53 sr/eps/ Preview Formula/Values View History **BL_FE_OPEN** 0 Change Severity ResetAlarm(s) BL29_BK Beamline ready for Acknowledge/Renounce Alarm(s) Disable/Enable Alarm(s) experiment!

influenciated GUI experience has heavily User development, providing authentication user and customizable user views.

www.tango-controls.org www.pythonhosted.org/panic www.albasynchrotron.eu

