

# A General Device Driver Simulator to help compare real time control systems



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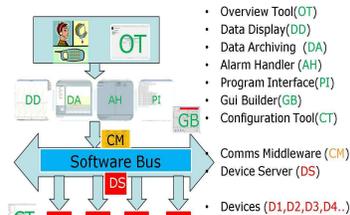
## Introduction

Advanced Virgo will be monitored by PLCs dotted along 3km tubes. PLCs will measure simple scalar values such as temperature and pressure via modbus or profibus.



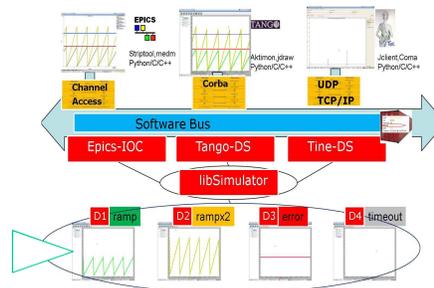
## SCADA Architecture

Test 3 SCADA.  
Similar Architectures



## Test Setup

Test SCADA using 4 signals similar to expected signals:  
small ramp, large ramp, error, timeout



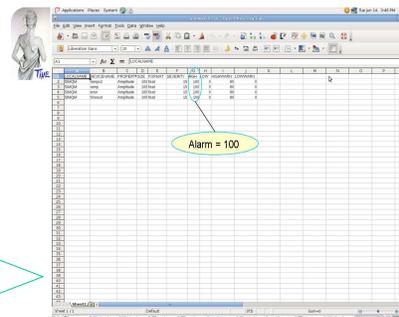
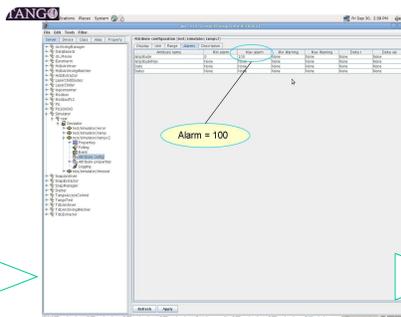
## Configuration Tool (CT)

Set alarm to go off when a signal reaches 100. As large ramp varies from 0 to 119.99999 every minute it should set of an alarm every 50 seconds for each SCADA. Epics configuration uses custom ".db" files. Tango configuration uses a Mysql database accessed by jive tool. Tine configuration uses csv files (or xml files or in code)



```
record(ai, "test/simulator/ramp")
{
  field(DESC, "Simulator Target Temp")
  field(DTYP, "Ramp from 0..59")
  field(INP, "1")
  field(SCAN, "1 second")
  field(EGUF, "100")
  field(EGUL, "0")
  field(EGU, "Ramp signal")
  field(LINR, "LINEAR")
  field(PREC, "1")
  field(ASLO, "1")
  field(AOFF, "0")
  field(HIHL, "100.0")
  field(HHSV, "MINOR")
}
```

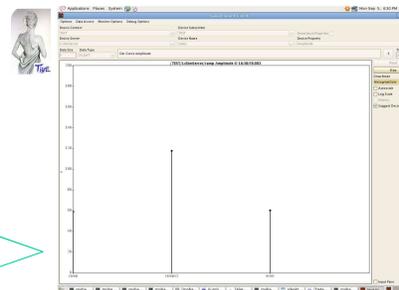
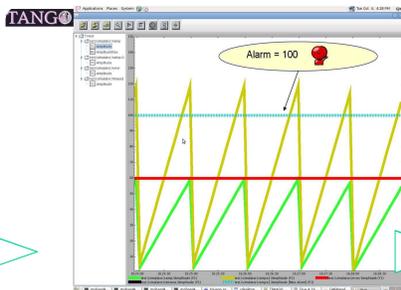
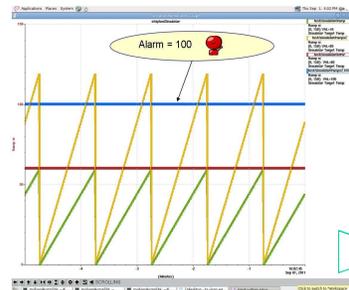
Alarm = 100



## Data Display (DD)

Epics Device names (Channels) must be remembered whereas Tango and Tine device names are available from pull-down menus.

If no pre-written device driver exists: Default generated code for Epics and Tine must be modified to stop the timeout signal blocking the device server.

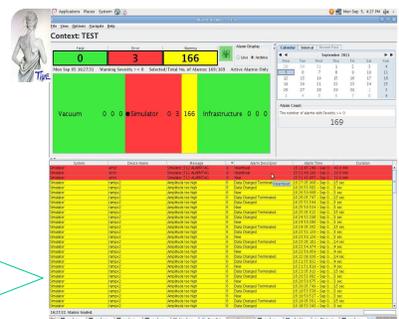
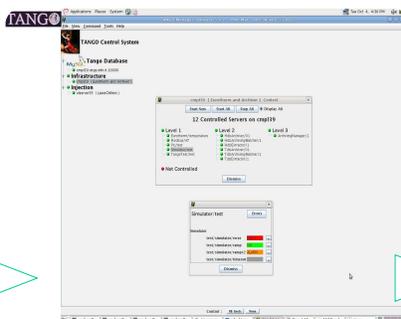
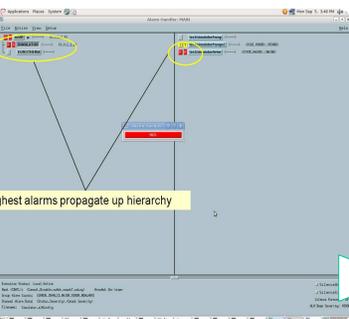


## Alarm Handling (AH)

In Epics highest alarm is propagated up to next level.

Tango operator must check states.

Tine sets alarm after several seconds (avoids false alarms).



Other software available from the 3 SCADA: Overview Tool(OT), Data Archiving(DA), Program Interface (PI), Gui Builder (GB) and many Device Servers(DS)