Securing TANGO Control System: A brain storming

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Outline

What is an ICS?

Wikipedia's definition (en)

"It is a general term that encompasses several types of control systems used in industrial production, including *supervisory control and data acquisition* (SCADA) systems, *distributed control systems* (DCS), and other smaller control system configurations such as *programmable logic controllers* (PLC) often found in the industrial sectors and critical infrastructures."

Examples of an Industrial Control System

`TODO:` "*Add sample pictures here...*"

What is an SCADA?

Wikipedia's definition (es)

"*Supervisory Control And Data Acquisition* it is a computer software to control and supervise industrial process remotely."

Examples of an SCADAs

`TODO:` "*Add sample pictures here...*"

What is an DCS?

Wikipedia's definition (en)

a *Distributed Control System* is the computer software for a manufacturing system, process or any kind of dynamic system, in which the controller elements are not central in location (like the brain) but are distributed throughout the system with each component sub-system controlled by one or more controllers.

What is a distributed system?

Tanenbaum say [1]: *A distributed system is a collection of independent computers that appears to its users as a single coherent system.*

What is a TANGO? (I)

The sea of Hardware

TODO: "*Add the nice picture of the shark...*"

It's an Distributed Control System
using CORBA as a Middleware

What means middleware?
Tanenbaum say [1]: *It is what supports heterogeneous computers and networks while offering a single system view.*

What is a TANGO? (III)

TANGO parts

- TANGO core $\Rightarrow$ the Middleware
- TANGO Device Servers $\Rightarrow$ the agents in the DCS

Device servers, device classes, and devices
TODO: "*Draw a nice picture about what those three things are...*"

What has an Agent (a device)
TODO: "*commands,attributes and properties*"

Optics Lab: Long Term Profiler

A beamline

Control a synchrotron accelerator

Against the transparencies

Against the layers

Security levels

Authentication

Encryption

Database access

Reference Papers

Reference journals and conferences

References I

📑 A. S. Tanenbaum and M. van Steen, *Distributed systems, Principles and Paradigms*.
Prentice Hall, 2002.
International Edition.