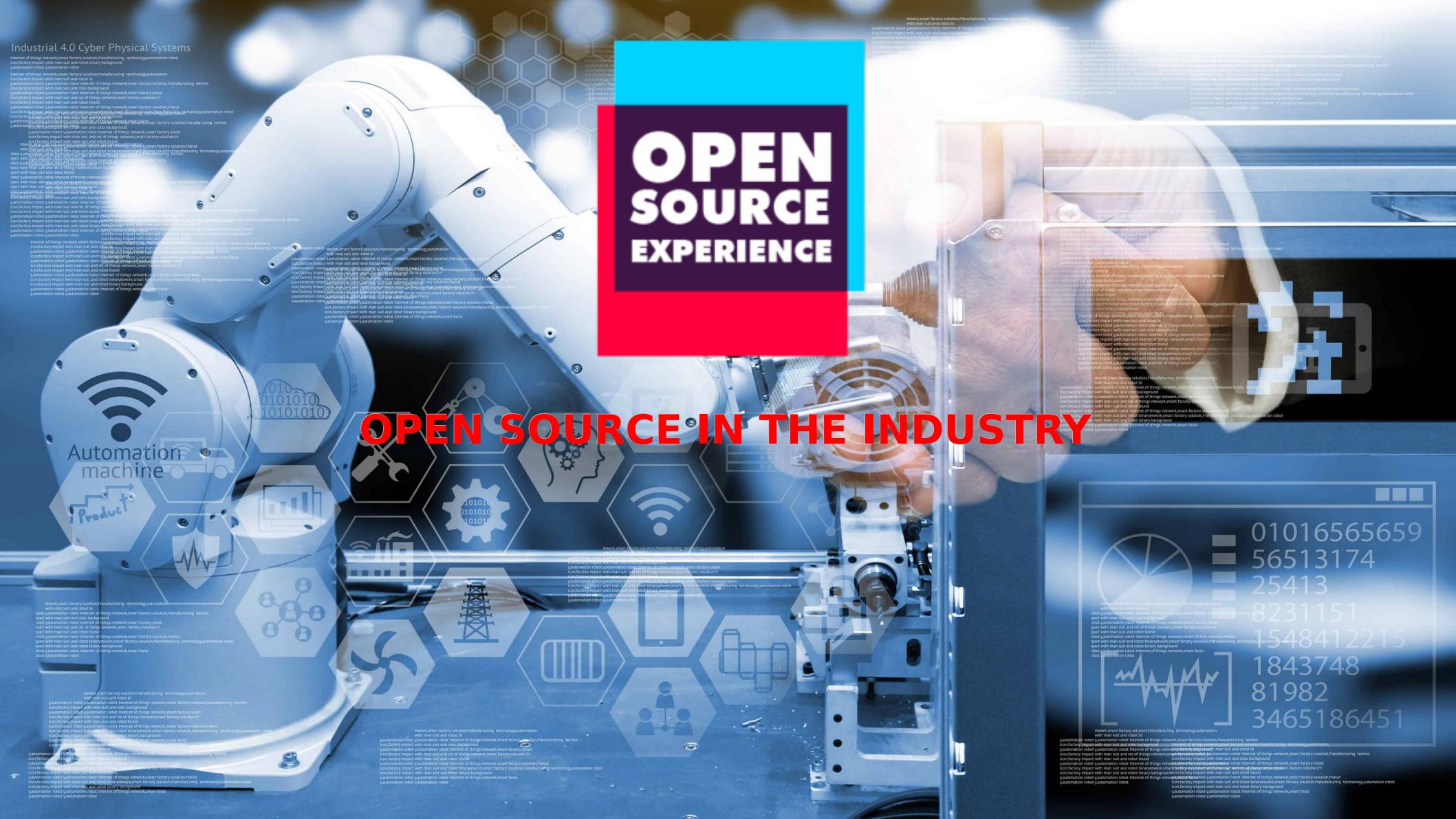


OPEN SOURCE EXPERIENCE

OPEN SOURCE IN THE INDUSTRY



Who is this presentation for?



Software Engineer

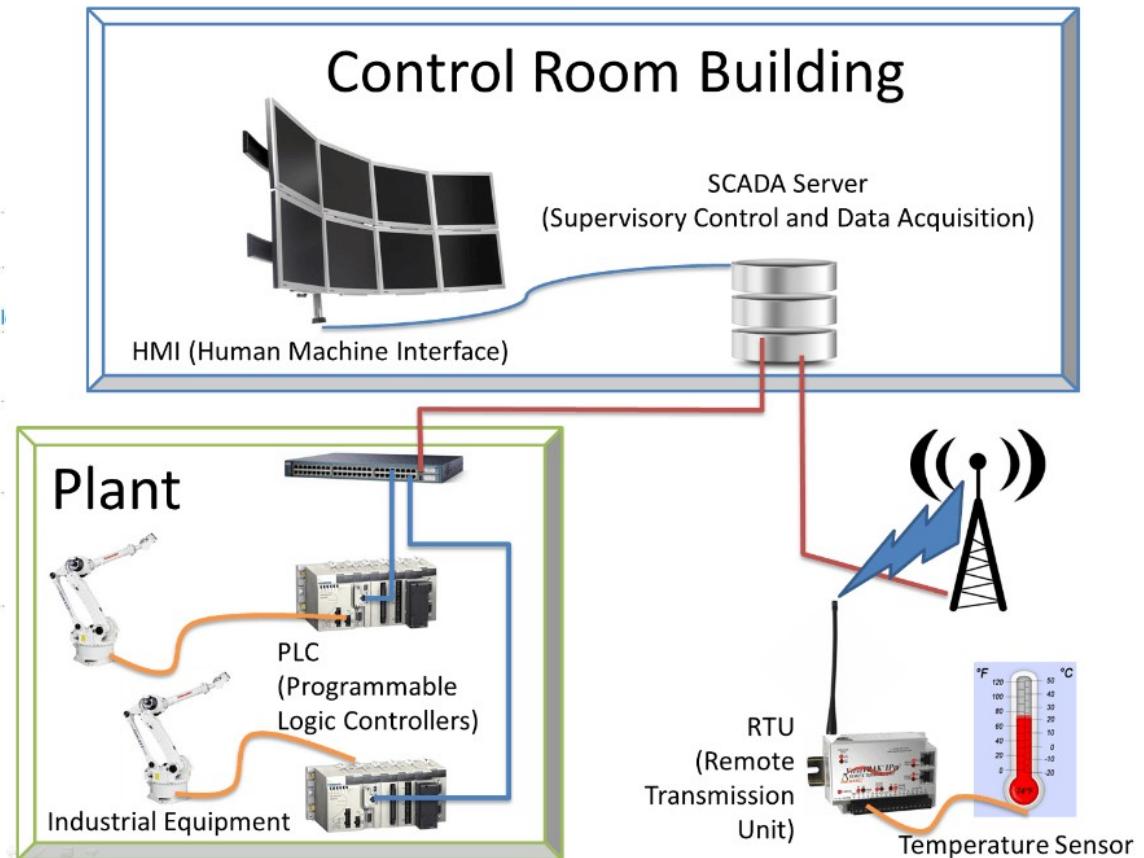
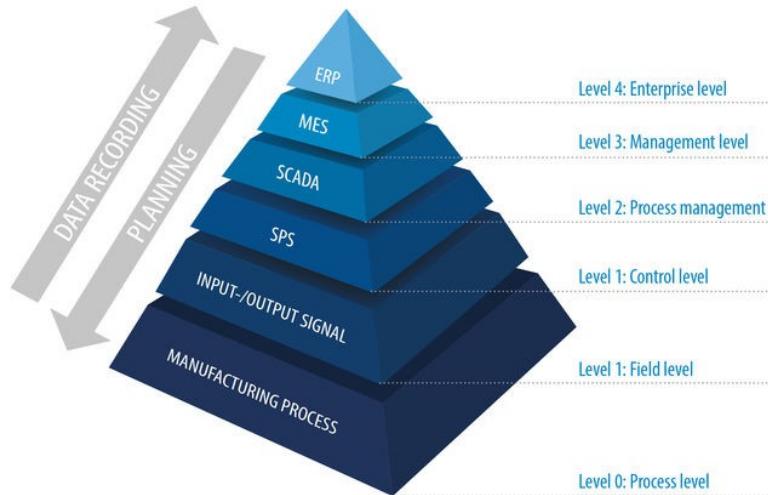


Automation Engineer

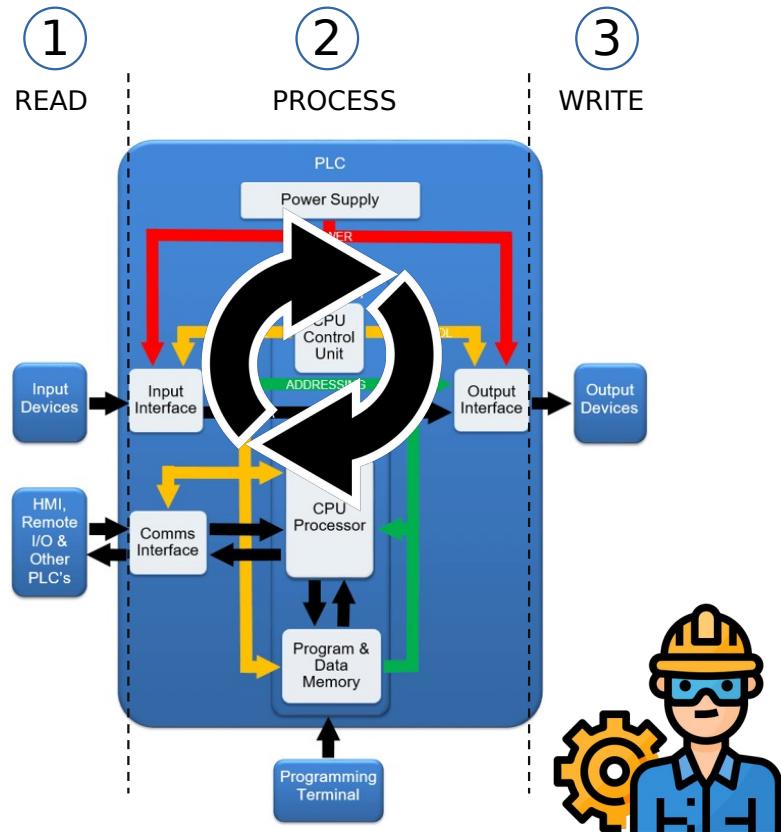


Industrial IT Manager / Design office / Machine manufacturer

SCADA System Architecture



PLC (Programmable Logic Controller)



PLC - Open-source runtime

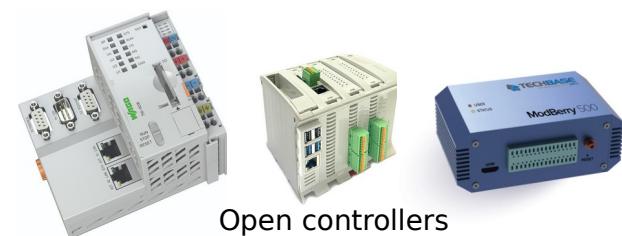
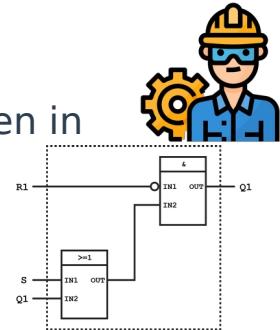
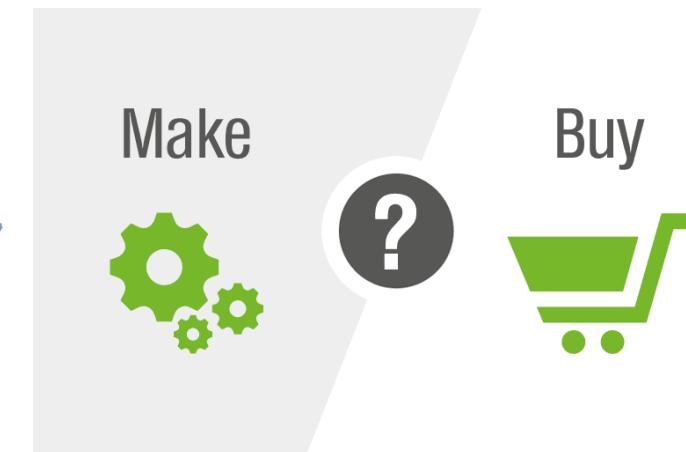
Runtime: Execution environment



Execute the program developed by the automation engineer written in standardized languages (like IEC-61132-3, IEC-61499, etc...)



Proprietary controllers



Open controllers



Embedded software engineer:

- Integrates the runtime in the hardware platform,
- Develops a hardware abstraction layer (HAL), adds protocols, etc...

Eclipse 4DIAC



Open-source PLC framework for Industrial Automation and Control

<https://eclipse.dev/4diac/>



Development Environment



Runtime Environment



Function Block Library



Example Projects



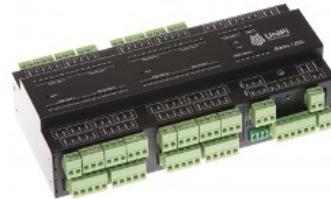
4DIAC-FORTE



Windows



VxWorks



MQTT



FOUNDATION

* Non-exhaustive lists

Eclipse 4DIAC



Open-source PLC framework for Industrial Automation and Control

<https://eclipse.dev/4diac/>





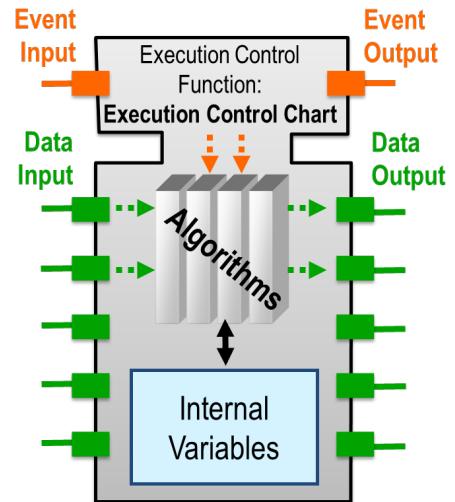
The screenshot shows the 4DIAC IDE interface with several open windows:

- System Configuration:** Shows a tree view of the system structure, including TraficLight, PedestrianCrossing, System Configuration, Type Library, and others.
- PedestrianCrossingCtrl:** An application editor window showing state transitions for PedestrianCrossingCtrl. It includes states like INIT, IN_EVENT_0, IN_EVENT_1, E_SR_0, E_SR_0.1, E_SR_0.2, and Stopped. Transitions are triggered by events like PedRequest, PedOnTime, and timeOut.
- TraficLight:** A hardware editor window showing a schematic diagram of a traffic light system connected via Ethernet. It includes components like Ethernet, Controller, RMT_DEV, and Lights.
- Interface List:** A distribution editor window showing the interface configuration for the TraficLight system.

IEC 61499 Compliant Development Environment Based on the Eclipse framework

IDE features:

- Application editor
- Hardware editor
- Type editors
- Distribution editor
- Deployment
- Monitoring & debugging
- Testing

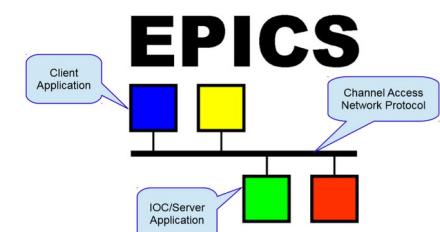
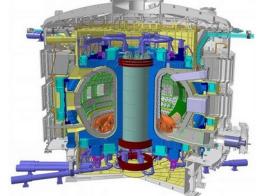


Open source Scada

Open source scada



- **Who develops?**
 - Mainly by laboratories / research institutes / Universities
- **And why ?**
 - Very specific needs (functional and material), systems in perpetual evolution, etc...
- **My favorite projects:**
 - Tango Control System
 - EPICS Control (Experimental Physics and Industrial Control System)

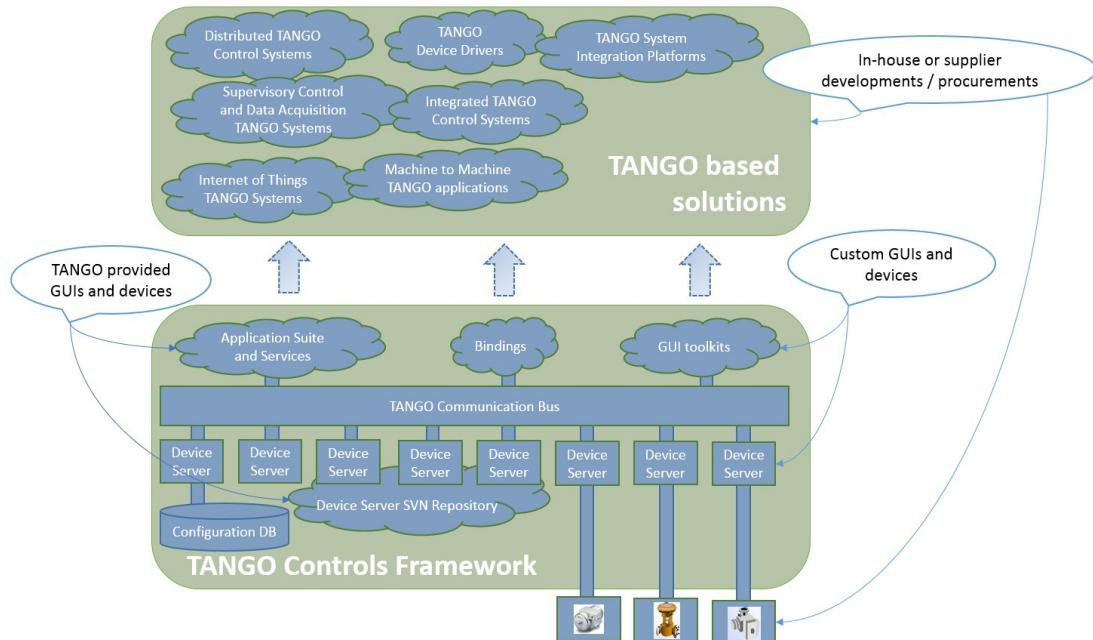




Tango Control

- **Short presentation**

- The original proposal for Tango was made in a paper written in **31/7/1998** by W-D. Klotz, A. Götz, E. Taurel and J. Meyer



QUESTIONS