

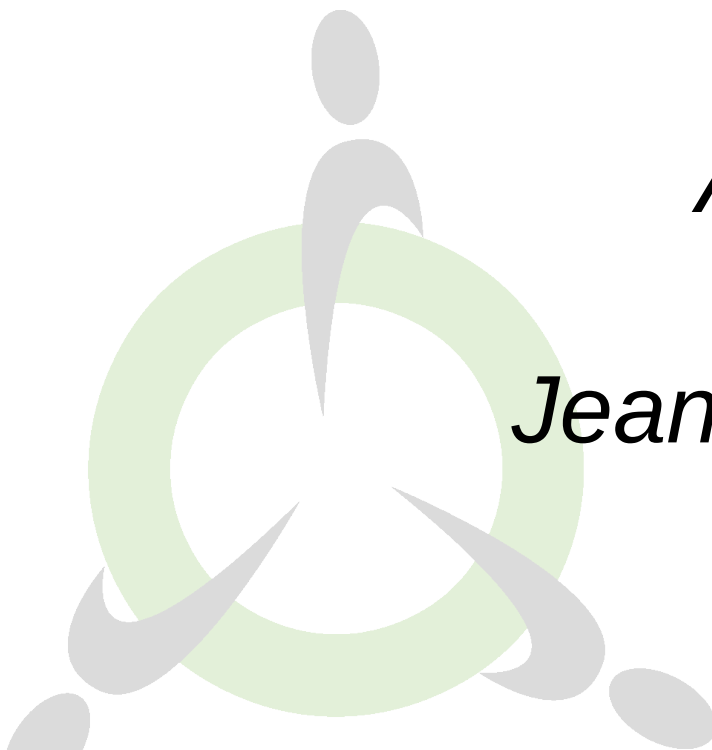
TANGO - A POSSIBLE CONTROL SYSTEM FOR THE AFRICAN LIGHT SOURCE ?

Andy Götz

+

Jean-Michel Chaize

ESRF



SOFTWARE NEEDS FOR LIGHT SOURCES

A light source needs at least the following software:

- 1) A **distributed control system**
- 2) A **scanning & data acquisition** system
- 3) **Data reduction & analysis** software
- 4) System software for managing **compute + storage resources**

WHAT IS TANGO ?

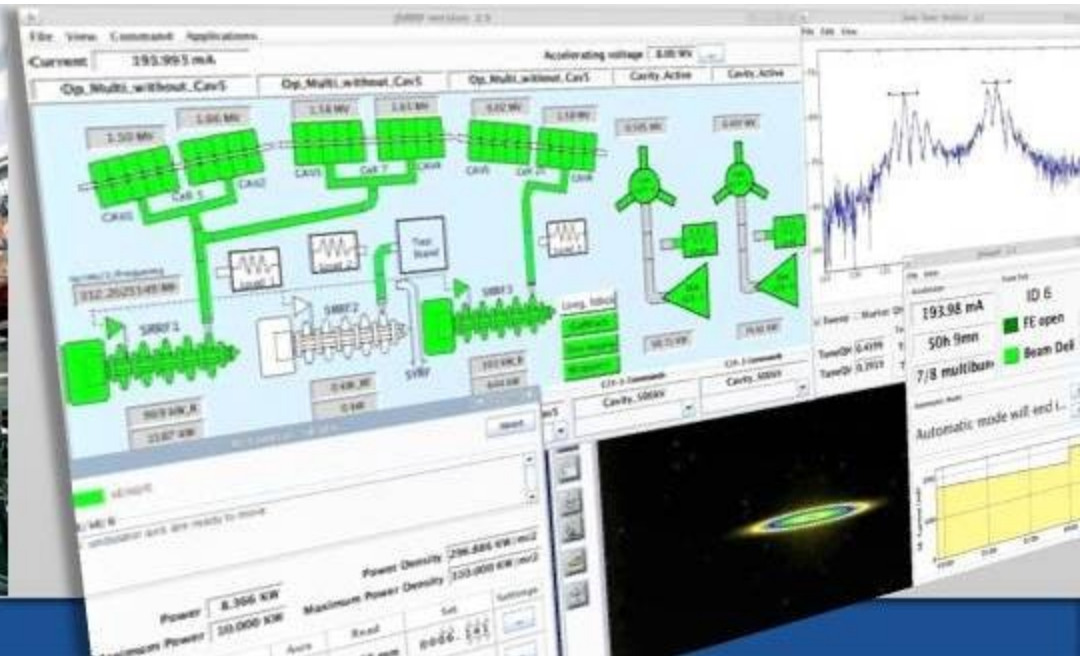
A distributed control system used mainly by large physics instruments e.g. light sources, lasers, telescopes, wind tunnel

- 1) **Mature** – 15 years development + large community
- 2) **Binary protocol** and **object oriented** framework
- 3) **Tools** for **configuration** and **monitoring** + **testing**
- 4) **Databases** for **parameters**, **archiving**, **settings** etc.
- 5) **Graphical toolkits** and **bindings** to commercial tools

ACCELERATOR CONTROL



European Synchrotron Radiation Facility



SOFTWARE BUILD OR BUY ?



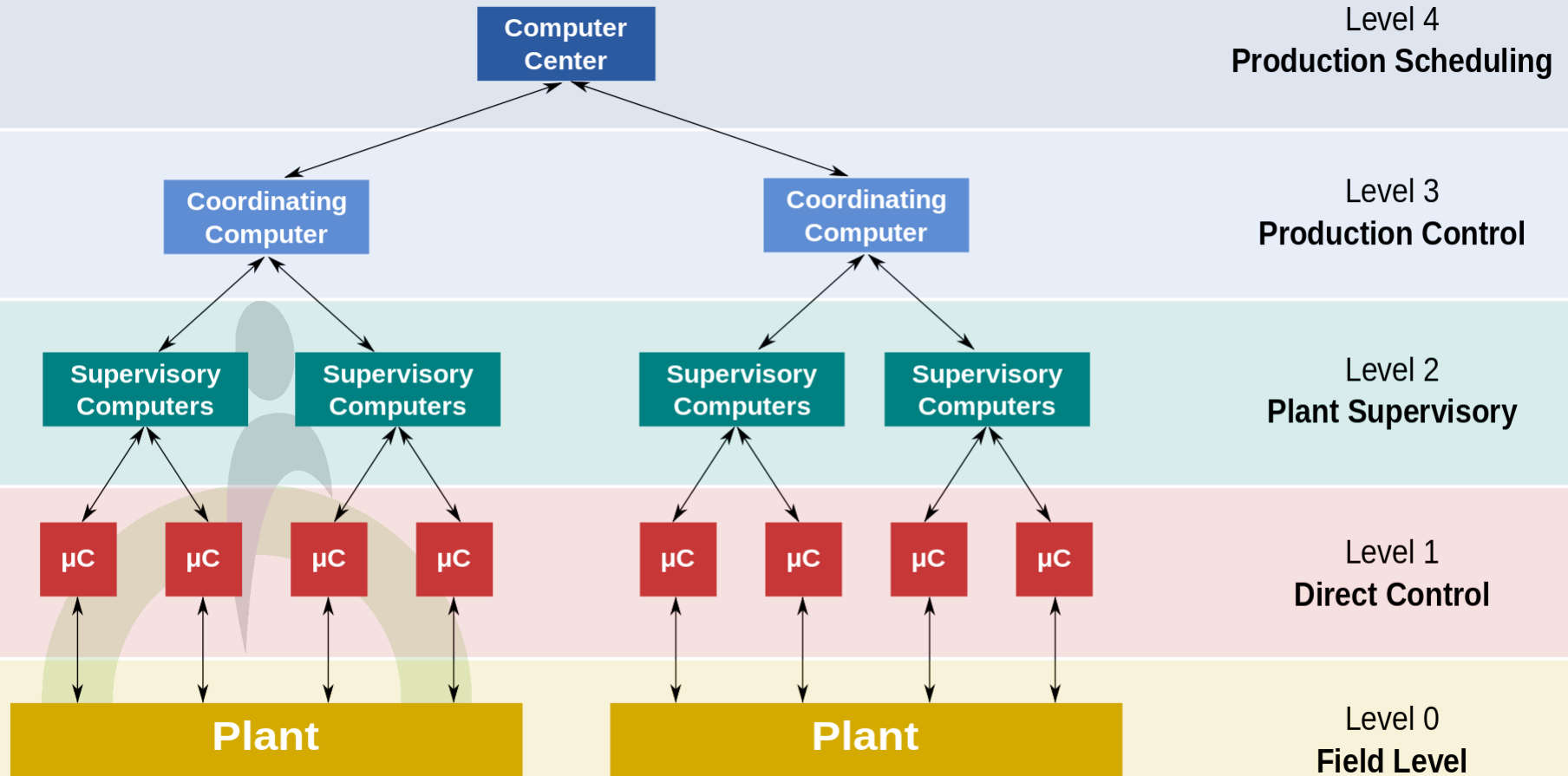
EVEN BETTER - COLLABORATE !

DISTRIBUTED CONTROL SYSTEMS



CHOOSE ONE OF THEM - YOUR CALL

Δ DISTRIBUTED CONTROL SYSTEM - DCS

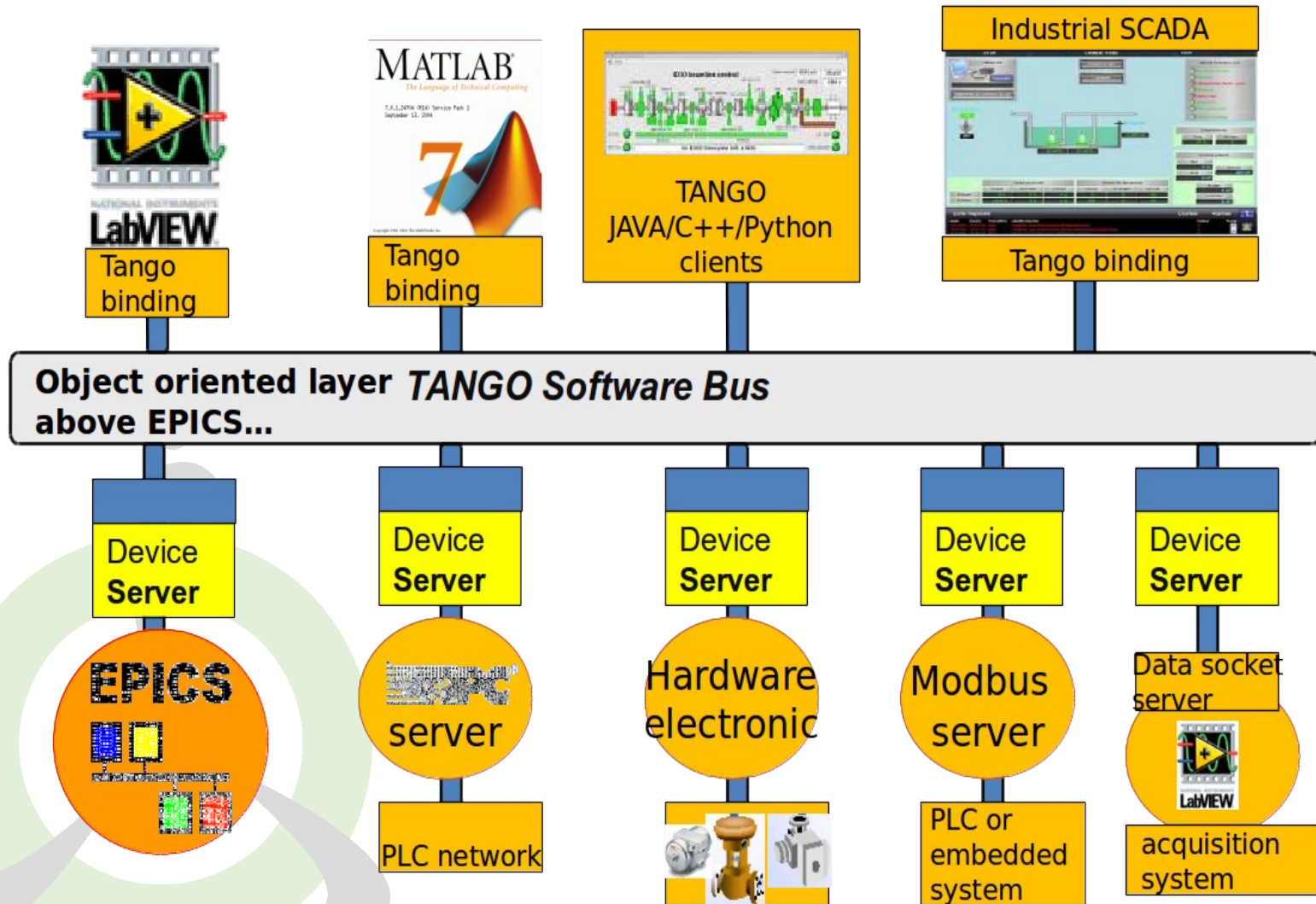


https://en.wikipedia.org/wiki/Distributed_control_system

DCS IS THE SOFTWARE FOUNDATION

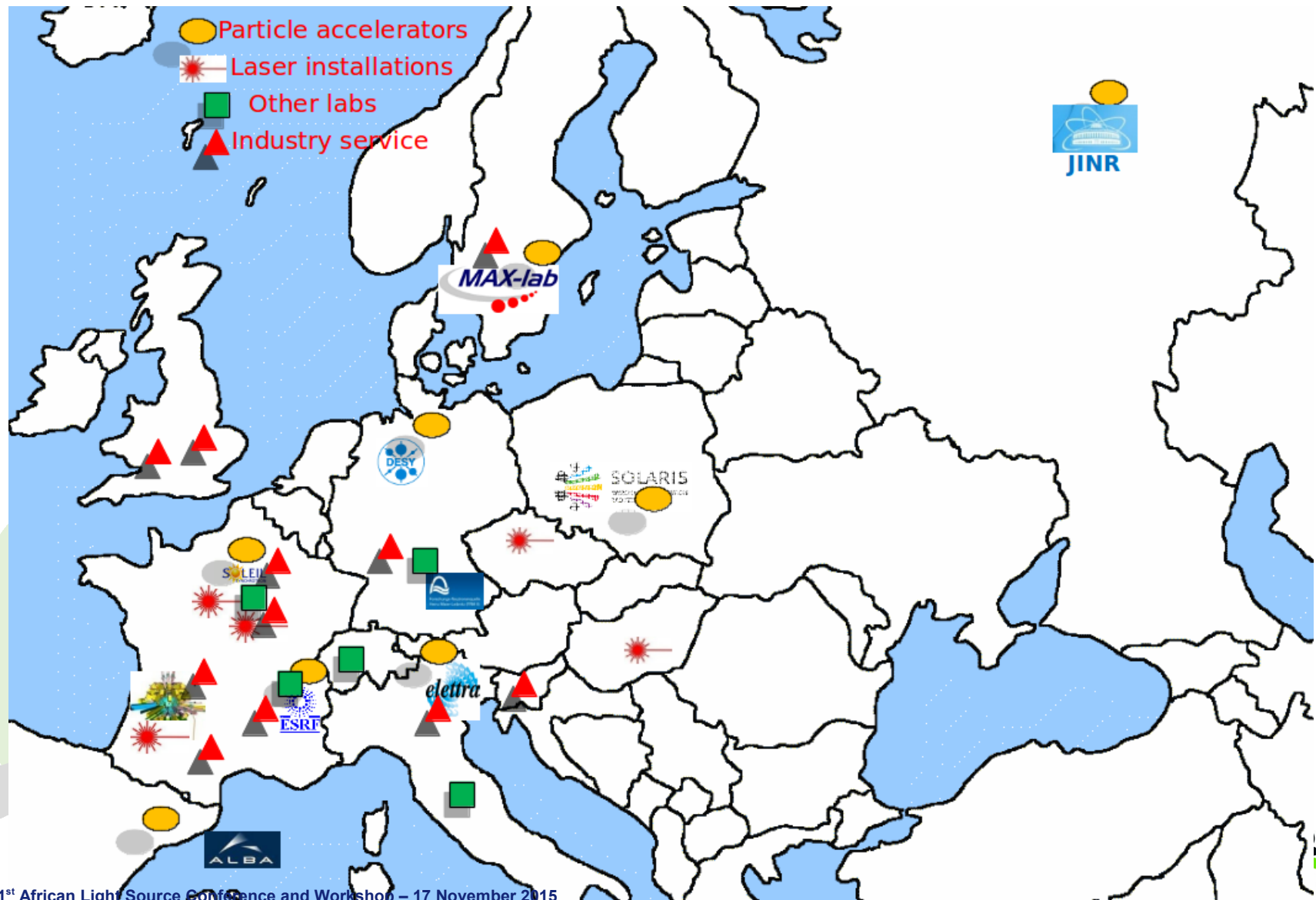


TANGO SOFTWARE BUS



TANGO CONTROLS COMMUNITY IN EUROPE

<http://www.tango-controls.org/community/institutions/>



TANGO

COLLABORATION



SUSTAINING TANGO COLLABORATION

- We have prepared a contract with partners who are willing to finance TANGO infrastructure developments. Contract is for 5 years = 10 keuros/year.
- Two types of partners : **Core + Contributors**
- Potentially 10 partners have expressed their interested. This would finance at least one FTE / year.
- Collaboration contract will start in 2016
- TANGO stays **free** and **Open Source** and **Sustainable!**

TANGO CONTROLS WEBSITE

<http://www.tango-controls.org>

The screenshot shows a web browser window with the address bar displaying 'www.tango-controls.org'. The browser's address bar includes a search icon and a search input field. Below the address bar, there is a navigation bar with links: 'Most Visited', 'Getting Started', 'Home - TANGO Controls', 'Meditation Timer', 'Liste des postes', 'IT eBooks', 'Japanese Buddhist Te...', 'TOPCAT', and 'ESRF mail'. The website's header features the 'TANGO' logo on the left, a navigation menu with links: 'About us', 'Downloads', 'Resources', 'Community', 'Partners', and 'Contact', and two circular icons on the right. The main content area has a dark background with the text 'Connecting things together'. Below this, there are three colored boxes: a red box on the left, a green box in the middle, and a blue box on the right. Each box contains a title, a description, and a 'READ MORE' link.

Home - TANGO ...
www.tango-controls.org
Search
Most Visited Getting Started Home - TANGO Controls Meditation Timer Liste des postes IT eBooks Japanese Buddhist Te... TOPCAT ESRF mail
django CMS Site Page LIVE

TANGO
About us Downloads Resources Community Partners Contact

Connecting things together

What is TANGO Controls ?

A free open source device-oriented controls toolkit for controlling any kind of hardware or software and building **SCADA** systems...

READ MORE

Why choose TANGO Controls ?

Because it is easy to use, flexible, and highly scalable. It provides a complete set of features for controlling equipment and lot of services for managing systems.

READ MORE

How to use TANGO Controls ?

Just download it and install it. Then reuse or write a device server, deploy and marvel at how it works!

READ MORE

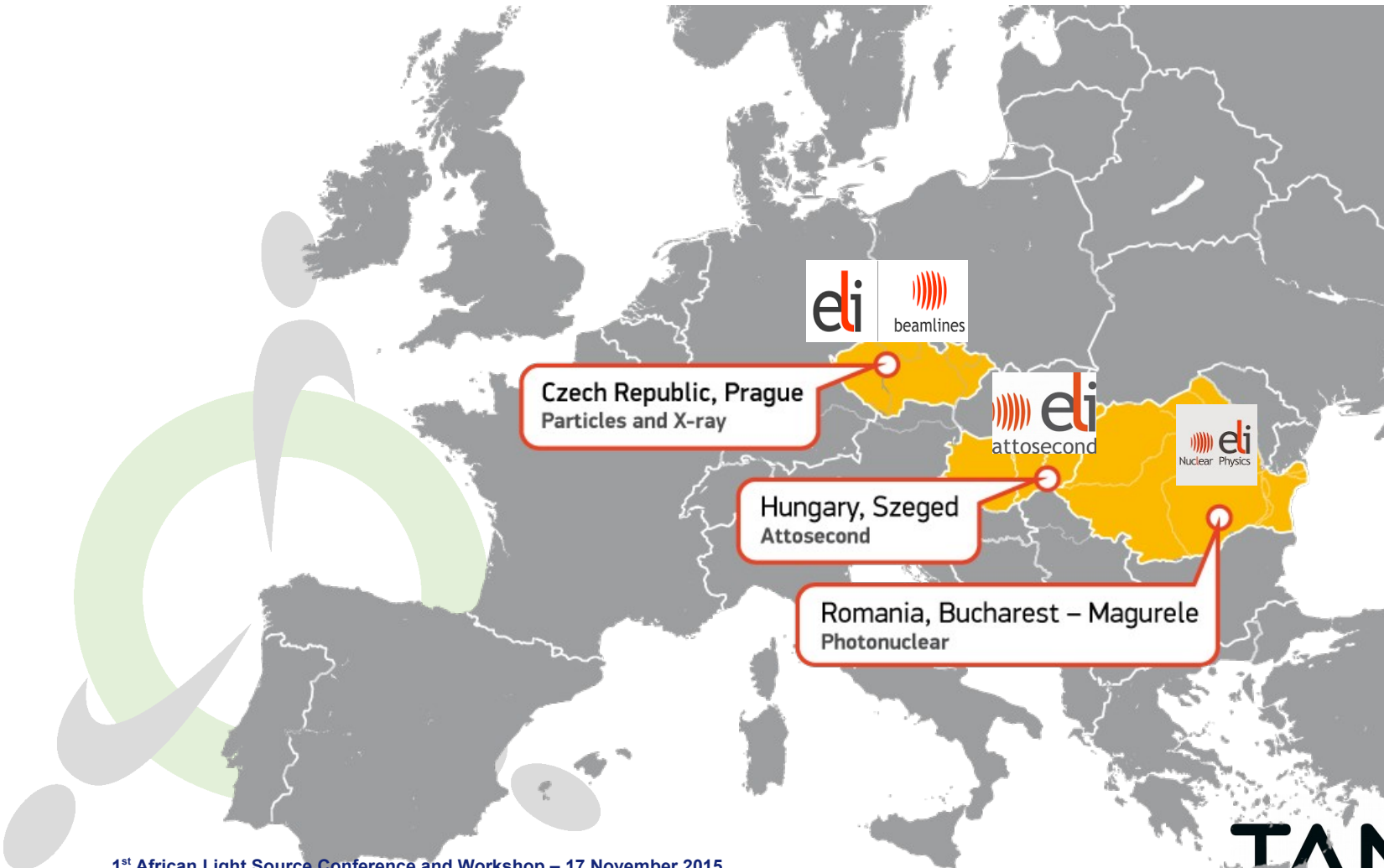
TANGO VIRTUAL MACHINE

<http://ftp.esrf.fr/pub/cs/tango/tango9-vm.zip>



LASERS ADOPT TANGO

- 3 Extreme Lightsource Infrastructures have chosen TANGO+EPICS



HOW ELI-ALPS USES TANGO

ELI-ALPS has chosen TANGO as their main control system (similar to ELI-NP)

- 1) Joined the **collaboration**
- 2) Setup a **team of engineers** to design and **prototype**
- 3) Started collaboration with local **university** to train **students**
- 4) Using all **TANGO tools**, developing only new features
- 5) Sub-systems from **industry delivered** with **TANGO**

ELI-ALPS CONTROL ARCHITECTURE

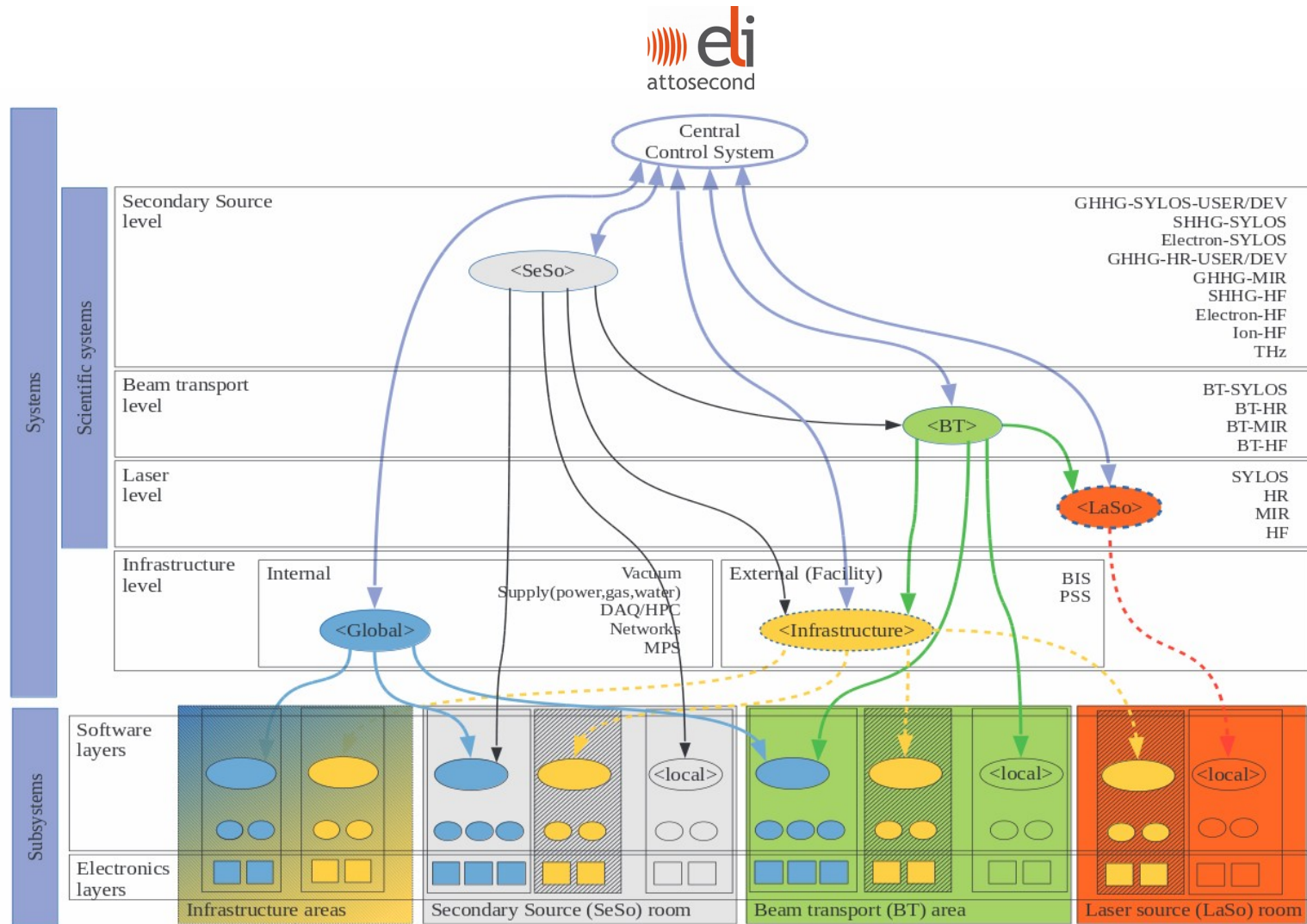


Figure 1: Control System Architecture.

SKA CHOOSES TANGO



- Square Kilometer Array has chosen TANGO as its distributed control system
- TANGO will be the nervous system of world's largest radio telescope



SKA CHOOSES TANGO

- SKA largest science project in Africa



1st African Light Source Conference and Workshop – 17 November 2015



HOW SKA WILL USE TANGO

- TANG Teleso Control

The logo for TANGO, featuring the word "TANGO" in a bold, black, sans-serif font. The letter "O" is replaced by a green circular icon containing a stylized white figure of a person in a dynamic pose, with the word "tango" written in small, lowercase letters to the right of the figure.

CREATING SYNERGY WITH SKA

- **SKA + African Light Source could collaborate via TANGO**
- **Sharing** know-how, engineers, students
- Creating a **local knowledge** pool
- Be a **major player** in the TANGO collaboration



CONCLUSION

- **African Light Source** will depend on software to be successful
- **Collaborate on Open Source Free Software** – avoid building or buying from scratch !
- The **TANGO distributed control system** framework would be a good choice for collaborating with other **light sources** in Europe and **SKA** in Africa
- Ensure **software** and **control systems** are included from the beginning in the **design + budget**