TANGO Industrialisation

Promoting the use of TANGO in and by Industry

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Gravit and TANGO

Gravit innovation GRENOBLE-ALPS

Speeding up technology transfers

- **Gravit is a technology transfer accelerator organisation based in Grenoble financed by France and Europe**
- **Gravit has financed the TANGO project for 50 000 euros over one year (2013)**

Project consultant **: Alexandre Delorme**

Andy Götz

Jean-Michel Chaize

Goals : demonstrate TANGO to industry, help industry to adopt, prepare TANGO Foundation, TANGO to be a de facto industrial standard

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Gravit and TANGO

Speeding up
technology transfers

- **Project made up of 3 work packages :**
  - Specify industrial demonstrator
  - Build industrial demonstrator
  - Prepare TANGO Foundation

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Budget

	ESRF	Gravit	Autres	Total
WP1	9100			9100
WP2	21000	40000		61000
WP3	38000	10000	25000	73000
Total				143100

WP1 = write a specification for the demonstrator

WP2 = implement the industrial demonstrator

WP3 = prepare a study on TANGO Foundation

Industrial Demonstrator

TANGO on the web

WP1 – TANGO leaflet writing

WP2 – TANGO packaging enhancement

TANGO demonstration

WP3 – TANGO Demonstration

TANGO new features

WP4 – TANGO OPC-UA client development

WP5 – TANGO high speed acquisition on open hardware

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TANGO is Open Source

Are you ready for the Open Source Revolution ?

98 % of Enterprises use Open Source

OSS = key to Software Development

DESIGNED and USED to

« Remote control anything and everything »[tm]

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TANGO is HIGHLY scalable !

From one device running on a ...

Raspberry Pi inside

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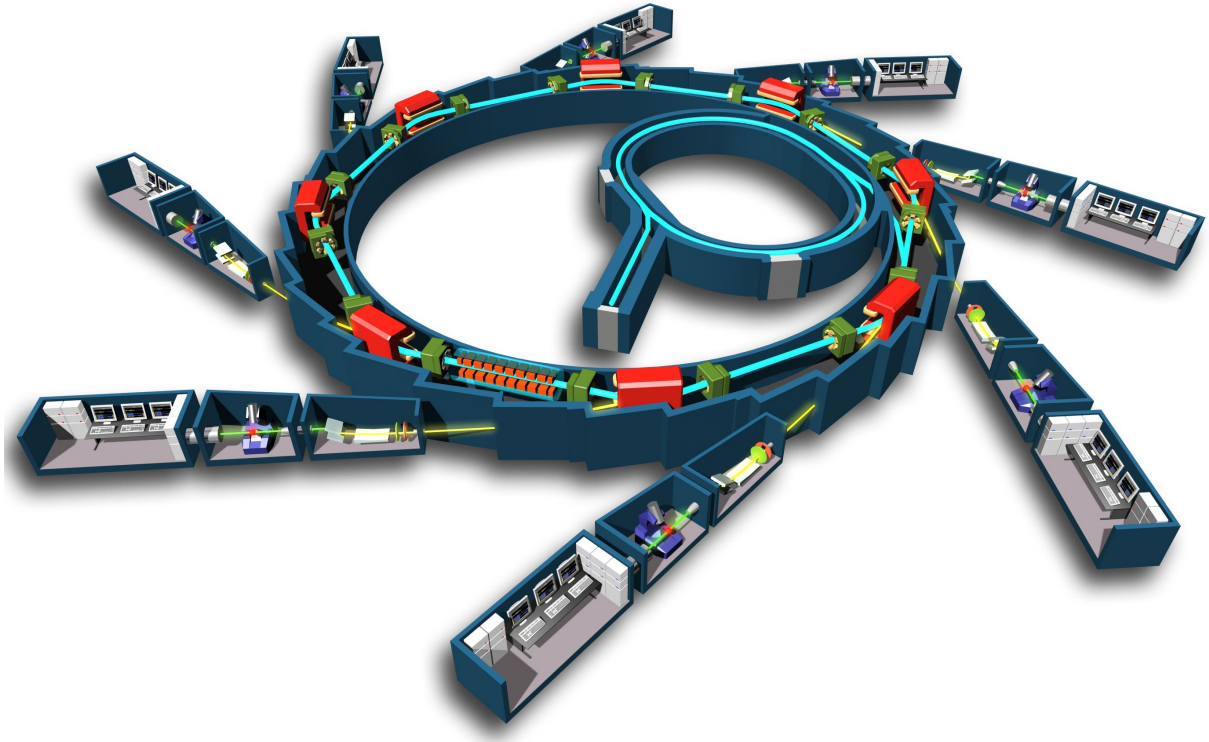
… to 20 000 devices running an accelerator



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TANGO – Research Institutes

Large Installations

- **ESRF**
- **SOLEIL**
- **ELETTRA**
- **ALBA**
- **CEA/LIONS**
- **DESY**
- **LMJ**
- **FRMII**
- **MAXLAB**

Large > 1000 devices

100 > Small > 0 device

Small Installations

- **HZB**
- **DLS**
- **SLS**
- **...**

TANGO – Industrial Users

- **Nexeya**
- **Cosylab**
- **ATOS**
- **Hytec**
- **Theosis**
- **Aerotech**
- **Oxford Instruments**
- **Photonics Science**
- **Your Favourite Companies ...**

TANGO – **Industrial use cases**

- **Provide TANGO support for industrial hardware**
- **Provide Services for TANGO e.g. Training**
- **Be a TANGO System Integrator**

TANGO – **System Integrator**

- **TANGO System Integrator markets**
  - Research Institutes
  - Internal projects use
  - SCADA market

TANGO – Industrial hardware support

- **Provide a TANGO Device Server for your hardware**
- **Embed TANGO in your equipment**
- **Provide TANGO device server source code to run externally**
- **Advantage :**
  - Sales argument for TANGO community
  - Provide remote control of your device
  - Profit from TANGO framework
- **Examples : Aerotech, Hytec, Photonics, Oxford Instruments, ...**

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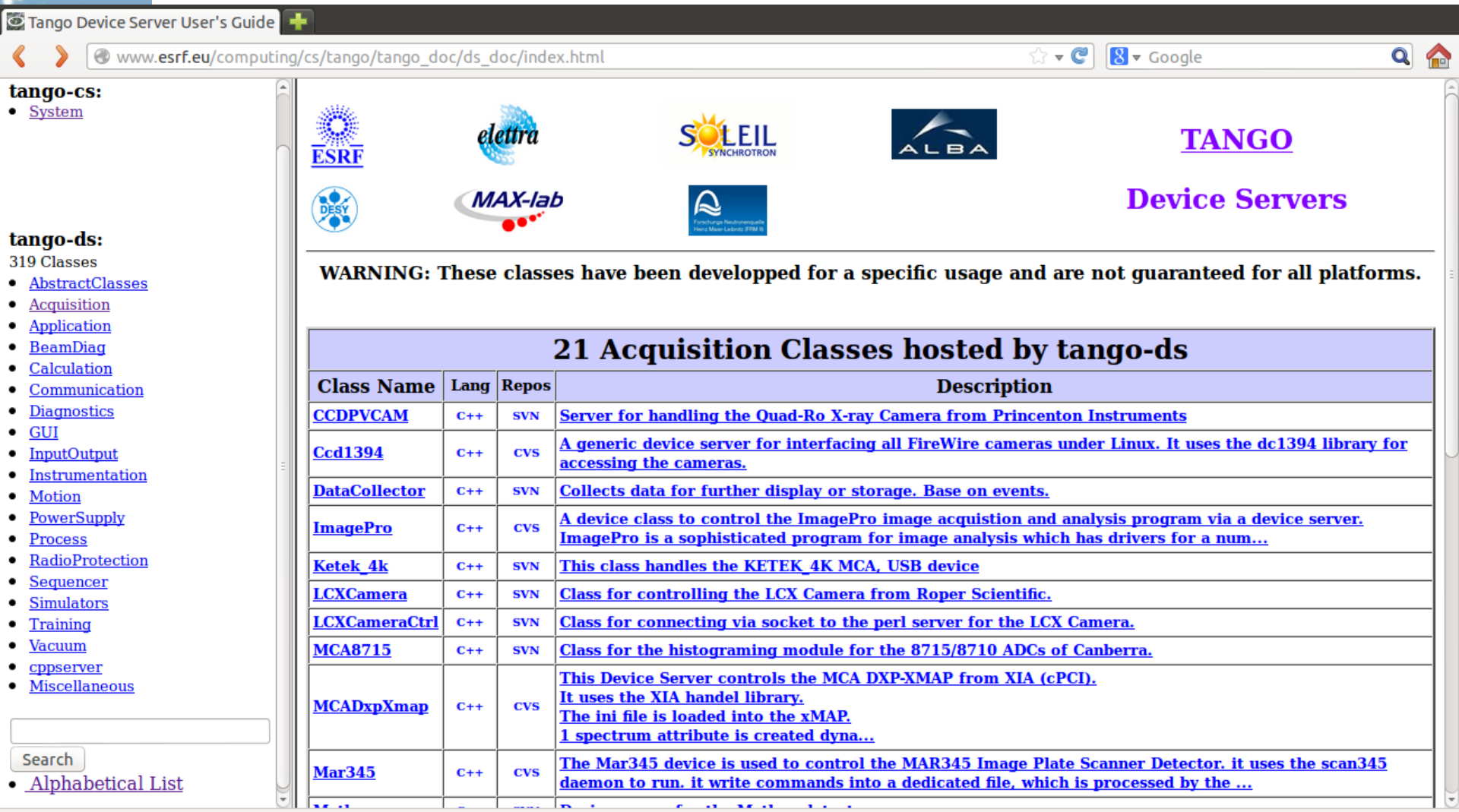
TANGO - Embedded devices

TANGO – Hundreds of Device Classes

Open Source on Sourceforge and local forges :



TANGO – Future technical developments

- **Support for mobile platforms – tablets, smartphones**
- **Debian packaging of Tango 8**
- **Events in Java device servers**
- **High speed archiving of terabytes**
- **Even faster transport protocols**
- **Improved Python binding**

No limit to ideas for improvements ...

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Gravit's secret plan for TANGO ;-)

Linux, Firefox et **Android** examples of successful Open Source projects

Make TANGO the **Android** of SCADA !

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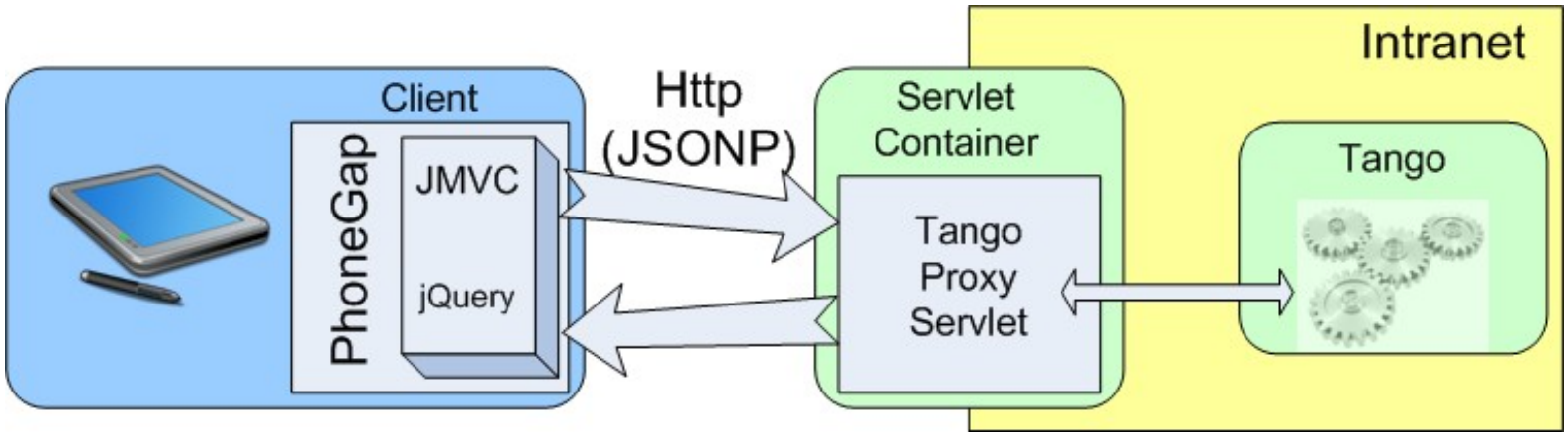
TANGO on mobile platforms



TANGO provides

- A **mature** product developed over **12 years**
- **Kernel** developers between **3 and 5** engineers
- More than **70 Device class developers** !!!
- **User interfaces** in **Java, Python** and **C++**
- **Full support** for all 3 languages (**client+server**)
- **Bindings** for most commonly used tools e.g. Matlab, Labview, Igor, Octave, ...
- Interfaced to many **PLC's** via **Modbus**
- **Integrates** other **SCADAs** like **EPICS**, **Panorama**, ...

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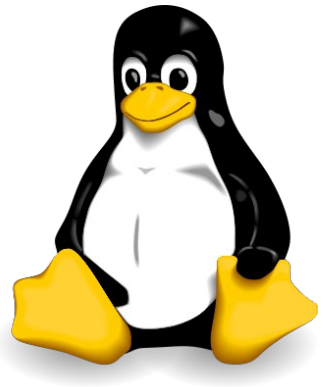
What is missing from TANGO ?

- More industrial partners
- Trained people
- Larger community
- More system integrators
- TANGO enabled hardware
- Industrial standard quality + support
- Industrial systems based on TANGO

Long term goal – TANGO Foundation

- **Goal – official entity to manage TANGO officially**
- **Legal representative of TANGO community**
- **Protect logo, licence etc.**
- **Develop and release official versions**
- **Collect and manage funds to promote TANGO**
- **Examples**
  - *Apache Foundation*
  - *Eclipse.org*
  - *Linux.org*



TANGO - Differences with industrial SCADA

Positive

- Open Source
- Free to try and distribute
- Multi-language and multi-platform
- Scalable from 1 device to 100000 devices
- SUPER-SCADA to integrate (m)any SCADA(s)

Negative

- Packaging not as polished
- Duplicate solutions
- Lack of standardisation
- Hardware needs to be procured separately

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Trade shows planned :

- **Embedded Days – 28 May 2013 @ Orly Airport**

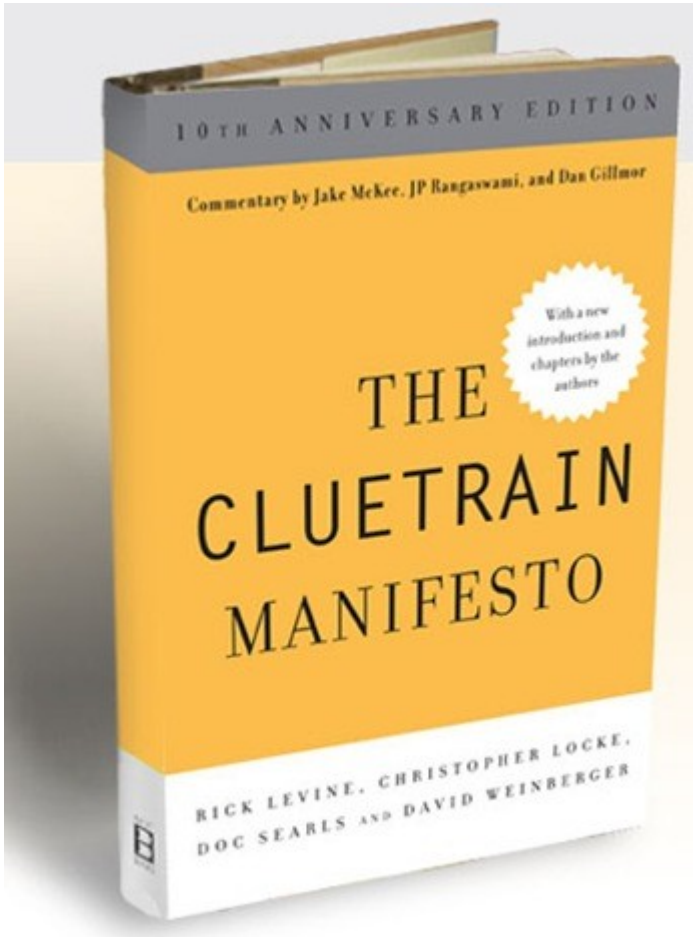
- **ICALEPCS 2013**

  6-11 October 2013

  San Francisco

- **Your suggestions welcome ...**

The end of business (+ software) as usual



These 15. Dans quelques années à peine, l'actuelle voix homogène des affaires - le son des rapports de mission et des brochures - semblera aussi forcée et artificielle que le langage du 18ème siècle à la cour de France.

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TANGO Open Source Business Model

- **GOAL :** make TANGO the OPEN SOURCE solution for industrial control systems
- **HOW :** create a COMMUNITY of INDUSTRIAL PARTNERS
- **MARKET :** RESEARCH INFRASTRUCTURES 400 M€/yr, INDUSTRIAL CONTROL 12 B€/yr
- **BENEFITS :** create JOBS in INDUSTRY, give EU INDUSTRY a competitive ADVANTAGE, INVENT new solutions for control e.g. SECURE protocol

TANGO a COMET in the SCADA sky ?